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Developing and Field Testing Design Parameters for Customizing Agricultural Extension Education Systems in Developing Countries.

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**DEVELOPING AND FIELD TESTING
DESIGN PARAMETERS FOR CUSTOMIZING
AGRICULTURAL EXTENSION EDUCATION SYSTEMS
IN
DEVELOPING COUNTRIES**

A Dissertation

**Submitted to the Graduate Faculty of the
Louisiana State University and
Agricultural and Mechanical College
in partial fulfillment of the
requirements for the degree of
Doctor of Philosophy**

in

The School of Vocational Education

by

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August 1997**

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ABSTRACT

Increasingly, developing countries view the partnership of research, education, and extension in traditional agricultural extension education systems as an adaptable model for improving their agrarian economies. The process of adaptation, however, has too often followed the traditional developmental project approach and been little more than the transplantation of a predefined extension education model into a developing country with little regard to existing country specific factors which impact the effectiveness of a domestic extension system. As a result, less than satisfactory technology transfer has occurred and slow rates of agricultural economic development have been posted, painting a disappointing record for agricultural extension in developing countries.

The general assertion remains, however, that extension education can promote development by improving the capacity of small farmers to produce food and fiber, enabling them to become functional, contributing parts of the economic development process. The challenge is to design an extension system, within country specific parameters, which will effectively meet the established developmental goals of a country.

The purpose of this developmental research project was to identify the factors to consider when designing an effective agricultural extension system for a given developing country and then link these factors to the components of existing extension

models to "custom" design an appropriate, effective extension system for the country.

A review of literature identified country specific factors which impact the effectiveness of an extension system and the primary components of the seven major extension models.

Additional procedures included the development of two instruments, the "Country Analysis Instrument" which serves to identify and quantify various existing or desired characteristics which impact the development of an extension system and the "Model Correlation Instrument" which correlates these identified impactors to particular components of existing models.

The designed instruments were subjected to a modified Delphi review by a panel of recognized experts in extension education and development for evaluation and refinement. Field-testing of the final instruments was done in the People's Republic of China and Cambodia through a 1994 Fulbright Project and Turkmenistan in a 1995 USAID Project. These studies validated the instruments as capable of withstanding practical application.

CHAPTER I. INTRODUCTION

In an article written for the Cooperative Extension Service of the United States Department of Agriculture, Dr. Clifton Wharton, long-time Chair of the Board for International Food and Agricultural Development, succinctly outlined one of the most significant challenges facing modern developmentalists by stating:

If there is one area where we have been most unsuccessful, it has been the development of cost-effective and program-efficient models for the delivery of new scientific and technical knowledge to the millions upon millions of farm producers in the Third World. We know how to harness the creative and inventive forces of science and technology in the war on hunger, but I submit that we still have not been fully successful in the technology of diffusion. (Wharton, 1984, p.4)

Authors Daniel Benor, James Harrison, and Michael Baxter emphasize the significant role agriculture plays in the economic development of countries in the 1984 World Bank publication, "Agricultural Extension - The Training and Visit System". According to the authors, the majority of developing countries of the world are agrarian societies and agricultural economic development is necessarily integral to their overall economic development. Few countries have experienced sustained economic development without growth in the agricultural sector and all countries that have experienced significant growth in agriculture have simultaneously achieved growth in their general economy. Agricultural development, therefore, represents not only a method of increasing food output, thereby enhancing

public welfare, but also serves as a direct contributor to overall economic development.

Benor et al. also point out that a number of factors combined to affect the quantum growth in the U.S. agricultural sector from 1945 to 1970. U.S. infrastructure developments progressed at a rate which served to support and stimulate progress in the agricultural and industrial sectors. Increased emphasis on agricultural research produced a host of new techniques and products providing the opportunity for significant improvement in production levels and efficiency. And certainly, a key ingredient was the Cooperative Extension Service which served as a vehicle for transferring this newly derived information from the research centers to local producers for practical application.

With such rapid improvement in the agricultural sector of the United States, the country has become a model for developing nations faced with mounting pressures from population growth and low food supplies. Benor et al. contend that it is increasingly apparent that improvement in the agricultural economy of a developing country is dependent upon adequate agricultural research and the successful diffusion of resulting technology into the rural sector through education. Further, while the research and education concept of the land grant system of the United States has long been recognized as one of the most effective means of improving food and fiber production, the

extension component is now recognized as an equally important partner in this process. Increasingly, developing countries are viewing this partnership as an adaptable model for improving their agrarian economies.

The process of adaptation, however, has too often followed the traditional developmental project approach and been little more than the transplantation of a predefined extension model into a developing country with little or no regard to existing country specific factors which directly impact the effectiveness of a domestic extension education system. As a result, less than satisfactory technology transfer has occurred and slow rates of agricultural economic development have been posted, painting a somewhat disappointing record of agricultural extension in developing countries over the last 35 years.

The general assertion remains, however, that extension education systems can promote development by improving the capacity of small farmers to produce and utilize food and fiber, thus enabling them to become a functional, contributing part of the economic development process. The challenge is to design an agricultural extension education system, within country specific parameters, which will effectively meet the established developmental goals of a country.

With this thesis in mind, the purpose of this developmental research project was to identify the various factors which should be considered when designing an effective

agricultural extension education system for a given developing country and then to link these factors to the various components of existing extension education models, thereby affording the opportunity to "custom" design an appropriate, effective agricultural extension education system for the country.

The specific objectives of the project were:

1. To conduct a review of literature to:

- a. identify the specific impactors which should be considered when attempting to design an effective extension education system for a given developing country by understanding problems encountered in existing extension education systems and theoretical considerations, and
- b. identify currently defined extension education models and their associated primary components which should be considered when designing an effective extension education system for a given developing country.

2. To design:

- a. a "Country Analysis Instrument" which will identify the existing or desired characteristics within a developing country which impact the design of an agricultural extension education system, and
- b. a "Model Correlation Instrument" which will correlate the impactors with particular components of existing

extension education models to provide a framework of appropriate design parameters

3. To refine the instruments through a modified Delphi review involving recognized specialists in extension education and international development.
4. To field test the refined instruments in selected developing countries as a process of evaluating an existing extension education system and designing a new extension education system.

A schematic of the procedures for this developmental research project is included in Figure I.

Figure I. Research Procedures

(fig. con'd.)

(fig. con'd.)

CHAPTER II. REVIEW OF LITERATURE

A review of related literature provided two perspectives from which to approach the research topic. The first identifies the various impactors which should be considered when attempting to design an effective extension education system for a given developing country. The second describes existing extension education models and their component parts. Each of these perspectives will be presented in detail with appropriate reference to the relevant literature.

While at first glance it may appear that the literature referenced is outdated, it should be pointed out that the bulk of the foundational literature relevant to the two identified perspectives of this project was produced in the 1970s and 80s. Subsequent literature is only marginally related. Material that is relevant has been referenced.

II-A. Considerations in Developing Countries

The identification of specific impactors is presented in current literature in terms of problems encountered in existing extension systems and outlined theoretical considerations.

Major areas of reference identified are as follows:

1. Government Policies in Agriculture
2. Macro-Organization of an Extension Service
3. Responsibilities of an Extension Service
4. Linkages between Research and Extension

5. Programming Approach in Extension
6. Selection and Training of Extension Personnel
7. Local-Level Extension Staffing
8. Support Strategies for Local Extension Personnel

All of these areas were considered by the majority of authors as having significant impact on the potential success of an extension education system, and each was examined in detail to establish a foundation for the research project. Although expansive, this list should not be considered totally inclusive of all impactors. Various authors have identified additional factors which they consider important. These referenced areas were also considered where applicable to the research.

II-A1. Government Policies in Agriculture

Government policy, in the form of specific regulations, financial support, and public statements, significantly impacts the future of development in all arenas. Such policies have the ability to impede development by diverting much needed resources from one area to another, overburdening an industry with cumbersome regulations, producing artificial market conditions, and directing the distribution of profits. Conversely, policy decisions can support and encourage development by channeling resources, enhancing organizational structure, subsidizing privatization, and supporting market growth.

The challenge facing developing countries is to align government policies with established development goals. In the

case of agricultural development and the establishment of an extension education system it is imperative that policies are designed to provide the basic structure, financing, and coordination required for both establishment and maintenance of the system.

Eddy Finley and Robert Price emphasized the significance of government policies and regulations to individual production decisions in their text, *"International Agriculture"*, published in 1994. According to the authors, government policies and regulations are too often used to force producers into the pre-designed mainstream of development. Examples include forcing the re-distribution of land or the move from the production of one commodity to another for national export income generation. Such governmental decrees are frequently seen as constraints upon individual initiative and discourage production efforts among smaller, low-income farmers. The result is often decreased food production which is detrimental to producers and consumers alike, as well as overall economic development.

In the article, *"Extension Strategies for Technology Utilization"* written for the 1984 Food and Agricultural Organization (FAO) of the United Nations publication, *"Agricultural Extension - A Reference Manual"*, authors Swanson, Roling and Jiggins emphasize the role of government policy-makers in determining the direction and progress of agricultural development. According to the authors, agricultural policy

should not only be supportive and consistent with agricultural development, but also congruent with agricultural extension objectives. They also point out the need to realistically construct policies, goals, and objectives relative to the resources and circumstances of the agricultural sector in general, and the majority of agricultural producers in particular. Swanson et al. state, "If agricultural policy is not consistent with agricultural development goals and vice versa, then it will be very difficult for agricultural extension to operate effectively." (p.90)

The authors go on to provide examples of government policies and their effects on agricultural development and extension. Examples cited include:

- a. Policies aimed at insuring cheap food for urban consumers;
- b. Policies designed to increase national agricultural output quickly without regard for broad-based agricultural development; and
- c. Policies oriented toward increasing agricultural production within the scope of broad-based agricultural development.

In the first instance, government policy is molded by the relative political power of large concentrations of urban consumers as contrasted with a dispersed and frequently unorganized rural population. Under such policies, prices for

commodities are held at artificially low levels to the benefit of the large urban population at the expense of farmers who see very little incentive to adopt new production technology, regardless of the efforts of an extension system. The result is the stagnation of the agricultural sector and very little broad-based agricultural development.

The second policy approach aimed at rapid, large-scale agricultural production focuses resources, including extension education, upon a few medium to large-sized farmers. The results are impressive in terms of rapid increases in national agricultural production for the purposes of feeding large urban populations or generating national income, but come at the expense of small-scale farmers. The issue of equity between producers is ignored and, rather than broad-based agricultural development, an almost irreversible stratification occurs in which the majority of food is produced at higher profits for the economically rising medium, large-scale farmers while small farmers remain at subsistence levels.

In the final scenario, policies are oriented toward increasing agricultural output and simultaneously promoting broad-based agricultural development. Such policies promote equity within the agricultural sector by investing in institutions, such as an extension system or supply and marketing cooperatives, which serve all farmers interested in increasing their productivity and income. While desirable, the

goal of improving the situation for the majority of the rural population and, thereby, enhancing economic development prospects for the nation, requires major commitments to capital infusion into the industry. Funding will be required to organize and maintain support institutions, develop technology suitable for small farming operations, and provide credit to insure equal access to technology.

E.T. York, past Chair of the Board for International Food and Agricultural Development, identified government policy as a primary limiting factor in agricultural development and the effectiveness of extension systems in a number of developing countries. In an article entitled, "*International Technology Development and Transfer*" printed in the 1985 Kellogg Center publication, "*The International Role of Extension: Future Directions*", York indicates that, "The governments of many developing countries have given too low a priority to agriculture in their development plans. Indeed, many governments have implemented taxation and pricing policies which seriously constrain agricultural development." (p.58-59)

In the same article, York refers to a paper written by Carl Eicher of Michigan State University which outlines numerous studies in Africa providing evidence that many countries, both capitalist and socialist, are pursuing negative pricing policies which dampen incentives to produce food and export crops and

encourage black market operations. In this secondary source, Eicher cites African experiences to illustrate this point.

A two-year study in Mali in 1980-81 showed that it cost farmers in a large irrigation rice production project 83 Malian francs to produce a kilo of rice but that the government paid farmers only 60 Malian francs per kilo. The result was that farmers would smuggle rice across the border into Senegal, Niger and Upper Volta where they could sell the rice at 108 to 128 Malian francs per kilo. While the Malian farmers were able to secure higher prices and generate higher farm income in such schemes, they did so at tremendous risk and at the cost of moving an important food commodity out of a country already suffering from low food supplies.

York cites another example from Eicher's paper in which Egypt provides another case in point. In the early 1980s the United States Agency for International Development (USAID) sponsored a project to introduce, through extensive demonstrations, a package of relatively simple improved technology which would increase wheat yields by 60 to 75 percent. Although the validity of the potential gains was unquestioned, farmers did not respond with the implementation of the new techniques. Upon investigation, it became clear that government pricing policies created a situation in which there was no incentive for farmers to use the improved technology to

achieve increased production. Alternative enterprises were much more financially attractive.

This situation arose because bread was being heavily subsidized by the Egyptian government. In an attempt to keep the cost of wheat as low as possible to reduce government expenditures on the subsidy, the government imposed an extremely low fixed-price on wheat. The result was a loss of incentive to produce wheat on the part of farmers and wheat supplies plummeted. The country moved from a position of self-sufficiency in wheat in the 1960s to importing 75 percent of its needs 20 years later. Wheat supplies were shored by the importation of wheat from the United States at a price several times higher per bushel than was being paid to domestic farmers at the fixed-price. The ultimate effect was that the government was forced to pay a much higher total price for the required wheat supplies than if it had maintained a commodity price level which provided an incentive for domestic production.

York summarizes by saying:

No matter how much effective technology may be available or how good the extension programs may be in disseminating this technology, little positive results may be obtained if the farmer does not have economic incentives to use the technology. Farmers may not be able to read and write, but they can all count. (P.59)

Though not providing as in-depth an evaluation as Swanson et al. or York, George Axinn and Sudlakar Thorat agree with the importance of consistency between agricultural policies and

development. In their 1972 book, *"Modernizing World Agriculture - A Comparative Study of Agricultural Extension Systems"*, Axinn and Thorat emphasize the concurrent dual-dependency which exists between agricultural development and the adoption of improved production technology, and profit incentive and adoption. That is, without adequate probable financial profit, there is very little incentive to adopt new production technology and without new technologies being adopted by farmers, little agricultural development can take place. They further indicate that profitability is, in turn, dependent upon government policies relative to pricing, credit, taxation, and import-export controls. They depict the governmental, educational, and production functions as being inextricably linked to one another.

L.H. Watts also emphasizes the significance of a national policy in his article, *"The Organizational Setting for Agricultural Extension"*, written for the previously referenced 1984 FAO publication, *"Agricultural Extension - A Reference Manual"*. According to Watts,

Policy within any country is a critical factor in extension effectiveness. Policy can be examined from two perspectives, the first, in terms of the importance given to extension, and the second, in terms of agricultural policy and its impact upon extension's educational effort. (P.28)

Watts expounds upon the benefits of carefully crafted, supportive government policies to an effective extension

education program. Such policies provide extension with an adequate share of government financial resources, as well as support for recommendations derived through the extension system relative to input availability, pricing structure, credit, transportation and other related factors. Additionally, this level of policy support enhances the status and ability of extension to affect positive change. Conversely, a policy structure which does not support extension philosophies and activities can quickly negate even the most attractive of extension recommendations through price and market disincentives.

In a study commissioned by a joint committee of FAO and another United Nations organization, the Economic Commission for Africa (ECA), a survey was conducted of extension personnel in eight east African nations. Results of the survey, published in the report entitled, *"A Comparative Analysis of Agricultural Extension Systems of Eight East African Countries"* (UN FAO/ECA, 1971), emphasized not only the importance of consistency between agricultural policy and development, but also alluded to the need for communication between policy-makers and extension workers. The report pointed out that, in too many instances, survey responses showed that government planners were unaware of the roles and challenges of extension and that extension field workers were not acquainted with their country's development plan.

II-A2. Macro-Organization of an Extension Service

The specific position of an extension service within the larger institutions of government and society can significantly impact the ability of the service to function. Establishment within a Ministry of Agriculture or other governmental unit can frequently insure connectionalism and establish status, thereby enhancing extension opportunities for technology diffusion at the local level. Such integration into government, however, can also obscure the role of extension personnel by superimposing other traditional government responsibilities of licensure, regulation, and policing over the educational function creating an atmosphere of distrust between client and teacher.

Autonomy of an extension system separated from governmental association can support unencumbered educational efforts. The cost of establishing and maintaining an independent organization with local connections may be prohibitive, however. Additionally, a separate organization outside of the mainstream of government financing, administration, research, and reporting may be incapable of or inefficient at communicating local needs to decision-makers in efforts to affect positive development.

Developing countries are faced with the difficult task of positioning an extension service within the framework of government in a manner which assures status and connectionalism

while simultaneously preserving the priority educational function.

In the publication, *"Design Of Rural Development - Lessons From Africa"*, written for the International Bank for Reconstruction and Development in 1975, Uma Lele identifies the question of extension organization within the governmental structure as a significant area for consideration. "Another important question," states Lele, "concerns whether or not extension services should be organized within the existing government bureaucracy or alternatively as an autonomous or semi-autonomous body." (p.66)

Lele supports an autonomous structure pointing out that frequently federal departments of agriculture personnel are ill-equipped to run extension services because of their lack of entrepreneurial ability, a lethargic attitude towards decision making, and an inability to respond to incoming information in a timely manner.

In the 1984 FAO publication entitled, *"Agricultural Extension Systems In Some African And Asian Countries"*, author Peter von Blanckenburg moves the question of organization one step further by discussing not only the position, but the responsibilities of extension within a Ministry setting. Blanckenburg identifies several countries in which the extension service is a part of the Department of Agriculture and has primary responsibility for the promotion of crop farming,

whereas the area of animal husbandry is the responsibility of another department within the Ministry of Agriculture or another Ministry altogether. Some of the countries cited are Ghana, Kenya, Sierra Leone, the United Republic of Tanzania, Bangladesh, India, Indonesia, Malaysia, Sri Lanka, and Thailand.

According to Blanckenburg, such fine distinction of responsibilities prevents a more integrated approach to development at the farm level, which would be the more desirable approach based upon ecological and production efficiency logic.

York also refers to the question of organization in terms of responsibilities by stating:

Another major problem is the nature of the extension organization itself. All too often, extension is more of a political arm of the ministry or is concerned with regulatory, data gathering, or service functions of the ministry rather than with the type of informal educational and organizational leadership role which characterizes the Cooperative Extension Service in the U.S. (York, 1985, p.60)

J.B. Claar, D.T. Dahl, and L.H. Watts allude to this same concern in the International Programme for Agricultural Knowledge Systems (INTERPAKS) publication of unknown date titled, *"The Cooperative Extension Service, An Adaptable Model For Developing Countries"*. They suggest that in countries where it is impractical or unacceptable to organize an extension system as or within a non-governmental unit, extension should be set up within the government with primarily educational functions rather than directive or regulatory responsibilities.

J. DiFranco amplified the critical nature of the question of extension organization in his article, "Extension Organization", published in the earlier 1972 edition of the FAO publication, "Agricultural Extension - A Reference Manual". In the article, DiFranco asserts that the positioning of an extension service within the organizational structure of a government is critical to its relationship with other related governmental entities, its status, and, ultimately, its effectiveness. DiFranco further suggests that a number of factors should be considered when determining the position of extension within a government, including the educational role of extension, the involvement of the top extension administrator in government policy formation, linkages with agricultural research agencies, and working relationships with other government agencies concerned with agricultural development.

The question of macro-organization of an extension service, therefore, can be viewed from several venues including position, responsibilities, and relationships. The latter two will be discussed as separate issues which impact upon the effectiveness of extension systems in developing countries.

II-A3. Responsibilities of an Extension Service

It is important that the educational function of extension personnel be maintained as their top priority. Frequently, in an attempt to take political advantage of the local connection of extension or to save capital, extension personnel will be

shackled with other governmental functions such as regulation, licensure, policing, data collection, managing inputs and marketing, among others. These activities greatly detract from the educational mission of extension by realigning staff time and associated resources.

Additionally, the relationship established between extension personnel and local farmers is central to the success of an extension service. Absent a relationship characterized by trust and mutual respect, extension rapidly loses credibility and will be incapable of convincing producers of the long-term benefits of technology adoption. Further, extension personnel will find themselves outside of the circle of confidence necessary to communicate local needs to researchers and administrators.

Relationships are often endangered, not because of specific acts, but rather perceived roles and responsibilities. Extension personnel placed in regulatory or policing roles may find suspicion and mistrust shading their client relationship to the detriment of their primary educational role.

In the 1984 INTERPAKS publication, *"Problems Facing National Agricultural Extension in Developing Countries"*, Vickie Sigman and Burton Swanson reported on a 1980 survey conducted of 129 national agricultural extension organizations. The report provided the identification of **"selected problems facing extension organization"**. Included among them was the fact that

extension personnel are often assigned tasks outside of what might be considered traditional extension work. According to the report, extension personnel are routinely asked to perform a multiplicity of functions for a wide range of government agencies, including such functions as collecting census data, collecting rural credit debts, and providing direct services rather than education. The authors maintain that this disbursement of personnel time to non-educational responsibilities greatly diminishes the ability of extension to carry out effective educational programs for rural development and, in some cases, jeopardizes extension's credibility.

DiFranco (FAO, 1972) also reported a variety of regulatory and administrative functions being performed by extension personnel for Ministries of Agriculture. Activities identified include the enforcement of government regulations, inspection of agricultural inputs and commodities, pest eradication, data collection, day-to-day operation of marketing organizations, and many others. DiFranco focuses upon the credibility issue by asserting that farmers are frequently suspicious of activities of a regulatory or inspection nature and personnel responsible for such activities are usually the object of distrust. DiFranco contends that, ".... an extension agent, whose success is based upon the trust farmers place in him, should not be burdened with regulatory duties." (p.42)

Authors, A.V. Allo and R.H. Schwass, support these concerns in the 1982 publication, *"The Farm Advisor - A Discussion Of Agricultural Extension For Developing Countries"*, written for the Food and Fertilizer Technology Center. They contend that any type of policing activities undertaken by extension personnel immediately arouse suspicion among farmers, rendering them less cooperative. The fear of prosecution for some breach of government laws and regulations outweighs their desire for educational assistance, forcing them to seek help elsewhere or forego assistance altogether.

Allo and Schwass purport that extension personnel can successfully complete their educational responsibilities only by fostering a relationship built upon trust and goodwill. This implies that non-educational, regulatory activities should be assumed by non-extension government employees. They emphatically wrote, "Agricultural extension is a working cooperation between farmers and extension workers - it can survive only on mutual trust and confidence." (P.10)

Claar et al. succinctly summarized the issue of extension responsibilities. The authors point out that, due to the fact that extension is frequently one of the few units of government that reaches the local level in all regions, there is a tendency for governments to assign the organization a variety of duties, including policing and regulation. Such activities not only conflict with the educational role, but can become predominant

in time allocation and image determination. The authors conclude, "Non-educational assignments to extension and its agents tend to overshadow the educational functions and may seriously weaken the principal educational purposes for which the unit was established." (p.12)

II-A4. Linkages between Research and Extension

Extension pedagogy is predicated on the belief that agricultural development is dependent upon the adoption of new production technologies, that new technology must meet the identified needs of local people, and that adoption follows education. The axis in this matrix is the linkage between research and extension components. Developing countries wishing to construct an extension system which remains true to its pedagogy must accommodate this connection or face ineffectual programming.

In a paper presented to the second annual meeting of the Association for International Agricultural and Extension Education held in Chevy Chase, Maryland in 1986, entitled, "*The Evolution of Agricultural Extension in Developing Countries*", Stephen Jones addressed a primary contributor to the general failure of extension systems in developing countries. Jones contends that the most significant single obstacle to extension success lies with the linkage between extension and research. According to Jones, both extension personnel and researchers too often lack basic knowledge of the needs, conditions, and

abilities of local small farmers. This results in a lack of relevant technology to extend to farmers, or in technology which is impractical or inaccessible due to input or cost constraints.

Jones further states that diverse regional physical conditions, farming systems, and production requirements compound the situation, as what may be appropriate and practical in one region may not be so in another.

Many other authors concur with Jones' evaluation. In their report, Sigman and Swanson (1984) mentioned two additional problems identified in their previously referenced survey. First, is the lack of appropriate technology to extend to farmers and second, the lack of on-going, two-way information flow between the national extension organization and agricultural research institutions. (p.5)

Elaborating on these issues, the authors identify the continual supply of new technology relevant to the farm community as one of five essential factors for agricultural development. They also espouse the opinion that two primary problems facing extension identified in much of the current literature are the void of appropriate technology to extend, especially to small farmers, and the inadequate linkage between research and extension which creates this void. According to Sigman and Swanson, a dynamic interaction between research and extension facilitates relevant research and the dissemination of research-based findings by keeping researchers informed of

problems faced by farmers as they arise, accommodating the development of practical new technology to address the problems, and transferring the new technology for local farm application through the extension component.

Dr. J.B. Claar, retired Director of the University of Illinois Cooperative Extension Service and INTERPAKS, also lists the lack of available technology and adequate linkages between the extension and research components as primary problems in the extension systems of developing countries. In his informal paper, *"Special Projects - Assets and Problems"* prepared in 1986 for INTERPAKS, Dr. Claar lists **"Reasons Why Extension Programs Fail"**. Included in this listing are the "lack of adapted technical packages" and the "lack of an extension research linkage". (p.2)

E.T. York supports this widespread opinion by stating,

Some of the current negative attitudes towards extension and its future usefulness in Third World countries undoubtedly grow out of the problems which limit the effectiveness of 'traditional' extension programs in these countries. First is the lack of close linkages between research and extension. Although the research and extension functions are usually centered in ministries of agriculture, close, complimentary relationships are seldom observed. This works to the detriment of both organizations - and ultimately to the detriment of the country's agriculture. (York, 1985, p.56)

The 1971 UN FAO/ECA report previously referenced, compiled a list of **"limiting factors in extension programme"**. Though differing in magnitude from one country to another, of prime importance were the lack of communications between research and

extension, flow of research information to extension, and transmission of farmers' problems to research institutions.

Blanckenburg reports similar findings in his 1984 FAO report on agricultural extension systems in some African and Asian countries. Survey respondents were asked to mention the chief difficulties in extension work as they existed at the end of the sixties. Although assessed differently in degree of significance from one country to another, the lack of research for dissemination to farmers and communication in the agricultural knowledge system were identified as major problems. Blanckenburg summarizes his findings by stating,

In a number of reports, from Bangladesh, Kenya and Malawi, a major constraint was seen in the unsatisfactory relation between agricultural research and the extension service. this question deserves increasing attention since evidently a dynamic technical change and an improvement in productivity depend largely on a continuous flow of research results to the farmers. (p.60)

A.H. Maunder concisely summarizes the significance of adequate linkages between the research and extension components in his article written for the 1972 FAO publication, *"Agricultural Extension - A Reference Manual"*. He outlines the advantages such coordination has provided by citing several successful development projects, including the introduction of Mexican wheat in Turkey, the rice improvement program in Southeast Asia, and the service system in Peru and other Latin American countries. He emphasizes the fact that single institutions working autonomously or competitively will affect

little developmental advantage, but the coordinated efforts of complimentary institutions such as research and extension can afford real developmental progress. (p.316-317)

II-A5. Programming Approach in Extension

As an educational institution, extension draws its philosophical foundations from primary teaching and learning theory, the tenets of which are grounded in the concept of "need", or as Tyler has defined it, "the gap between what is and what should be". (Tyler, 1949, P.8) The base question which has arisen for all extension systems, both established and planned, is which approach to employ in the determination of those needs.

In his preeminent text, "*Basic Principles of Curriculum and Instruction*", Tyler includes three primary sources for identifying educational objectives, contemporary society, subject specialists, and, most significantly, the learner. Few modern educators would question the validity of such an approach and yet, the debate over programming determination in extension, "top-down versus bottom-up", continues. Although a review of the literature clearly points to the advantages of learner involvement in program planning, the goals and objectives of a government may preempt such involvement, particularly in cases where national security is in question, whether economic, military, or political in nature. It must be acknowledged, however, that the educational effectiveness of an extension system and its resulting ability to contribute to development,

regardless of other underlying circumstances for its establishment, are closely tied to learner involvement in programming.

Presenting a chapter titled, "Extension Programme Development" for the 1984 edition of the FAO publication, "Agricultural Extension - A Reference Manual", J.L. Compton maintains that, although local clientele participation in the development, implementation, and evaluation stages of extension programming has long been considered fundamental and inherent to the notion of extension education, there has been considerable drifting from this principle worldwide. His conclusion is that such migration from central philosophy not only results in less than effective educational programming through a lack of local need cognition and the associated imbalance of inputs and activities, but also impacts upon the central element of change, the "self".

Compton writes,

People have a right to, and the need of, self-determination. It is clear that there is a relationship between participation and the development of an ensuing positive self-concept, a sense of control, and a sense of commitment and responsibility to others, which together provide a motivational basis for change. (Compton, p.116-117)

Many other authors support these conclusions. In his 1986 Master's thesis, "Implications of the U.S. Cooperative Extension Service for Agricultural Extension In Developing Countries", K.K. Navaratnam discusses several factors which limit the

effectiveness of agricultural extension. Of significant importance in his evaluation is the need to involve local people in the processes of needs assessment and program planning.

Navaratnam indicates that too often extension programs and priorities are established and developed at the national level and trickle down for implementation at the local level.

In their INTERPAKS publication, Claar et al., assert that deliberate efforts to involve local people in program planning are essential in order to assure program effectiveness and relevance. The authors state,

Extension programs should be strongly oriented toward helping clientele solve problems. And that implies a high level of involvement on the part of the people served. Some problems may be of such magnitude that they are recognized at the national level; others may be only recognized by an individual client. Through this mechanism, clientele become involved in helping develop extension programs and in keeping the programs oriented to local concerns. (Claar et al., p.9-13)

These same authors point to the significance of insuring a research support structure which is oriented toward the identified needs of local people rather than to problems or issues perceived by regional or national bureaucracies.

A.H. Maunder (1972, p.52-53) emphasized the fact that effective extension programs must be designed to "meet the needs of the masses of people" and that, due to a great many circumstances, these needs may be quite varied and that practices suitable for one farm and farmer may not be appropriate for another, even within the same area. In order to

deal with such disparity, Maunder asserts that programs for agricultural development must first be tailored to general conditions in the area and then adjusted for the specific circumstances of an individual farm or farmer. His conclusion is that extension programs must be developed to fit local situations.

Niels Roling views the issue more pragmatically. In his book, *"Extension Science, Information Systems in Agricultural Development"*, first published in 1988 and then reprinted in 1990, Roling claims that local programming leads to greater overall efficiency and effectiveness of the "development machinery".

Roling supports this assertion by pointing to the fact that local programming approaches provide valuable contributions to the development process through the "three E's - efficiency, equity, and empowerment", a phrase coined by N. Uphoff in an article written for the 1984 FAO publication, *"Studies on Agrarian Reform and Rural Poverty"*. Roling elaborates on the concept by explaining that efficiency is encouraged through the ability of local people to mobilize local resources, equity because local involvement motivates people to help themselves and press for services that might otherwise pass them by, and empowerment because people have a greater voice and sense of self-determination. Roling asserts that, collectively, these attributes make people less dependent upon government and

private enterprise and increases their bargaining power, vital elements to development. (p.154)

Thelma Howard and Harold Baker in the chapter, "*Constructive Public Involvement*", written for the "*Extension Handbook*" (Blackburn, 1984), identify a number of benefits to public involvement in programming for the extension organization and the participating citizens. Included in their list are:

- a. a greater likelihood for change adoption
- b. less risk of organized opposition
- c. the attainment of organizational objectives
- d. improved organizational approach
- e. organizational program prioritization
- f. a reduction of organizational cost due to local support
- g. long-term development of people reducing the required organizational investment
- h. people become more skilled and knowledgeable of creative problem solving
- i. enhanced participant self-esteem
- j. political equality between participants and organizational decision-makers

Howard and Baker expand the discussion, however, by recognizing that there are some associated risks to public involvement in programming. They identify:

- a. participation is not viewed as intrinsically valuable and may lead to disappointment and backlash
- b. people with vested interest may try to sabotage programming efforts
- c. loss of a sense of accountability for elected leaders
- d. organization may view participation as a substitute for sound policy and program leadership
- e. participation can be an organizational ploy for promoting vested interests or increasing organizational control (p.66-67)

In spite of the potential risks of public participation in the planning function, however, most would agree that the benefits far outweigh the risks, particularly when viewed in the context of development. Axinn and Thorat summarize the need to involve local people in the program planning and implementation processes by simply stating, "The extent to which the goals of any agricultural extension program will be achieved tends to be directly related to the extent to which those toward whom the program is directed have participated in establishing the goals." (Axinn & Thorat, 1972, P.190)

II-A6. Selection and Training of Extension Personnel

As with all organizations, the success of an extension system is highly dependent upon the abilities and commitment of its personnel. Selection of capable, qualified individuals and

their proper training in preparation for specific tasks are, therefore, integral to a viable extension organization.

Claar et al. recommend staffing an extension service with individuals who have a practical education in agricultural technology and its application and who have the ability to relate to local people. They elaborate by indicating that the ideal situation would be to staff extension with individuals who are sufficiently like their clientele to empathize with their needs and concerns, yet have an advantage in education and knowledge. They specifically relate this to gender by stating, "In societies where women carry out a significant role as producers, women agriculturists can probably improve the effectiveness of the extension system." (p.11-12)

Additional concerns identified by Sigman and Swanson (1984) as a result of their 1980 survey referenced problems arising from personnel selection and training. According to their report, field-level personnel lack training and practical skills in improved agricultural technology, as well as extension methods and communication skills.

The authors emphasize that in order to maximize the diffusion of agricultural innovation, it is important to employ a staff with sound communication skills, an adequate understanding of extension techniques, and the ability to select appropriate extension methods. They recommend both pre-service and in-service training programs to provide basic practical

skill levels in communication and the technical areas of agricultural extension, including crop improvement, soil science, disease and pest control, livestock management, and domestic sciences.

Sigman and Swanson summarize by quoting Oram, et al., authors of the publication, *"Investment and Input Requirements for Accelerating Food Production in Low-Income Countries by 1990"*, who states, ".... the shortage of sufficient trained staff is at least as great a constraint on research and extension in developing countries as is the shortage of funds." (p.4)

Peter von Blanckenburg (1984, p.62-64) indicates that the "lack of qualified staff" was the most frequently mentioned limiting factor in extension programming by respondents to the questionnaire analysis of east African countries. Other associated problems identified in the analysis included the lack of female extension workers, appropriate staff training, and sufficiently trained supervisors.

Blanckenburg also referred to a survey conducted by him and U.J. Nagel for the Institute of Socio-Economics of Agricultural Development, Technical University of Berlin between 1979 and 1981. Respondents from African and Asian countries were asked to point out the three most pressing problems facing extension in their countries. The responses were tallied and ordered according to the frequency of appearance. Ranking third

was the concern of staff qualifications, and ranking eighth, the lack of in-service training and practice-oriented training.

Finally, Blanckenburg refers to a study conducted by S.H. Sudad for FAO in 1980. Sudad surveyed extension workers in Jordan, Malaysia, and the United Republic of Tanzania to determine their perceptions of the major constraints to the effectiveness of agricultural extension. The researcher reported training as the most frequently identified constraint from the programming operations angle.

Maunder (1972, p.316) indicated that improved training at all levels is a continual need in the extension systems of all countries. Although he considered the need to be most apparent in countries with newly established extension services still in the process of recruiting and training staff, he believed the need for upgrading personnel and improving their ability to serve the rapidly changing needs of an expanding clientele to be equally important in established services.

Maunder raised the issue to another level with the opinion that the ability to organize people for cooperation in areas of common need and an aptitude for working with other development agencies and institutions is becoming increasingly important and that few extension workers have a sufficient understanding of group dynamics and the social and psychological principles involved to meet such demands.

The author goes on to exhort the establishment of a training policy and program which sets forth training goals, provides appropriate training facilities, budgets adequate financing, and assigns personnel responsible for training activities and their periodic review.

Allo and Schwass (1982, p.71-75) indicate emphatically that extension staff cannot be expected to perform the tasks that an efficient system would require of them if they have not been effectively trained. Further, the authors specify the type of training needed by local extension workers by indicating that field staff must be trained, theoretically and practically, in farm production methods; must be taught how to win the confidence of clientele and teach them; and taught to identify and train local leaders, organize community groups, conduct local demonstrations, and run meetings.

Allo and Schwass support continual in-service training as the best approach for keeping extension personnel up-to-date on leadership, communication, and decision-making skills, and techniques for meeting the challenges of an ever-changing technical and social sphere. They conclude with the opinion that, "Career-long education is an essential condition for professional competence in today's world; like all professions, an agricultural extension service must provide reasonable and regular opportunities for on-the-job training...." (p.75)

Swanson succinctly summarizes the topic of training in a chapter entitled, "Pre-Service Training of Extension Personnel" presented in the 1984 FAO Reference Manual. He states,

Extension personnel are the major resource of a successful extension service. Extension personnel who enter the extension service should be prepared to perform basic extension tasks. In addition, a successful extension organization makes provision to further strengthen the professional and technical competencies of its staff members once on-the-job, because staff must be trained and up-to-date to provide the essential link in the technology transfer process between agricultural research and farmers. Therefore, attention should be paid both to the pre-service and in-service training of extension personnel and an overall staff development and in-service training plan. (p.197)

II-A7. Local-Level Extension Staffing

Whether in new, developing extension systems or long-established organizations, the issue of the number and manner of staffing of local extension units is generally seen as one of the most difficult issues faced by extension planners. The difficulty arises in the complexity of predicated variables. These variables, while identifiable, differ in both status and magnitude for each country. Therefore, determinations of appropriate local staffing for extension, by virtue of inherent complexity, are subjective at best. However, a review of the literature substantiates the significance of the issue and identifies variables of consideration.

Peter von Blanckenburg, in his study of some Asian and African Extension Systems (Blanckenburg, 1984), concedes that, due to the volume of the personnel-intensive, direct-contact

tasks required in developing countries, there have been many complaints in the past that extension services have not been sufficiently staffed. He does not argue this point, but rather identifies some of the extreme variables which must be considered when determining adequate staff numbers. Those identified include the size and educational level of the clientele base, extension methods, the urgency of agricultural development, and the flow of new production technology. Due to the differences which exist from one country to the next, Blanckenburg suggests that it would be problematic to recommend general norms for extension staff densities.

Maunder (1972, p.219-220) identifies similar considerations regarding the question of staffing and adds to the list of variables. In addition to those identified by Blanckenburg, Maunder suggests that the number of personnel required to man an extension service must vary according to the simplicity or complexity of the extension program, the overall diversity of the clientele served, and the relationship of those factors to the challenge of maintaining effective organizational communication.

Maunder does approach the manner of extension staffing, however, by suggesting that one can categorize personnel requirements by starting with the local level and identifying the kind and qualifications of staff needed. He then suggests applying or eliminating these qualifications as appropriate for

each level, depending upon the simplicity or complexity of the organization required. He delineates the following categories:

a. Field Extension Worker

- ... extension agent
- ... home demonstration agent
- ... youth agent

b. Area/District Extension Worker

- ... area administrator
- ... area agents
- ... area specialists

c. State/National Extension Worker

- ... administrative officer
- ... assistant administrators
- ... subject-matter specialists
- ... communications specialists
- ... training specialists
- ... program leaders and supervisors

According to Maunder, field level responsibilities may be characterized as utilitarian, personal contact and human relations oriented. Those at the area/district level are supervisory, middle management, and subject matter knowledge oriented. The state/national level positions are oriented toward academia and research, training and communications, and administrative-management. All are, to one degree or another, dependent upon the others for fulfilling the extension process

and without adequate on-going connectionalism the system would lose its basic strength.

In their chapter for the 1984 FAO Reference Manual entitled, *"Organizational Design and Extension Administration"* (Claar & Bentz, p.171-174), J.B. Claar and R.P. Bentz expand the list of variables related to the question of staffing numbers set forth by Blanckenburg and Maunder by adding the geographic size of the area served, the diversity of agriculture, the size and complexity of the farms, the mobility of the extension staff, the educational level of staff, and the ease of communications.

Although Claar and Bentz acknowledge that, due to the complexity of country variable circumstances, the number of paid personnel required to operate an extension service cannot be stated with certainty, they do attempt to provide some parameters for consideration. Their recommendations provide the only objective guidelines in the literature and they begin by citing the 1981 Swanson and Rassi study which reviewed the extension profile of 57 countries.

The authors also refer to the Training and Visit System (TVS) to provide guidelines for staffing an extension system. They conclude that under such a system approximately 12 percent of the personnel would be administrative and advisory staff, 6.5 percent subject matter specialists, and 81.5 percent village extension workers.

In considering both sources of guidelines, the 1981 Swanson and Rassi Study and the T&V System, Claar and Bentz believe that the number of subject matter specialists is too low. They do so based upon the European and North American situations in which 18 and 19 percent, respectively, or nearly one in every five extension staff members is a subject matter specialist. Comparable data for Africa and Asia show specialists to be only about six percent or one for every 16-17 extension workers. They contend that since subject matter specialists provide the vital link between research and field staff, low specialist to field worker ratios portend a serious inability to provide adequate technical support and training for field-level workers.

Claar and Bentz further assert that subject matter specialists in many developing countries hold only a first university degree or the equivalent, while in Europe and North America, most specialists are highly trained, experienced professionals, with post-graduate degrees.

Their conclusion is that it would be appropriate for extension organizations in Asia and Africa to work toward a staffing level of subject matter specialists of about 13 percent, as well as to up-grade their training level.

In terms of the staffing of field-level workers, the authors acknowledge that these ratios vary considerably from several thousand farmers for every extension worker in some

African nations to less than 1:300 in some special donor-assisted projects. They observe that the TVS has a range between 1:1600 and 1:280 farmers in South and South East Asia. The average ratio is about 800 farmers or farm households per village extension worker. They conclude that, while there cannot be a single standard to use in determining extension staff size and ratios, these data provide some general parameters for planning personnel requirements for extension systems.

An additional dimension of the staffing question which cannot be ignored is the employment of women in an extension system. York describes the lack of women in extension services of many developing nations as a major weakness. He cites a passage by Jacqueline Ashby in her paper, *"New Models for Agricultural Research and Extension: The Need to Integrate Women"*, in which she states,

Agricultural extension is oriented primarily towards male clientele. Extension agricultural agents are essentially always male. In many societies customs inhibit women's contact with unrelated members of the opposite sex, including extension workers In general, extension training for women tends to relegate them to non-agricultural activities. In sub-Saharan Africa where female farming is of major importance, extension programs for rural women have historically concentrated almost exclusively on women's homemaking activities. A recent survey of agricultural training centers in Asia indicated that out of nine countries which provided for enrollment of females, only one, Sri Lanka, had successfully recruited women for farmer training. (York, 1985, p.60)

York concludes that women in agriculture are not receiving a level of extension consideration commensurate with the significance of their role in agricultural development and, as a result, extension is less effective, and development less likely to be realized.

Allo and Schwass (1982) also address this issue. According to the authors, millions of women in the rural communities of Asian and Pacific countries divide their time between farm and home, mainly wives and unmarried daughters of farmers, and most as unpaid family workers. They contend that most of these rural homemakers have never been taught to use scientific knowledge, and programs which have been oriented to rural women have concentrated on the homemaking function to the total disregard of their farming roles.

The authors assert that many agricultural tasks are segregated according to sex in the rural areas of developing countries and that women's farming roles typically center around those activities necessary to produce and store the staple food crops and care for small livestock such as poultry and swine.

Allo and Schwass write:

It is often stated that an important function of extension services is to assist rural women improve their living standards. However, there are very few successful examples of this type of program anywhere in the world. Programs aimed at country women have largely concentrated only on their homemaking function and have been unbalanced by ignoring their roles in agricultural production.

Therefore, extension personnel should attempt to widen the knowledge and improve the skills of village women. A trained, enthusiastic and observant extension service, which includes women membership on its staff, can accomplish much in benefit to the region by using a proportion of the available resources for extension in well-planned programs specifically designed to satisfy the needs of rural women. (p.33-35)

Swanson, Roling, and Jiggins (1984, p.94-95) also emphasize the importance of considering women when formulating extension staffing patterns by recognizing that women play an important role in both agricultural production and marketing, as well as in food processing, storage and preparation. They concede that it is unlikely that women will have direct access to credit and inputs in many developing countries, as income is generally controlled by the male head of household and institutions frequently deny women access. They further concede that extension services have been predominately oriented toward males as most extension workers have been males with little appreciation for the contributions of women and that, in some countries, social customs prohibit non-family males from contacting women. They assert, however, that there are numerous examples of women playing predominant roles in cash crop or commodity marketing, as well as the feeding and care of livestock and that extension programming through female workers in appropriate areas of technical production would aid in rural development.

The question of staffing numbers and patterns revolves around a wide range of variables. It is important to consider as many of these variables as practical within their appropriate context in a given country. Additionally, it is important to consider not only the ratio of extension workers to farmers when designing an agricultural extension system, but also the ratio of men to women. Finally, educational programs for women must emphasize instructional areas pertinent to the roles which they play.

II-A8. Support Strategies for Local Extension Personnel

Effective and efficient interaction between extension personnel and local farmers is integral to the success of an extension system. In turn, the ability of an extension staff to accommodate such interaction depends upon the support structure afforded them by the system. An adequate support structure must include transportation and instructional materials, equipment, and supplies.

Results of the survey documented in the INTERPAKS publication, *"Problems Facing National Agricultural Extension in Developing Countries"* (Sigman & Swanson, 1984), identified three major problem areas related to the support of local extension personnel which impact upon the success of extension program efforts. They include inadequate mobility, equipment, and teaching aids.

Sigman and Swanson indicate that modes of transportation utilized by local extension personnel vary greatly depending upon road accessibility, geographic area to be covered, and the number of clientele farms served, but that, in general, adequate transportation for reaching farmers efficiently is lacking. Current methods of travel generally used by extension personnel include walking or traveling by car, jeep, truck, bus, motorcycle, or bicycle.

The importance of transportation in development has been addressed by numerous developmentalists over the years. At a Food Problems in Africa Symposium held at the University of Illinois in April, 1981, John W. Mellor indicated that an expanded infrastructure, particularly transportation and roadways, is the basic requirement for accelerating growth of the African agricultural sector.

Claar and Bentz (1984) emphasize that adequate transportation for local extension workers is a prerequisite for effective extension work. They also recognize that, while necessary, the issue of transportation provides a special challenge for extension organizations due to varying local circumstances and the heavy costs associated with financing transportation alternatives.

Blanckenburg (1984) also addresses the problem of less than adequate transportation by proffering the opinion that, in addition to adequate salaries and the financing of programs, the

primary difficulty facing extension services is the question of staff mobility. He emphasizes the issue in terms of the large geographic areas which must be covered by limited extension personnel in their attempts to maintain contact with large numbers of farmers. He further contends that it is not merely a question of enough vehicles, but also of adequate funds for maintenance and fuel and that extension services which work in sparsely populated areas are severely limited by high associated transportation costs.

Sigman and Swanson elaborate on the lack of adequate equipment by specifying that there is a lack of essential teaching and communication equipment ranging from blackboards to video-cassette recorders. They contend that such equipment enhances the creativity and flexibility of the teaching-learning process, aspects particularly important in situations where clientele have a limited knowledge base.

Regarding teaching aids, the authors indicate that there exists a general shortage of essential teaching aids including bulletins and demonstration materials. They also point out that supportive educational materials are content-oriented and generally specific to a situation. As a result, they need to be developed in the field. Due to other responsibilities placed upon extension personnel, this activity is rarely adequately accommodated in the planning and implementation of extension programs.

Claar and Bentz (1984) concur with Sigman and Swanson regarding the importance of adequate equipment and teaching aids to a successful extension program and emphasize the significance of relevant bulletins, manuals and reference guides, as well as access to equipment and supplies such as seed, fertilizer, and pesticides for demonstration purposes.

Several other authors have alluded to the lack of support for local extension personnel in these and other areas.

Blanckenburg stated,

Government financial resources for rural development in poor countries are notoriously scarce. In the majority of countries the effect of this has not been so severe on the actual number of extension staff, but rather on the level of salaries and on finance available for equipment and its maintenance. (1984, p.28)

York agrees that salaries of extension personnel are often extremely low. As a result, many extension workers are forced to seek supplemental income. He emphasizes, however, that while salaries are low, support funds are usually even more inadequate. His conclusion is that extension services in developing countries would be better served if they had fewer personnel who were better supported. (York, 1985)

Uma Lele (1975) elaborates that the issue of salaries is a crucial aspect of staff support as it is directly related to staff morale and motivation. The author emphasizes that successful programs depend on energetic staff who are motivated and identifies salaries and promotions as essential incentives.

Another aspect of the support issue is the provision of office facilities. According to Claar and Bentz (1984), it is essential for extension workers to have a place where they can be reached and where they can meet with clientele. The creation of local extension offices most effectively meets these needs. They emphasize that it is a mistake to assume that an extension organization can function well without adequate equipment and facilities.

Maunder (1972) sums up the need to adequately support local extension workers by pointing to the fact that the very nature of extension programming requires that extension staff maintain contact with masses of rural people. Accommodating such ongoing contact requires not only large numbers of adequately trained field staff, but support in the form of transportation, supplies and equipment. He firmly believes that in situations where finances are limited, it is better to maintain fewer well-financed agencies than to employ larger numbers of personnel with little viable means of contacting farmers and carrying on educational programs.

II-A9. Additional Areas of Impact

To this point, the review of literature has concentrated on major topical areas of impact upon the effectiveness of an agricultural extension education system within a developing country. The review has focused upon these areas in the context of identified problems encountered in existing extension systems

and associated theoretical viewpoints. In addition to these areas of consideration, Addison Maunder, in the original 1975 FAO publication, *"Agricultural Extension - A Reference Manual"*, outlined several other factors which directly impact the design of an extension organization. These factors are worthy of mention and include:

- a. Geographic Factors,
- b. Climatic Factors,
- c. Political Factors,
- d. Economic Factors, and
- e. Agricultural Factors

II-A9a. Geographic Factors

One of the most obvious influences upon the design and organization of an extension system is a country's geography. Natural barriers in the form of mountains, rivers, and established population areas divide countries into regions, districts or communities. These naturally occurring sub-units must be accommodated with separate organizational units for conducting extension work.

In addition to the logical need to accommodate defined sub-units, geographical barriers may have created masses of people with different customs and cultural perspectives, as well as languages, which must be considered in designing an extension organization. By using the examples of India, Peru, and countries with nomadic tribes, Maunder (p.28) points out that in

many situations people living in adjoining areas have different languages and social organizations. He emphasizes that in these circumstances, extension workers with backgrounds vastly different than their clientele may find it difficult to understand attitudes and perspectives and communicate modern ideas and improved practices in agriculture and rural living.

Maunder continues to discuss the significance of geographic factors by referring to the size of a country. He emphasizes that the success of a local extension education system rests with the ability of extension workers to be able to relate to local situations and problems. His conclusion is that the best way to guarantee familiarity is to have field staff living in the communities which they serve with technical support and administrative staffs readily available to assist local personnel with technical and administrative matters. In small countries, this may imply locating supporting staff in the capital city. Larger countries, however, require decentralization by establishing regional or district extension offices staffed with program leaders, technical specialists and supervisors. Maunder emphasizes that, in such situations, it is essential to maintain close communication between central administration and district offices in order to insure coordinated programs and policies.

II-A9b. Climatic Factors

Climate can also affect extension organization and programming and in extreme situations limit, either permanently or temporarily, accessibility to clientele groups. Seasonal variations offer the greatest impact to organizational programming. In northern climates in which cropping operations are conducted primarily during the warmer summer months, extension programs may be more successfully conducted in the off-season when farmers have more time to read, plan and participate in educational workshops or seminars. On the other hand, the summer activities of farm visits and field demonstrations provide important first-hand educational experiences. In tropical climates, rainy and dry seasons may have similar organizational and programmatic influences.

II-A9c. Demographic Factors

Maunder emphasizes that it is essential to understand the structure of the society within which an extension service is established. In particular, he identifies the demographic factors of population distribution by sex, religion, age, and education as significant considerations. He also points to the identification of local decision-makers as an important approach to programming strategy.

Maunder elaborates on areas of demographic significance by observing that cultural or religious traditions may dictate certain jobs or duties in village life and agriculture for men

and women, respect for the experience and wisdom of elders, or common loyalties and attitudes. He also observes that age groups differ in attitudes, values, and goals and that social change comes more easily to those who have been exposed to the educational and scientific approach of experimentation.

II-A9d. Political Factors

Since extension education systems are designed to serve all people, political affiliation is an irrelevant consideration. The political context in which an extension system is established, however, can be of great significance.

Maunder points out that since education is a long-term activity, political stability within a country is necessary for continuity of extension education programs. Changes in government administration, whether democratically accommodated or not, can create disruption in programming through delay or the complete change of organization, personnel, or programmatic goals. While such changes could potentially improve a system, they could equally create a loss of confidence among clientele groups.

The establishment of a civil service in many countries has accommodated the continuity of many government programs by providing job security and tenure for government employees during administrative changes. In these countries, all employees except top policy officials and their assistants are included. The inclusion of extension personnel within a civil

service system lends continuity to extension programs, greatly enhances staff morale, and maintains program credibility among clientele.

II-A9e. Economic Factors

Regarding economic considerations, Maunder points out that with the many and varied needs of rural communities in developing countries, improved levels of living can be achieved and maintained only through increased productivity and capital generation, and this requires initial investment. While some funding may be available from outside sources, rural communities cannot remain forever dependent upon outside sources and must strive for self-sufficiency if long-term development is to be realized.

Few developed countries, let alone developing countries, possess sufficient resources to provide all of the public institutions and services desired. The priority distribution of scarce financial resources is paramount among decision-makers, and the associated limitations are important factors when considering extension organization and administration.

The fundamental proposition, however, is that the basis of economic growth in most countries lies in the development and efficient utilization of their natural resources, and usually agriculture. Overall economic development and provision of social services, therefore, is highly reliant upon increased productivity and economic development within the agricultural

sector. This salient fact must be kept in mind when considering the allotment of scarce government finances to agricultural extension services.

Maunder also observes that economic factors affect the internal organization of the extension service. He contends that, even with the most efficient use of personnel and other resources, a basic cadre of field personnel and supporting staff is required to develop and carry out an effective extension education program. When funds are insufficient for provision of this minimum organization, an extension administrator is faced with deciding how to best utilize limited financial resources to achieve some impact in rural education. This may be through enhanced cooperation with other agricultural agencies or the training of volunteers. Regardless of the approach, the availability of funds can dictate organizational focus and priority.

II-A9f. Agricultural Factors

Aside from those alluded to previously, Maunder identifies several other aspects of the agricultural industry which impact upon the development of an extension organization including the type of farm, the relationship between extension and other agencies, and farm supply and marketing services.

Maunder identifies a number of different types of farm organizational structures and contends that each type will dictate a different relationship between clientele and

extension. Specifically, he identifies subsistence farms, small land holders, general farms, specialized farms, estate farms, cooperatives, and corporate farms as separate and distinct farm organizational structures. Due to associated differences in size, production levels, methods of decision-making, financial resources, and employees, extension must organize and program to meet the varied educational needs of each.

Aside from the type of farming, Maunder emphasizes the importance of outlining the relationships between an extension service and other organizations and agencies. He points to the fact that rural families are frequently involved in many programs and organizations including credit programs, cooperatives, schools, and marketing organizations. Delineation, in the form of national policy, of extension's roles and responsibilities in the midst of and relative to these many other agencies and organizations must be addressed. This may involve formal agreements at the national level with provisions for cooperation of agency personnel at the local level.

Maunder also identifies farm supply and marketing services as important agricultural considerations which affect extension organization. Progressive agriculture requires access to improved seed, fertilizer, pesticides, machinery, and equipment. Without these tools, extension programs will be theoretical at best and will result in little long-term development.

Additionally, development requires the availability of markets which offer fair prices for agricultural products. Without them, little incentive exists for farmers to produce at levels higher than farm or local consumption demand and income generation will lag.

II-A10. Summary

The review of literature to this point has provided the foundation for developing the "*Country Analysis Instrument*", an evaluation tool intended for use in identifying the various existing or desired characteristics which impact upon the development of an agricultural extension education system within a developing country. In summary, current literature substantiates the necessity for extensive consideration of the following areas when striving to design an effective extension system for a given developing nation:

1. Geographic Situation
2. Climatic Situation
3. Demographic Situation
4. Political Situation
5. Economic Situation
6. Agricultural Situation
7. Infrastructure Situation
8. Government Agricultural Policies
9. Macro-Organization of Extension

10. Extension Responsibilities
11. Extension and Research Linkages
12. Extension Programming Approach
13. Personnel Selection and Training
14. Local-Level Extension Staffing
15. Personnel Support Strategies

II-B. Extension Education Models

In order to identify the various components of currently defined extension models for correlation with existing or desired conditions within a developing country, it was beneficial to review the descriptions of extension models as presented in the literature. Several different approaches to extension have been employed over the past 40 years to develop or improve national agricultural extension education systems. These approaches can be considered alternative extension models and may be identified as follows:

1. Conventional Agricultural Extension System (CAES)
2. Training and Visit System (TVS)
3. University Agricultural Extension System (UAES)
4. Commodity Development and Production System (CDPS)
5. Integrated Agricultural Development System (IADS)
6. Integrated Rural Development System (IRDS)
7. Farming Systems Research and Development System (FSRDS)

Each of these models was examined in detail with particular emphasis on a comparative analysis of their component

parts including, objectives, clientele, organization, approach, and the role of extension personnel. This review was facilitated in large part by a chapter written by Burton Swanson and J.B. Claar for the 1984 FAO publication, previously referenced, *"Agricultural Extension - A Reference Manual"* entitled, *"The History and Development of Agricultural Extension"*. In this chapter, the authors outlined what they termed, *"alternative models and recent trends in organizing agricultural extension"*.

II-B1. Conventional Agricultural Extension System

According to Swanson and Claar (p.6-7), the Conventional Agricultural Extension System or CAES label may be applied to a number of general agricultural extension systems organized in many developing countries. Most of these systems were established as a part of the Ministry of Agriculture in these nations at a time when there was little agricultural research being conducted. In general, these circumstances dictated that the systems had little technology being generated for transfer to farmers and, as a result, they became increasingly involved in carrying out a wide array of other governmental activities at the local level.

The primary objectives of the CAES revolve around increasing national agricultural production, including food crops, export crops, and livestock. Additional objectives

include increasing farm incomes and improving the quality of life of the rural population.

Swanson and Claar (p.7) point out that these objectives are frequently in conflict when viewed from the national context against the farmer's perspective. Governments interested in increasing national food output for urban populations while maintaining cheap food policies may conflict directly with rural populations interested in increasing their incomes. Under these circumstances, farmers will not adopt new technology to increase production without the incentives of cost recovery and profit. Extension systems organized as a part of a Ministry of Agriculture and charged with forwarding government policy objectives and increasing farm income may find their task an impossible one.

The clientele base for extension services organized under a CAES should be all farmers. However, since many developing countries have adopted a policy of increasing agricultural output and lack adequate numbers of well-trained agricultural extension workers to reach the total farm population, target groups are often identified. These groups usually focus on the larger, more productive farmers.

Swanson and Claar (p.7-8) indicate that such a focus, in an effort to increase total food production or export crop production for improved foreign exchange earnings, is problematic and can be a short-fall of the system. While the

approach does focus extension resources on macro-economic objectives, it supersedes attention to small, women, and young farmers in terms of both research and extension activities. As a result, broad-based agricultural development is thwarted. Governments interested in maximizing the impact on all human resources in rural areas should include all major categories of farmers as primary extension clientele.

As previously indicated, most developing countries have established an agricultural extension service as a part of the Ministry of Agriculture. In larger countries, this may be on a state or provincial level rather than a national level. In other countries, extension may be organized as separate units under various ministries representing sub-sectors of agriculture, such as livestock or marketing. In these cases, there is a separate extension unit for each ministry resulting in a more limited focus, a duplication of effort, and often conflict between extension workers.

As representatives of a ministry, extension personnel may be responsible for carrying out ministry programs and activities at the local level, as well as education. They may sell and distribute inputs, arbitrate disputes, perform regulatory functions, administer subsidy programs, and collect and report agricultural data. Such dual assignments directly affect the extension worker's ability to perform the extension assignment, often in a negative manner.

Under the CAES of most countries, agricultural extension workers use one-on-one methods including home and farm visits and office calls by clientele. In addition, some countries have agricultural information units which produce extension bulletins, teaching aids, radio programs, and other mass media materials. The lack of improved technology and available teaching aids on the local level, however, often results in little teaching being done by field extension workers.

According to Swanson and Claar (p.8), the role of the agricultural extension worker in the CAES should be that of educator and communicator. Specifically, extension workers in the system should identify farmer problems and production constraints, disseminate useful information about new technology, and teach farmers how to successfully use new technology to increase production and incomes. Such activities are distinctly educational and, with the number of farmers to be served in most developing countries, constitute a full-time job.

In instances where extension workers are the local agricultural representatives of government, they tend to be low level administrators rather than educators. This results in serious role conflicts to the detriment of the educational function of field workers and extension ultimately fails to effectively carry out the essential education and communication functions necessary for agricultural development.

Components of the Conventional Agricultural Extension

System may be summarized as follows:

Objectives

- To increase national agricultural production, including food crops, export crops, and livestock
- To increase farm incomes
- To improve the quality of life of the rural population

Clientele

- Target groups within the farm population

Organization

- Organized as a unit of the Ministry of Agriculture or as a unit of various sub-sector ministries

Approach

- One-on-one contact by local extension workers through home and farm visits and office calls by clientele
- Agricultural information units for production of bulletins, teaching aids, radio programs, and mass media materials

Role of Extension Personnel

- Consultant; identify farmer problems/needs and production constraints

- Communicator; communicate farmer problems/needs and production constraints to subject-matter specialists and research workers
- Educator; disseminate research-based information about new technology and demonstrate its practical application to farmers
- Government Administrator; administer government programs and policies on the local level

II-B2. Training and Visit System

Swanson and Claar indicate that the Training and Visit System or TVS is not a new extension model, but rather an attempt to reform and improve upon the effectiveness of the Conventional Agricultural Extension System. Due to some significant differences in component parts, however, it will be treated as a separate model and evaluated as such.

The TVS was introduced and substantially supported by the World Bank to improve existing agricultural extension systems in countries where the extension organization is weak and performs little or no actual agricultural education function. According to Daniel Benor, James Harrison, and Michael Baxter, authors of the 1984 World Bank publication, *"Agricultural Extension - The Training and Visit System"*, the approach relies on frequent update training of extension workers and regular field visits, hence the name, and has proved to be particularly effective.

The authors do not view the system to be new extension methodology, but rather an effective management system which accommodates the efficient implementation of existing extension principles. Under the organizational structure extension workers visit farmers regularly and transmit messages relevant to production needs, communicate problems faced by farmers back to specialists and researchers for investigation, and receive regular training to upgrade their professional ability so they may serve the technological demands of farmers. (p.9)

The objectives of the TVS are similar to those of the CAES with the major difference being that the primary emphasis is placed upon increasing individual farm production and income rather than increasing national agricultural output. The assumption is, of course, that if farmers increase their production and income, there will be a simultaneous increase in national agricultural production.

Additional objectives of the system address specific problems of the CAES and are outlined by Swanson and Claar as follows:

1. To improve the organization of extension by introducing a single, direct line of technical support and administrative control,
2. to change the multi-purpose role of many extension workers to a clearly defined, single-purpose role involving only education and communication activities,
3. to improve coverage by limiting the number of farm families or households one extension worker is expected to visit,

4. to improve mobility by providing appropriate transport so each worker can regularly visit his or her contact farms,
5. to improve each extension worker's technical skills and knowledge about improved agricultural technology by providing regular in-service training sessions,
6. to improve extension's ties with agricultural research through the addition of more subject-matter specialists, who are expected to maintain regular contact with their research counterparts and to insure a continuing flow of information that transmits technology to farmers and farmer problems back to research personnel,
7. to improve the status of extension personnel by giving them a relatively clear-cut extension job with reasonable expectations that they can successfully carry it out; this will increase their level of respect in the community and begin to build their self-confidence, and
8. to reduce the duplication of services that occurs when extension is fragmented among the different ministries or is added to new area or commodity development schemes in a country or province that already has a general agricultural extension system. (1984, p.9)

The farmers in each extension worker's area of responsibility constitute the clientele of the TVS.

Approximately ten percent of the farmers in each village are identified as contact farmers. Initially, contact farmers were selected from the more progressive individuals in each community. These farmers generally had greater access to resources and were, therefore, not typical of the majority of small farmers of the region. As a result, diffusion of technology throughout the village was limited. Under current applications of the TVS, extension workers select contact

farmers who are representative of all the major groups of farmers in a given village. This approach provides for the diffusion of technology through all farming sectors in a community.

Benor et al. (1984, p.34) explain that the structure of the TVS is based on "the total number of effective, operating farm families and the number of families that one Village Extension Worker (VEW) can be reasonably expected to cover." With these figures in-hand, the number of VEWs needed for a given area can be calculated.

Swanson and Claar (1984, p.9) elaborate on the number of VEWs required by adding to the farm population consideration the additional factors of road access and cropping intensity and diversity. According to the authors, the ratio between extension worker and farmer may vary from 1:1200 to 1:300, with an average of 1:800.

Continuing their discussion, Swanson and Claar describe the following scenario. The clientele population for one village extension worker is divided into eight farming groups of about equal size. In an average situation, one VEW would work with ten contact farmers in each of eight villages or areas, for a total of 80 contact farmers. Each contact farmer would represent 10 farm families or households for a total population of 800 farm families or households per VEW.

Under this scenario, the number of VEWs needed in an area can be easily determined by dividing the total number of farm families or households by 800. The remainder of the extension support organization would be based on the total number of village extension workers needed.

Benor et al. (1984, p.35) expand upon the support staff issue by explaining that other staff requirements are contingent on the number of VEWs. They consider that the "effective span of control for supervision" is about eight. Utilizing this benchmark, supervisory staff requirements are easily calculated.

The authors describe the TVS support structure as follows. One Agricultural Extension Officer (AEO) supervises six to eight VEWs, and six to eight AEOs are, in turn, supervised by a Subdivisional Extension Officer (SDEO). SDEOs are supervised in groups of four to eight by a District Extension Officer (DEO). Depending on the total number of districts in a country, DEOs are directly supervised by the Extension Administrators or Deputy Administrators or from an intermediate level by a Zonal Extension Officer (ZEO). Subject matter support would be offered with small teams of Subject Matter Specialists (SMSs) at each of the subdivision, district, and headquarters levels.

It is assumed that this focused organizational structure will provide a sufficiently narrow span of control so as to afford close staff supervision and enhance program efficiency and success.

In addition to this rather elaborate organizational structure, the TVS also includes a well-defined training, monitoring, and evaluation system managed by an autonomous unit in the ministry. The system is designed to provide information on a regular basis for both formative and summative evaluations.

Benor et al. (1984, P.34) describe the approach as a systematic program of regular biweekly training sessions for the VEWs combined with regularly scheduled visits to farmers' fields at two-week intervals. While in the field, the VEW utilizes teaching and technical skills discussed at the training sessions to teach farmers recommended agricultural practices, demonstrate how to implement the practices, motivate them to utilize the practices on their fields, evaluate production constraints, and advise farmers how to overcome them. Other staff assigned to support the work of the VEW also have similar fixed work responsibilities and training.

Swanson and Claar (1984, p.10-11) summarize the TVS by indicating that the system is structured to provide each extension worker with a well-defined job, timely training, technical support, teaching resources, transportation, and adequate supervision to effectively accomplish their responsibilities. They outline major shortcomings of the system, however, as being too top-down directed, not allowing enough farmer participation in program planning; too rigid in scheduling, particularly during down seasons; too labor

intensive and therefore, expensive; too reliant upon word of mouth with little use of the mass media; too understaffed with trained SMSs, resulting in poor extension-research linkages and technical training; and too authoritarian to provide positive, supportive feedback to extension workers to maintain extension worker morale.

Components of the Training and Visit System may be summarized as follows:

Objectives

- To increase individual farm production and income
- To increase national agricultural production
- To improve the quality of life of the rural population
- To reform and improve upon the effectiveness of Conventional Agricultural Extension Systems

Clientele

- All farm families in each extension worker's area of responsibility
- Contact farmers within the villages of the extension worker's area of responsibility

Organization

- Organized as a unit of the Ministry of Agriculture
- Each VEW works with approximately 10 contact farmers in each of eight villages or areas

- Each of the five levels of supervisory staff is responsible for supervising approximately eight individuals
- Small teams of SMSs provide technical support at the various supervisory levels

Approach

- VEWs receive biweekly training in agricultural practices and recommendations that relate to farming operations during the coming weeks
- VEWs visit contact farmers once every two weeks on a fixed day known to all farmers and his supervisors

Role of Extension Personnel

- Educator; disseminate research-based information about new technology and demonstrate its practical application to farmers
- Motivator; encourage application of improved methods or identified solutions to problems
- Consultant; identify farmer problems/needs and production constraints
- Communicator; communicate farmer problems/needs and production constraints to subject-matter specialists and research workers

II-B3. University Agricultural Extension System

The most commonly recognized example of the University Agricultural Extension System (UAES) is the extension service in the United States. Swanson and Claar (1984, p.11) describe the system as a program instituted under state and federal legislation which establishes a cooperative program between the local, state, and federal governments to fund and carry out extension work on a matching basis through one or more land-grant universities in each state. Each county or multi-county unit has a local extension office manned by local extension workers responsible for educational programming in the area of coverage. Supervision is conducted through a variety of administrative arrangements, most with district or regional administrators who in turn report to the central extension administration located at the associated land-grant university. Swanson and Claar characterize the system as one focusing on human development through cooperative relationships between state and local agencies and personnel, a broad range of subject matter, and diverse clientele groups.

Lincoln Kelsey and Cannon Hearne describe the legislative establishment and governmental cooperation of the UAES of the United States in their book, *"Cooperative Extension Work"*, published in 1963. The authors emphasize the unique cooperative arrangement which exists between the land-grant institutions of each state and Puerto Rico and the United States Department of

Agriculture as outlined in basic federal extension legislation, the Smith-Lever Act. The legislation specifically establishes an extension service for each state as a part of the land-grant institution of the state.

Swanson and Claar (p.11) identify the primary goal of the UAES as helping clientele to solve problems in a socially desirable and personally satisfying way through educational programs in selected subject matter areas. Specific objectives are delineated as improving the efficiency of agricultural production, increasing farm incomes and rural welfare, producing an adequate quantity of quality farm products for consumers at reasonable prices, strengthening the family and home, helping youth grow and develop through "learning by doing" projects, preserving the environment and promoting the efficient use of natural resources, and community development.

Clientele for the University Agricultural Extension System can be identified as all people interested in the subject matter presented by the system. Generally, audiences are targeted for each specific type of program. In urban areas, home economics, youth work, and home horticulture programs are generally emphasized. In rural areas, the service cooperates with a variety of agencies and organizations to provide programming in agriculture, as well. By law, extension programs are open to all people regardless of race, religion, age, sex, or handicap.

Swanson and Claar view the fact that UAESs are organized as a part of the land-grant university structure, rather than as a governmental entity, as a distinct advantage of the system. Such structure employs extension workers as staff members of the university and allows them to maintain their autonomy from political forces. As a result, their full efforts can be focused on locally-relevant extension activities.

The local connectionalism of extension under the UAES has been purported by many authors as a unique and distinct advantage of the system. Swanson and Claar point out that the structure calls for local people to participate in all aspects of extension programming including personnel selection and evaluation, operational financing and management, and program prioritization and implementation.

Robert Clark indicated in his chapter, "*Organization for the Work*", written for the 1966 book edited by H.C. Sanders entitled, "*The Cooperative Extension Service*", that the focal point of extension service in the United States is the county level organization and program. This emphasis is, of course, heavily dependent on local staffing of extension units. Clark states that the number of extension workers per county may vary from one to 20 or more, but that the national average is three. (p.38)

Swanson and Claar (p.11-12) identify four primary types of extension personnel and their predominate locations under the

UAES. They list extension workers and assistants or para-professionals at the local level and subject matter specialists and supervisory personnel at the regional and state levels.

The approach used by the UAES is an educational one which utilizes research-based information to help local people identify and solve problems. Swanson and Claar describe the approach as one which calls on representatives of various county clientele groups to serve on a local extension advisory council. The county advisory council works with local staff to determine the major areas for programming priority each year. Requests for assistance in these priority areas are then communicated by local staff to subject matter specialists at the regional and state levels for instructional assistance. The authors emphasize that the system is very clientele oriented with bottom-up rather than top-down program prioritization.

A wide array of instructional approaches are implemented to provide educational assistance to local clientele. Some of these approaches include, county, regional, and state meetings, demonstrations, and tours; one-on-one consultations and farm visits; and newsletters, news columns, radio programs and other mass-media venues.

Clark (1966) outlines the roles of local extension personnel as teacher and advisor. In these roles, county staff work with local clientele to relate research findings and improved methods to local farm, home, and community problems.

According to Clark, such local efforts largely determine whether or not the major objectives and goals of the service are achieved.

Other extension personnel include subject-matter specialists responsible for assisting local extension personnel in the development of technical information, and supervisors and state leaders responsible for assisting the county staff in planning programs, counseling on personnel matters, budgeting, and developing public relations.

Swanson and Claar indicate that extension personnel in the UAES serve as "an action-oriented force in development". They do so by disseminating information and encouraging its application to solve specific problems. Additionally, when problems are observed for which there are no solutions or if a service is needed that is not being provided, extension personnel frequently take the lead in helping to resolve the situation.

Components of the University Agricultural Extension System may be summarized as follows:

Objectives

- To improve the efficiency of agricultural production, farm incomes, and rural welfare
- To insure production of adequate volumes of high-quality agriculture products at acceptable prices

- To strengthen the family and home
- To aid youth in the processes of learning and development
- To enhance the environment and the use of natural resources
- To work with communities toward the goal of community improvement

Clientele

- All people, regardless of race, religion, age, sex, or handicap, interested in the subject matter presented

Organization

- Cooperative arrangement between federal, state, and local governments to carry out extension work on a matching basis through one or more land-grant universities in each state
- Local level extension offices and workers located in each county or multi-county unit
- Subject-matter specialists, administrators, and other supervisory personnel located at state and regional levels
- All extension personnel are staff members of a land-grant university

Approach

- Local advisory councils provide guidance and assistance in the financial, operational, programming, and evaluation processes of the extension program
- Extension personnel use research-based information to help local people identify and solve problems
- Yearly program priorities are determined by local clientele and requests are then made by county staff for instructional assistance from subject-matter specialists on selected topics: bottom-up programming
- Teaching methods include meetings and lectures, discussion groups, computers, publications, mass media, long-distance learning systems, demonstrations, visual aids, and one-on-one consultation

Role of Extension Personnel

- Advisor; work with local people to identify and prioritize problems/needs and possible solutions
- Communicator; communicate farmer problems/needs and production constraints to subject-matter specialists and research workers

- Educator; disseminate research-based information about new technology and demonstrate its practical application to farmers
- Motivator; encourage application of improved methods or identified solutions to problems
- Evaluator; work with local people to evaluate the effectiveness of new techniques and extension programs

II-B4. Commodity Development and Production System

The Commodity Development and Production System (CDPS) generally has a very narrow focus which centers around a given commodity. As such, it can be characterized as a vertically integrated production system which incorporates all phases of commodity development, including technology development, technology transfer, production, and marketing.

The primary objective of this type of system is to produce and market a specific commodity or group of commodities in an effective and efficient manner. Usually the commodity or commodities identified are high export value products, but may be domestic consumption goods, as well. Accordingly, other significant objectives include improving national income through increased exports and potentially, increasing the domestic food supply and providing lower food costs.

In many instances, these goals may secondarily lead to increased farm income through rural development. Swanson and Claar (1984, p.12) indicate that successful CDPs invest in development by providing farmers incentives in the form of profit sharing which encourages farmer participation by increasing farm income. Additionally, such systems re-invest in the development and transfer of new technology to insure continued improvement of the production systems. Governments which fail to make such internal investments in the system and use the system simply to increase export crop production in order to capture both the foreign exchange and surplus income, generally do not experience long-term development. Lack of profit soon becomes a disincentive for farmers and participation wanes. Further, levels of production technology do not keep pace with demand resulting in higher production costs and reduced output.

Since CDPs are geared toward increased output of a given commodity, the clientele addressed by such systems are frequently those living in a particular geographic location which possesses certain ecological features suitable to production of the commodity. Examples would be beverage crops such as tea and coffee which are typically grown at certain altitudes in the tropics and cocoa and rubber which require humid tropical zones.

According to Swanson and Claar, CDPSS are generally organized around a single, semi-autonomous public sector body with responsibility for technology development and transfer, as well as production and marketing functions. Such integration is made possible because a single entity controls the marketing of the commodity and can, thereby, recover the costs of providing research, extension, inputs, credit and marketing services to farmers from commodity profits.

Under such an arrangement, quality of product becomes the leverage which forces farmers to adopt new technology. Generally, the farmer must follow the advice of the extension worker or technician to participate in the program and sell his or her products. Failure to do so may result in an unsatisfactory product which would be unacceptable by the organization for marketing. In most countries where the system is well organized, however, net farm income generated from program participation far exceeds returns on traditional crops.

According to Swanson and Claar (p.13), this approach is sometimes referred to as "**contract extension**" because a contract exists between the farmers and public sector body in which the farmers contract to produce the crop using the recommended practices and the organization contracts to buy the crop at a specified price.

Under such arrangements, extension workers tend to specialize by commodity rather than function and, therefore,

serve as the technical agents who handle all aspects of technology transfer. They teach farmers in their assigned areas the recommended production practices, provide inputs when needed, monitor crop production, identify problems as they arise, and provide technical advice for problem solution.

Components of the Commodity Development and Production System may be summarized as follows:

Objectives

- To produce and market a high-value commodity efficiently and effectively
- To increase national income through increased exports of the identified commodity and/or increase domestic food supply, thus providing for lower food prices
- To improve farm income and rural welfare

Clientele

- Contract farmers in an identified geographic area characterized by a certain ecological system capable of producing the identified commodity

Organization

- Semi-autonomous public sector body responsible for all facets of commodity development, production, and marketing

Approach

- Farmers contract to produce the identified commodity or commodities using recommended practices
- Commodity organization contracts to provide commodity research, credit, input supply, technical assistance, and marketing services

Role of Extension Personnel

- Educator; disseminate research-based information about new technology and demonstrate its practical application to farmers
- Supplier; supply farmers with required inputs
- Consultant; identify farmer problems/needs and production constraints
- Marketer; coordinate product marketing

II-B5. Integrated Agricultural Development System

The Integrated Agricultural Development System (IADS) approach originated in the 1970s when it was recognized that in order to achieve increased agricultural output, all components of the agricultural development process must be coordinated and applied. The system is usually applied through donor-assisted projects directed toward a particular geographic area and focusing on a specific set of production problems. The primary objectives of the projects are to increase food or agricultural

output in the project area, thus improving farm incomes and welfare, and to demonstrate the effectiveness of the integrated approach.

The system clientele may be identified as all farmers in the project area. When project funds or resources are limited, however, project coordinators tend to key in on the larger, more progressive farmers.

Since the system is generally applied in a concentrated manner in a specific geographic area, autonomous management structures and technical support systems are generally developed, thus avoiding the cumbersome bureaucracy of existing institutions. Such autonomy allows for the hiring of the more competent technical personnel of the country through higher salary offerings and the provision of essential factors such as transportation and supplies. In this regard, the system creates a somewhat "artificial" environment to guarantee success.

Swanson and Claar (1984, p.13-14) evaluate the system by proffering the opinion that in most cases these projects did not introduce any significantly improved technological components to farming systems. The projects were based on the assumption that the primary limiting factors to production were lack of inputs or overall coordination. As a result, a host of special services were instituted including supply, credit, extension, and marketing in a systematically coordinated approach. Service centers would frequently be established at the local level where

farmers could obtain credit, purchase inputs, and secure advice on efficient production.

In theory, the role of extension personnel in the IADS is to help farmers learn new production technology and gain access to inputs, credit, and marketing services. Swanson and Claar note, however, that the educational function is too frequently sacrificed in favor of the input supply and service function in areas in which there is a shortage of trained agriculturists. The authors suggest that the job of supplying inputs, credit, and other services is apparently a more clearly defined and rewarding job than conducting extension programs. As a result, extension programming may be neglected in the IADS, unless it is given more priority and direction.

Components of the Integrated Agricultural Development System may be summarized as follows:

Objectives

- To increase food or agricultural output in the project area
- To improve farm income and welfare in the project area
- To demonstrate the effectiveness of the integrated approach to agricultural development

Clientele

- All farmers in the identified project area

Organization

- Autonomous organization established through a donor-assisted project and responsible for all facets of agricultural development within the project area

Approach

- Organization provides for limited inputs
- Organization assumes responsibility for coordinating all facets of agricultural production, including credit, supply, technical assistance, and marketing services

Role of Extension Personnel

- Educator; disseminate research-based information about new technology and demonstrate its practical application to farmers
- Supplier; provide farmers with required inputs
- Consultant; identify farmer problems/needs and production constraints
- Marketer; coordinate product marketing

II-B6. Integrated Rural Development System

The Integrated Rural Development System (IRDS) places strong emphasis upon the broad-based participation of the rural poor in planning, implementing, and evaluating rural development programs. Swanson and Claar (1984, p.14) describe the system as

a hybridization of the 1950-60 community development projects and the "Animation Rurale" approach employed in Francophone Africa. The approach mirrors a more holistic approach to rural development by considering both social and economic factors in program design. As a result, programs of the IRDS generally reflect both economic and social objectives.

By introducing appropriate new agricultural technology which increases production levels and generates improved farm incomes, the system is able to strengthen support for indigenous institutions responsible for health, nutrition, and basic education. Aside from these economic and social enhancement objectives, a central concern of the system is also to increase participation, self-reliance, and local initiative.

Most programs of the IRDS are directed to the rural poor. Therefore, there is a direct attempt to achieve increased equity in the availability of new or expanded rural services. However, in a chapter written for the 1982 text, *"Progress in Rural Extension and Community Development"*, entitled, *"The Rise and Fall of Community Development in Developing Countries"*, L.E. Holdcroft comments that efforts to work within the existing power structure of rural communities, a typical strategy with this type of development system, frequently results in many of the benefits to program participation actually accruing to the village elite, rather than the general populace.

Organizationally, the system is similar in structure to the Integrated Agricultural Development System in which an autonomous body is organized at or near the village level. In the IRDS, however, the scope is necessarily broader in terms of social services. Therefore, the organizational body is charged with bringing several technical departments, including agriculture, under unified control.

Generally, the system is instituted by establishing a pilot project in the identified target area. Clientele are directly involved in the needs assessment activity to determine rural development priorities. Of major concern is the identification of an appropriate technology package which will increase agricultural production and income. The pilot project provides the opportunity to establish the methodology for rural development. Once the system is instituted in the pilot area, the project is expanded into additional areas.

Extension personnel originally serve as catalysts and facilitators to involve the rural poor in the planning, implementation, and evaluation processes. As the project progresses, they assume the role of teachers, demonstrating improved agricultural technology.

Components of the Integrated Rural Development System are summarized on the following page.

Objectives

- To increase agricultural output and improve farm income in the target area
- To increase the availability of social programs in health, nutrition, and basic education
- To improve local participation, self-reliance, and initiative

Clientele

- Rural poor in the identified target area

Organization

- Autonomous organization responsible for all facets of economic and social development

Approach

- Establishment of a pilot project in the target area
- Use of local people in the planning, implementation, and evaluation processes

Role of Extension Personnel

- Motivator; encourage application of improved methods or identified solutions to problems
- Educator; disseminate research-based information about new technology and demonstrate its practical application

- Advisor; work with local people to identify and prioritize problems/needs and possible solutions
- Evaluator; work with local people to evaluate the effectiveness of new techniques and extension programs
- Marketer; coordinate product marketing

II-B7. Farming Systems Research and Development System

In the proceedings of Kansas State University's 1982 Farming Systems Research Symposium entitled, "*Farming Systems In The Field*", Cornelia Butler Flora expresses the opinion that, although the Farming Systems Research and Development System (FSRDS) has much less of a history than the other previously defined systems, it is recognized by many as a "potentially integrative and innovative force in agricultural development". Butler views the FSRDS as a truly holistic approach to development involving the identification of cultural, agronomic, environmental, sociopolitical, and socioeconomic constraints to agricultural welfare and the collaboration of an interdisciplinary team of researchers and farm families in developing and adopting relevant technology. According to the author, the FSRDS implies a two-way flow of information between farm families and researchers that, if implemented and utilized properly, can aid in influencing the development of relevant policies and support systems for long-term development.

A key component of the FSRDS is that it is flexible and may be implemented in a variety of ways. It can concentrate on the development of a particular commodity or group of commodities or it can emphasize total development of a local area, region, or entire country, depending upon the desires and interests of the host country. However, a common element among the alternative approaches to the FSRDS is the selection of relatively uniform sets of conditions for conducting research and implementing change.

W.W. Shaner, P.F. Philipp, and W.R. Schmehl write in their 1982 book, *"Farming Systems Research and Development, Guidelines for Developing Countries"* (p.3), that the FSRDS facilitates the intensive investigation of the individual conditions of small farmers while simultaneously providing the ability to make an impact on large numbers of farmers. This is made possible through the selection of a relatively homogenous clientele population of farmers with similar cropping, herdsmanhip, and management practices in a reasonably uniform physical, biological, and socioeconomic environment. It is expected that improved technologies developed for farmers in the defined research areas will be applicable to farmers operating elsewhere under similar conditions.

The primary objective of the FSRDS is to increase the welfare of small farm families within the identified project area by increasing their productivity and income. This

objective is approached through the formulation of an interdisciplinary team which conducts on-farm research to evaluate the interplay of the production components under the farmer's control and the physical, biological, and socio-economic environments. In addition, the team identifies and generates new technologies and then adapts, tests, and promotes them.

According to Shaner et al. (p.4-5), approaches vary according to the identified characteristics of the target population, as well as by the preferences of FSRDS administrators and researchers. Typically, the FSRDS works within the existing conditions of a region or affects rather minor changes to the existing environment. In some instances, however, the system may take a more radical approach and affect a more comprehensive set of changes, including public policy. The authors point out that the primary activities of the FSRDS include the targeting and selection of a research area, problem identification, development of a research base, planning on-farm research and analysis, and the extension of results to farmers.

Under the system, extension personnel play major roles in identifying problem areas, conducting on-farm research and demonstration activities, and promoting the implementation of results.

Components of the Farming Systems Research and Development System may be summarized as follows:

Objectives

- To increase the welfare of small farm families by increasing their productivity and income

Clientele

- Small farm families within the identified project area

Organization

- Variable organization; may be organized in a variety of ways ranging from an autonomous body to a sub-unit of the Ministry of Agriculture
- Variable responsibility; may be charged with development of a particular commodity or group of commodities or the total development of a local area, region, or entire country

Approach

- Establishment of an interdisciplinary team which conducts on-farm research to evaluate the interplay of the production components under the farmer's control and the physical, biological, and socio-economic environments and identifies and

generates new technologies and then adapts, tests, and promotes them

- Identification of a project area which possesses reasonably uniform physical, biological, and socioeconomic environments where farmers' cropping and livestock patterns and management practices are similar

Role of Extension Personnel

- Advisor; work with local people to identify and prioritize problems/needs and possible solutions
- Researcher; conduct on-farm research to determine practicality and effectiveness of new technology
- Educator; disseminate research-based information about new technology and demonstrate its practical application to farmers
- Motivator; encourage application of improved methods or identified solutions to problems
- Communicator; communicate farmer problems/needs and production constraints to subject-matter specialists and research workers

II-B8. Summary

In summary, current literature delineates the primary components of existing extension education models, a brief comparative analysis of which is presented in Table I. This

portion of the review of literature provided the foundation for developing the "Model Correlation Instrument". The instrument is intended for use as a "key" in correlating the existing or desired characteristics which impact upon the development of an agricultural extension education system within a developing country, as identified by the "Country Analysis Instrument", with the various components of existing extension education models. This analysis of the various alternative components of existing extension models and their correlation with identified existing and desired characteristics provides the conceptual framework for this developmental research project and is considered essential when designing an effective extension education system for a given developing nation.

Table I. Components of Major Extension Systems

Systems	Component: Objectives
Conventional Agricultural Extension System	Increase national agricultural production; Increase farm incomes; Improve quality of rural life.
Training & Visit System	Increase individual farm production; Increase farm incomes; Increase national agricultural production; Improve quality of rural life; Reform extension system.
University Agricultural Extension System	Improve efficiency of agricultural production; Increase farm incomes; Improve quality of rural life; Insure adequate volume of high-quality food at acceptable prices; Strengthen family & home; Aid youth in learning & development; Enhance environment & use of natural resources; Community improvement.
Commodity Development & Production System	Produce & market high-value commodity efficiently; Increase national income thru export of high-value commodity &/or increase domestic food supply.
Integrated Agricultural Development System	Increase agricultural production in project area; Increase farm incomes in project area; Improve welfare in project area; Demonstrate effectiveness of system.
Integrated Rural Development System	Increase agricultural production in target area; Increase farm incomes in target area; Increase social programs in target area; Improve self-reliance in target area.
Farming Systems Research & Development System	Increase individual farm production; Increase farm incomes; Improve rural welfare.

(table con'd.)

Systems	Component: Organization
Conventional Agricultural Extension System	Unit of Ministry of Agriculture
Training & Visit System	Unit of Ministry of Agriculture; Each VEW works with 10 contact farms in each of 8 villages; Each of 5 levels of supervisory staff oversees 8 individuals; Teams of SMS's provide technical assistance at supervisory level.
University Agricultural Extension System	Cooperative arrangement between federal, state & local governments thru land-grant universities; Local extension offices & workers in each county or multi-county unit; Subject specialists & administrators located at state & regional levels; All extension personnel are staff of land-grant university.
Commodity Development & Production System	Semi-autonomous public sector body responsible for all facets of commodity development, production & marketing.
Integrated Agricultural Development System	Autonomous organization established thru donor-assisted project & responsible for all facets of agricultural development in project area.
Integrated Rural Development System	Autonomous organization responsible for all facets of economic & social development.
Farming Systems Research & Development System	Variable organization with variable responsibility.

(table con'd.)

Systems	Component: Approach
Conventional Agricultural Extension System	One-on-one contact by extension workers thru home & farm visits & office calls; Agricultural information units produce bulletins, radio programs, mass media materials & teaching aids.
Training & Visit System	VEW's receive training in agricultural practices every other week; VEWs visit contact farmers every other week on a fixed schedule.
University Agricultural Extension System	Local advisory councils provide guidance & help with finances, operation, programming & evaluation of extension programs; Extension personnel use research information to help local people identify & solve problems; Yearly programming priorities are determined by local clientele; Teaching methods are extensive & varied.
Commodity Development & Production System	Farmers contract to produce commodity using recommended practices; Commodity organization contracts to provide commodity research, credit, inputs, technical assistance & marketing.
Integrated Agricultural Development System	Previously limited inputs provided by organization; Organization coordinates agricultural production, including credit, supply, technical assistance & marketing.
Integrated Rural Development System	Establishment of pilot project in target area; Use of local people in planning, implementing & evaluation.
Farming Systems Research & Development System	Establishment of interdisciplinary team to conduct on-farm research of production components under farm control, generate new technologies & promote them; Identification of project area with uniform characteristics.

(table con'd.)

Systems	Components: Clientele	Role of Extension Personnel
Conventional Agricultural Extension System	Target groups in farm population.	Communicator Educator Government Administrator
Training & Visit System	All farm families in extension worker area; Contact farmers in villages of extension worker area.	Educator Motivator Consultant Communicator
University Agricultural Extension System	All people interested in subject matter presented.	Advisor Communicator Educator Motivator Evaluator
Commodity Development & Production System	Contract farmers in identified area capable of producing identified commodity.	Educator Supplier Consultant Marketer
Integrated Agricultural Development System	All farmers in identified project area.	Educator Supplier Consultant
Integrated Rural Development System	Rural poor in identified project area.	Motivator Educator Advisor Evaluator Marketer
Farming Systems Research & Development System	Small farm families in identified project area.	Advisor Researcher Educator Motivator Communicator

CHAPTER III. PROCEDURES AND OUTCOMES

Having built a foundation by reviewing the relevant literature, procedures for this developmental research project turned to the development and field testing of the proposed instruments, the "Country Analysis Instrument" and the "Model Correlation Instrument". Specific procedures for development of the instruments consisted of three distinct phases, including instrument design, review, and refinement. Each of these phases will be described.

III-A. Instrument Design

As previously stated, the purpose of this research project was to develop and field test the previously identified instruments. The instruments would first, identify the existing or desired characteristics within a developing country which impact the design of an agricultural extension education system, and secondly, correlate those identified impactors with particular components of existing extension models, thus providing a framework of appropriate design parameters. When utilized in order by a project analyst or consultant team charged with the task of assisting a developing country in designing a new or evaluating an existing agricultural extension education system, the instruments would afford the opportunity to "custom" design an appropriate, effective agricultural extension education model for that country.

III-A1. Country Analysis Instrument

Based upon a review of current literature which detailed problems encountered in existing extension education systems and outlined theoretical considerations for the design of an effective system, several major "impacting" areas were identified for analysis. With these impactors in mind, the "Country Analysis Instrument", was developed.

The original draft of the "Country Analysis Instrument" (Appendix A.) consisted of 13 pages of questions intended to be completed by a project analyst or consultant team familiar with the task of agricultural extension education system design and evaluation in developing countries. Questions addressed in the instrument were directed at the major impactors identified in the review of literature and were divided into these general categories:

1. Geographic Situation (GS)
2. Climatic Situation (CS)
3. Demographic Situation (DS)
4. Political Situation (PS)
5. Economic Situation (ES)
6. Agricultural Situation (AS)
7. Infrastructure Situation (IS)
8. General or Desired Characteristics (DCS) Impacting an
Agricultural Extension Education System

When originally designing the instrument, an attempt was made to identify specific, relevant questions which could be answered by the analysts, given adequate access and time to research the information. While the questions posed require both objective and subjective evaluation on the part of the analysts, the majority of questions were constructed to prompt short, indicative responses. Open-ended questions were used only when necessary to clarify specific details of situations or for the purpose of stating general relevant observations.

III-A2. Model Correlation Instrument

A review of current literature detailing the various characteristics of existing extension education models identified specific components essential to the design of an effective and efficient extension education system. The second instrument, the "Model Correlation Instrument", was based upon this review.

The original draft of the instrument (Appendix B.) consisted of eleven pages of questions intended to be completed by a project analyst or consultant team familiar with the task of agricultural extension education system design and evaluation in developing countries after completion of the first instrument, the "Country Analysis Instrument". Questions included in the instrument were designed to correlate the impactors identified by the "Country Analysis Instrument" with particular components of existing extension education models. Further, it allows the analyst or team the opportunity to identify the best alternative

components, given the information at hand, thus providing the basic structural framework of appropriate design parameters for an agricultural extension education system for the developing country in question.

The instrument was designed to approach this task in a logical manner by identifying various **"analysis factors"** outlined in the **"Country Analysis Instrument"** which should be reviewed when selecting appropriate model component alternatives. Completion of the instrument requires the analyst or team to make a subjective evaluation of all applicable **"analysis factors"** when determining which component alternative would be the most appropriate. Additionally, most component alternatives were identified with their model derivation. Care was taken in the development process to insure that the **"Model Correlation Instrument"** could be easily followed, completed, and interpreted. Finally, the instrument was also designed to provide the opportunity to **"translate"** the selected components into a list of **"identified design parameters"**.

Specific components identified by current literature and included in the instrument are as follows:

1. Objectives

- a. Established by ...
- b. Defined as ...

2. Clientele

3. Organization

- a. Administered by ...
- b. Responsible for ...
- c. Organized with ...
- d. Funded by ...
- e. Staffed by ...
- f. Staffed with ...
- g. Linked with ...
- h. Associated with ...
- i. Supported with ...

4. Educational Approach

5. Role of Extension Personnel

III-B. Instrument Review

Once designed, the instruments were subjected to a review by recognized specialists in extension education and international development. As established in the original research proposal, a modified Delphi approach was used for the review. Under this approach, a total of 30 individuals were selected to review the instruments in three stages, with each individual reviewing the instruments twice.

Selection and description of the review panel, the modified Delphi approach, the timetable for instrument review and refinement, and the review panel evaluation form will be discussed in detail as they apply to the instrument review process.

III-B1. Review Panel Selection and Description

A non-probability, purposive sample of 30 individuals was selected to review the instruments. Sources of the "Review Panel" included:

- a. individuals associated with the University of Illinois who have recognized expertise in international development;
- b. selected individuals who participated in the 1985 National Conference, "The International Role of Extension: Future Directions", held March 31st through April 2nd at the Kellogg Center of Michigan State University; and
- c. Fulbright Scholars who have participated in various developmental research projects in education.

Review Panel members selected from these sources were contacted by letter with follow-up phone calls to secure their participation. A total of 41 individuals were contacted in order to secure the 30 required panel members.

Once the "Complete Review Panel" of 30 members was confirmed, it was divided into two groups, a "Primary Review Panel" and a "Secondary Review Panel". As outlined in the research proposal, the Primary Review Panel consisted of 20 members and the Secondary Review Panel consisted of 10 members. Panel assignments were randomly made by drawing names. A copy of the Review Panel listing and assignments with names, addresses,

and phone numbers and a copy of the inquiry letter mailed to these individuals requesting their assistance with the developmental research project are on file. Of the 30 reviewers originally seated, 27 completed the review process, 18 in the Primary Review Panel and nine in the Secondary Review Panel.

Table II. provides a brief description of the Review Panel relative to education, occupation, areas of specialization, international experience, and project completion.

Table II. Review Panel Description

Descriptors		Number of Panel Members	Percent of Panel Members (n=30)
Education	Master's Degree	14	46.67
	Doctorate	16	53.33
Occupation	College/University Faculty	13	43.33
	Extension Staff	18	60.00
	Private Business	2	6.67
	Other	5	16.67
Specialties	Extension Education	18	60.00
	Development	15	50.00
	Economics	4	13.33
	Other	7	23.33
International Experience	Africa	8	26.67
	Asia	14	46.67
	Europe	23	76.67
	Latin America/ Caribbean	19	63.33
	Middle East	3	10.00
	Pacific	5	16.67
Project Completion		27	90.00

III-B2. Modified Delphi Review Approach

Again, a modified Delphi approach was utilized for the instrument review process. This approach called for the instruments to be reviewed in three "waves" as outlined in the following Table III.

Table III. Modified Delphi Approach Waves

Wave	Review Panel	Items Provided	Items Returned
First	Primary of 20	Original Instruments Evaluation Form Letter of Explanation	Modified Instruments, Completed Evaluation
Second	Secondary of 10	Revised Instruments, Evaluation Form Letter of Explanation	Modified Instruments, Completed Evaluation
Final	Complete of 30	Revised Instruments, Evaluation Form Letter of Explanation and Thanks	Modified Instruments, Completed Evaluation

In the approach outlined, the "original instruments", a letter of explanation, and an "evaluation form" were mailed individually to the 20 member Primary Review Panel in the "first wave". The letter of explanation asked panelists to complete the evaluation form and, as an additional part of the evaluation process, to make suggestions for improvement of the instruments by making additions, deletions, and alterations to their copy of the instruments. The resulting "modified instruments₁" from the first wave, in combination with the comments and recommendations included on the evaluation forms, were utilized to refine the original instruments into the "revised instruments₁".

Once the primary refinement was completed, the revised instruments, and the same letter of explanation and evaluation form were sent individually to the 10 member Secondary Review Panel in the "second wave". These individuals were the remaining 10 individuals of the 30 member Complete Review Panel who did not participate in the first wave.

As with the first review, this Secondary Review Panel completed the evaluation form and made suggestions for improvements on their copies of the revised instruments. These "modified instruments," along with the comments and recommendations on the evaluation forms from the second wave, provided the basis for preparation of "revised instruments." These instruments were then mailed along with an identical evaluation form and the letter of explanation and thanks to the "Complete Review Panel" of 30 reviewers in the "final wave". This wave represented the second time each of the reviewers participated in a review of the instruments.

Again, on receipt of the "modified instruments," and the completed evaluation forms from the final wave, refinements were made to the instruments for the third and final time. These refinements resulted in the "final instruments" in preparation for field testing.

III-B3. Timetable for Instrument Review and Refinement

The planned review period for each review wave was four weeks and reviewers were requested to evaluate the documents and

return their evaluations within this time frame. Additionally, the refinement period between each wave was planned for two weeks and all refinements were anticipated to be completed within two weeks of the receipt of the last review. Therefore, the anticipated review and refinement process was expected to be completed within an 18 week period.

The actual review and refinement process required considerably longer than originally anticipated and consumed eight and a half months. Delays and extensions resulted from a variety of circumstances including:

1. difficulty in confirming panel members
2. delay in compiling the original instruments, letters, and evaluation forms
3. inability to send all of the documents to an entire panel in one wave
4. underestimated amount of time required for panelists to review and evaluate the instruments
5. late responses/returns
6. underestimated amount of time required for interpreting evaluations and recommendations
7. underestimated amount of time required for refining instruments based on evaluations and recommendations
8. additional time consuming priorities for the researcher

While the estimated timetable called for the original instruments to go to the Primary Review Panel in February, 1993,

they were not mailed out until July, 1993. This, coupled with the delays and extensions brought on by other identified circumstances, resulted in the final instrument refinement being completed in mid-March, 1994 rather than July, 1993.

III-B4. Review Panel Evaluation Form

As indicated, on delineation of the review panels, the two instruments were distributed in a single package to members of the panels for evaluation along with a letter of explanation and the "evaluation form" (Appendix C.). The evaluation form was four pages long and consisted of a series of ranking and open-ended questions regarding the presentation of the individual instruments, their appropriateness for accomplishing the identified objectives, and the potential for their application.

III-C. Instrument Refinement

As outlined in Section III-B2, The Modified Delphi Review Approach, refinements were made to the instruments at the completion of each review "wave". This process relied on "refinement parameters" established as a part of the research proposal to determine the degree to which changes should be made during each level of instrument refinement. A discussion of these parameters and the general areas of refinement will be presented.

III-C1. Refinement Parameters

As determined during the research proposal process, refinements were made to the original instruments based on the

considered significance of the recommended changes to the improvement of the instruments. It was deemed inappropriate to define specific parameters, such as an established 20 percent refinement factor in which 20 percent of the Review Panel suggesting a specific change would be required in order to motivate incorporation of the suggestion into the revised instrument. Additionally, it was considered equally inappropriate to alter the original instruments each time a recommendation for change was made by an individual reviewer as each reviewer possesses unique knowledge, experience, and preferences. While such diversity is a distinct advantage to the refinement process, the potential exists for a conflict of perspective. Additionally, the objective of the review portion of the research project was to afford a composite and progressive refinement of the instruments. Therefore, suggestions for instrument refinement were incorporated into the revised documents at each level at the discretion of the researcher based on the predominate goal of improving the presentation of the instruments, their appropriateness for accomplishing the identified objectives, and the potential for their application.

III-C2. General Areas of Refinement

Suggestions for improvement of the instruments derived from the three panel review waves fell into four primary categories. These categories included:

1. Form, Grammar, and Style
2. Language and Cultural Diversity
3. Category Appropriateness and Effectiveness
4. Significance of Specific Category Questions

The form, grammar, and style suggestions were made to correct errors and make the instruments more easily understood and interpreted. Additionally, these suggestions added to instrument efficiency by opening the layout and streamlining the format of the instrument to aid project analysts and consultant teams in the completion and application of the instruments.

Comments and suggestions under the language and cultural diversity area concentrated on the manner in which questions were presented, may be interpreted, or applied in various cultural situations. Suggestions pointed to the fact that many of the original questions and associated conclusions were "skewed" by a United States perspective. Such an approach may or may not be appropriate, depending on the country. Suggested changes expanded the instruments, but also contributed to their "universality".

Although generally viewed as complete in context, some suggestions were made to adjust the categories considered and evaluated by the "Country Analysis Instrument". Primary suggestions centered around the addition of a Cultural Situation section and a Communications Network section. Some evaluators believed that a Cultural Situation section would afford the

opportunity to better gauge the impact of specific cultural factors on the acceptance and effectiveness of an extension education system. Others suggested that a section on communications would assist in better identifying potential extension education methodologies. Yet another group questioned the appropriateness of the Economic Situation section as an area of impact.

On careful consideration of these comments and suggestions, it was determined 1) to enhance and clarify the cultural portion of the Demographic Situation section rather than add an additional Cultural Situation section to the **"Country Analysis Instrument"**, 2) that considerations of communication could best be handled in the Infrastructure and the Desired Characteristics Sections rather than adding an additional section, and 3) that an analysis of the Economic Section relative to the impact of national developmental goals and objectives on an extension education system validated its inclusion in the instrument.

The categories included in the **"Model Correlation Instrument"**, and particularly the identified primary components of an extension education system, were generally considered quite appropriate. However, several questions arose relative to the method of selecting appropriate component alternatives based upon the subjective evaluation of various analysis factors. Further, several suggestions were made for prioritizing the consideration of analysis factors to enhance the ability of project analysts

and consultant teams to design an appropriate and effective extension education system. It was generally suggested that such prioritization should be done by project personnel in close cooperation with national decision-makers.

Many suggestions were made over the course of the review to add, delete, or alter specific category questions in the "Country Analysis Instrument". A large majority of these suggestions were determined to be valid enhancements to the instrument and were incorporated in the refinement process. Those of lesser significance were disregarded.

Summaries of the significant suggestions for refinement of the instruments presented in the Instrument Evaluation Forms and the associated Revised Instruments of each Review Wave are found in the Appendixes. Table IV. identifies the applicable appendix for each wave summary and revision.

Table IV. Evaluation Summary/Instrument Revision Appendixes

Wave	Instrument Evaluation Form Summary	Country Analysis Instrument Revision	Model Correlation Instrument Revision
First	Appendix D.	Appendix E.	Appendix F.
Second	Appendix G.	Appendix H.	Appendix I.
Final	Appendix J.	Appendix K.	Appendix L.

III-D. Instrument Field Testing

Subsequent to the Final Revision of the instruments, and as a welcome extension of the original research project, the

instruments were field tested in the **People's Republic of China** and **Cambodia** in 1994 and in **Turkmenistan** in 1995. These **Field Tests** provided a unique opportunity to gain valuable experience in instrument application procedures and served to validate the instruments.

III-D1. People's Republic of China and Cambodia Field Testing

Field testing of the instruments in the People's Republic of China (PRC) and Cambodia was afforded by a 1994 Fulbright Grant. The award provided funding for transportation, accommodations, and interpreter assistance associated with the research project.

As implied in the concept of "field testing", the purpose of the Fulbright Project was to apply the developed instruments in a practical situation to gain experience in their application and to evaluate their validity. Specific procedures for the project included:

1. referencing national and university library resources,
2. securing statistical reports from government agencies,
3. interviewing educators and government personnel, and
4. surveying educators and clientele through focus groups.

The itinerary for the eight-week research project is summarized in Table V. on the following page.

Table V. 1994 Fulbright Project Itinerary

Week	In-Country Location	Primary Contact(s)	Project Goal
One	Beijing University PRC	History, Sociology, Education, Economics Faculty	Library Research Educator Interviews
Two	Beijing University PRC	State Statistical Bureau Ministries of Ag & Education	Government Statistics Procurement Government Personnel Interviews
Three	Xian, PRC	Institute of Economics	Government Personnel Interviews Clientele Focus Group
Four	Dunhuang, PRC Shenzen Economic Zone Guangzhou, PRC	Chinese Academy of Social Sciences Shenzen Economic Council	Clientele Focus Group Council Personnel Interviews
Five	Beijing University PRC	Sociology & Education Faculty Chinese Academy of Social Sciences	Exit Interviews
Six	Phnom Penh, Cambodia	United Nations Food & Agriculture Organization	Library Research FAO Statistics Procurement
Seven	Phnom Penh, Cambodia	Planning & Statistics Department, Ministry of Agriculture	Government Statistics Procurement Government Personnel Interviews
Eight	Phnom Penh, Cambodia	Ministry of Education	Government Personnel Interviews Clientele Focus Group

III-D1a. PRC Field Test

Initial contact in the PRC was with faculty members of the Departments of History, Sociology, Education, and Economics at Beijing University. Faculty of these departments provided access

to library resources, student translators, introductions to governmental agencies and leaders, interviews, and arrangements for in-country interview and survey contacts.

Completion of major portions of Geographic, Climatic, Demographic, Economic, Agricultural, and Infrastructure Situation sections of the "Country Analysis Instrument" in the PRC was accomplished through the aid of student translators assigned by faculty members of the university. Students assisted by interpreting questions posed in the instrument, locating appropriate resources in the university library, and translating applicable data and information contained in the resources.

Additional assistance was provided by junior clerks in the State Statistical Bureau and Ministry of Agriculture. Clerks assisted by securing government statistical documents and interpreting the data contained therein and taking notes during interviews with government personnel.

Interviews with faculty members of Beijing University and the Ministries of Agriculture and Education accommodated completion of major portions of the Political Situation and General or Desired Characteristics from Policy Makers' Perspective sections of the "Country Analysis Instrument". A total of 21 interviews were conducted, 10 with Professors and Associate Professors of Beijing University, seven with Assistant and Associate Ministers and Bureau Chiefs of the Departments of Agriculture and Education, two with personnel from the Institute

of Economics, and two with representatives of the Shenzhen Economic Council.

In order to complete the General or Desired Characteristics from Users' Perspective section of the instrument, two focus group sessions were arranged. The first was arranged by the Institute of Economics in Xian and consisted of five farmer representatives of farming communities in townships surrounding Xian. The second was organized in Dunhuang by the Chinese Academy of Social Sciences and was conducted with eight farmers. Project interpreters assisted in conducting the sessions which lasted just under two hours each. Instrument questions were posed in order by the interpreters who also translated responses as they were given.

During a series of three exit interview sessions, personnel of the Chinese Academy of Social Sciences and faculty members of the Departments of Sociology and Education of Beijing University assisted with the interpretation of data collected by applying the "Country Analysis Instrument" through the previously described procedures. This analysis, including a prioritization of the information collected, accommodated the completion of the "Model Correlation Instrument". Conclusions of the instrument, as suggested design parameters, were discussed relative to the current agricultural extension education system of the PRC organized under the Chinese Ministry of Agriculture. The

instruments completed in the PRC Field Test Project are found in Appendix M.

According to the results of the Field Test, appropriate design parameters for the agricultural extension education system in the People's Republic of China may be briefly summarized as follows:

Model Objectives should be:

1. established by the central federal administration.
2. defined as
 - a. providing for broad-based agricultural development;
 - b. improving the quality of life for the entire rural population; and
 - c. increasing food availability while maintaining low food prices.

Model Clientele should be:

1. target groups within the farm population, specifically production units of the primary commodities of pork, poultry and eggs, and cereal grains.

Model Organization should be:

1. administered by the Ministry of Agriculture.
2. responsible for agricultural production education and research and production input supply.
3. organized with staff and offices on national, provincial, prefecture, county, and township levels.

4. funded by the federal government through project profits.
5. staffed by university graduates at the national and provincial levels and technical school graduates at the prefecture, county, and township levels; men and women at all levels; and, nationals at all levels.
6. staffed with administrators at the national and provincial levels, associate administrators and subject matter specialists at the prefecture and county levels, and field staff educators at the county and township levels with total staff numbers at each level depending upon numbers of farmers and regional production.
7. linked with research centers through locally administered research plots and dual-assigned personnel with both research and teaching responsibilities at the prefecture and county levels.
8. associated with farm supply and marketing systems on an informal basis, but not credit or promotional organizations.

Educational Approach should be:

1. agricultural information units for production of bulletins and teaching aids; and
2. local extension workers contacting local production unit farmers on a fixed schedule.

Role of Local Extension Personnel should be:

1. consultant - identify farmer problems/needs and production constraints;
2. communicator - communicate farmer problems/needs and production constraints to subject-matter specialists and researchers;
3. educator - disseminate research-based information about new technology and demonstrate its practical application to farmers;
4. evaluator - work with local people to evaluate the effectiveness of new techniques and extension programs;
5. researcher - conduct on-farm research to determine practicality and effectiveness of new technology; and
6. supplier - provide farmers with required inputs.

III-D1b. Cambodia Field Test

Arrangements in Cambodia were accommodated by the Cambodian Office of the Food and Agriculture Organization (FAO) of the United Nations and the Ministry of Agriculture. Staffs of both organizations provided statistical analysis information, interpreters, interviews, and introductions to governmental agencies and leaders.

Major portions of the Geographic, Climatic, Demographic, Economic, Agricultural, and Infrastructure Situation sections of the "Country Analysis Instrument" for Cambodia were completed through the assistance of two junior staff members assigned by

the Ministry of Agriculture. These individuals reviewed the instrument and gathered applicable statistical documentation. Additionally, they assisted with translation of documents and interview sessions when necessary.

Interviews with government personnel in the Ministries of Agriculture and Education facilitated the completion of remaining portions of the situational sections of the instrument and the General or Desired Characteristics from the Policy Makers' Perspective section. A total of 12 interviews were conducted, six with Vice Ministers and Department Directors in each of the two ministries.

As in the PRC Field Testing project, a focus group was utilized as the primary approach for securing information necessary for the completion of the General or Desired Characteristics from the Users' Perspective section of the "Country Analysis Instrument". A single focus group of seven farmers from the surrounding Mekong area met in a two and a half hour session. Instrument questions were posed by the assisting staff members and responses were recorded.

One joint exit interview was conducted with representatives of FAO and the Ministries of Agriculture and Education. The session provided for the presentation of the data and information collected through the application of the "Country Analysis Instrument", its interpretation, and its prioritization and input into the "Model Correlation

Instrument". Results of instrument application in the form of suggested design parameters were discussed in detail. Completed instruments for the Cambodia Field Test are found in Appendix N.

Appropriate **design parameters** suggested through use of the instruments for an agricultural extension education system in **Cambodia** may be briefly summarized as follows:

Model Objectives should be:

1. established by the central federal administration with clientele advisory groups providing program input.
2. defined as
 - a. increasing agricultural production for export to reduce balance of trade deficit;
 - b. increasing agricultural production to increase real income of farmers; and
 - c. improving the quality of life for the entire rural population.

Model Clientele should be:

1. entire farm population.

Model Organization should be:

1. administered by the Ministry of Agriculture.
2. responsible for agricultural production education.
3. organized with staff and offices on national, provincial, and district levels.

4. funded by the federal government and supported with development assistance funds.
5. staffed by engineers (university graduates) at the national level, controllers (technical school graduates) at the provincial and district levels, and agents (one-year certificate holders) and skilled workers (secondary cycle graduates) at the village level; men and women at all levels; and nationals at all levels.
6. staffed with administrators at the national and provincial levels, subject matter specialists at the national and provincial levels, specialist extension officers at the district level, and farmer technicians at the village level with total numbers at each level depending upon the number of farmers and regional production.
7. linked with research only through local demonstration plots and advisement of local needs and results of new technology application; research to be administered by National Agricultural Research System (NARS), national universities, and autonomous international research institutes or private companies (Non-Governmental Organizations [NGO's]).
8. associated with no other credit, supply, marketing, or promotional organizations on a formal or informal basis.

Educational Approach should be:

1. local extension personnel using research-based information to help local people identify and establish need priorities and then request instructional assistance from subject matter specialists on selected topics; and
2. national and provincial level support of NGO extension development projects.

Role of Local Extension Personnel should be:

1. consultant - identify farmer problems/needs and production constraints;
2. communicator - communicate farmer problems/needs and production constraints to subject-matter specialists and researchers;
3. educator - disseminate research-based information about new technology and demonstrate its practical application to farmers;
4. evaluator - work with local people to evaluate the effectiveness of new techniques and extension programs;
5. motivator - encourage application of improved methods or identified solutions to problems.

III-D2. Field Testing in Turkmenistan

Field testing of the instruments in Turkmenistan was accomplished as a part of a 1995 United States Agency for International Development (USAID) project. Turkmenistan is one

of the Newly Independent States (NIS) of Central Asia formed as a result of the breakup of the Soviet Union. The specific purpose of the project was to assist the country in investigating the potential formation of an agricultural extension education system; a uniquely appropriate project for instrument field testing.

Specific procedures for the project included:

1. securing statistical data from governmental and international development agencies,
2. interviewing educators and government personnel, and
3. surveying clientele groups through focus groups.

The itinerary for the five-week development project is summarized in Table VI. on the following page.

Primary contact in Turkmenistan was with in-country personnel of the USAID office in Ashgabat. An Assistant Program Manager and Project Interpreter were assigned to the project and assisted in all aspects of the identified procedures, including translating the instruments, collecting applicable government statistics, arranging and recording interviews and focus groups, and interpreting written documents and verbal exchanges.

Large portions of the Geographic, Climatic, Demographic, Economic, Agricultural, and Infrastructure Situation sections of the "Country Analysis Instrument" were completed through statistical information provided by USAID and the Ministry of

Table VI. 1995 USAID Project Itinerary

Week	In-Country Location	Primary Contact(s)	Project Goal
One	USAID Compound Ashgabat, Turkmenistan	USAID Personnel Ministry of Agriculture	Government Statistics Procurement
Two	Chardzhou, Turkmenistan	Agricultural University Faculty Governor's Office, Chardzhou Oblast	Educator Interviews Government Personnel Interviews
Three	Danow, Turkmenistan	Danow Business Association Governor's Office, Danow District	Government Personnel Interviews Local Farmer Interviews Clientele Focus Group
Four	Danow, Turkmenistan	Danow Business Association Governor's Office, Danow District	Government Personnel Interviews Local Farmer Interviews
Five	USAID Compound Ashgabat, Turkmenistan	USAID Personnel Ministry of Agriculture	Clientele Focus Group Exit Interview

Agriculture. Remaining portions of the instrument, including the General or Desired Characteristics from Policy Makers' Perspective section, were completed through individual interviews. Interviews were held with five Directors and Vice-Directors of the Ministry of Agriculture in Ashgabat, four faculty members of the State Agricultural University in Chardzhou, the Governor of the Chardzhou Oblast and the Governor of the Danow District of Chardzhou, five Government Bureau Chiefs in Chardzhou and Danow, and nine farmers in the Danow District for a total of 25 interviews. Additionally, two focus

groups, one with 12 farmers in the Danow District and a second with 16 farmers in the Ashgabat area, facilitated completion of the General or Desired Characteristics from Users' Perspective section of the "Country Analysis Instrument".

A single exit interview in Ashgabat in the final week of the project included representatives of the Ministry of Agriculture and USAID and accommodated the application of the "Model Correlation Instrument". Completed instruments for the Turkmenistan Field Test are found in Appendix O. Conclusions reached in the form of suggested **design parameters** for an agricultural extension system in **Turkmenistan** may be briefly summarized as follows:

Model Objectives should be:

1. established by the central federal administration with clientele advisory groups providing program input.
2. defined as
 - a. providing and/or maintaining low consumer food prices;
 - b. increasing agricultural production to increase real income of farmers;
 - c. improving the quality of life for the entire rural population;
 - d. providing for broad-based agricultural development;

- e. supporting communities toward the goal of community development.

Model Clientele should be:

- 1. entire farm population.

Model Organization should be:

- 1. administered by the Ministry of Agriculture.
- 2. responsible for administration and direction, agricultural production and research, and small business development.
- 3. organized with staff and offices on national, oblast, and district levels.
- 4. funded by the federal government, generated project funds, and development assistance funds.
- 5. staffed with university graduates at the national and oblast levels and specially trained individuals at the district level; men and women at all levels; and nationals at all levels with expatriate support for development projects.
- 6. staffed with administrators at the national and oblast levels, subject-matter specialists/researchers and educators at the oblast level, and extension workers at the district level with total numbers at each level depending upon the number of farmers and district production.

7. linked with research through locally administered research plots and advisement of local needs and results of new technology application; research to be administered by State Agricultural University and development assistance organizations.
8. associated with credit, supply, and marketing organizations on a formal basis as required in specific development projects.

Educational Approach should be:

1. agricultural information units for production of bulletins and teaching aids;
2. local extension workers contact local farmers on a fixed schedule;
3. local extension workers receive training on a fixed schedule;
4. local extension personnel using research-based information to help local people identify and establish need priorities and then request instructional assistance from subject matter specialists on selected topics; and
5. development project established in which the organization provides previously limited inputs and assumes the responsibility for coordinating all facets

of agricultural production, including credit, supply, technical assistance, and marketing services.

Role of Local Extension Personnel should be:

1. consultant - identify farmer problems/needs and production constraints;
2. advisor - work with local people to identify and prioritize problems/needs and possible solutions;
3. communicator - communicate farmer problems/needs and production constraints to subject-matter specialists and researchers;
4. educator - disseminate research-based information about new technology and demonstrate its practical application to farmers;
5. motivator - encourage application of improved methods or identified solutions to problems;
6. evaluator - work with local people to evaluate the effectiveness of new techniques and extension programs;
7. researcher - conduct on-farm research to determine the practicality and effectiveness of new technology;
8. government administrator - administer government programs and policies on the local level;
9. supplier - provide farmers with required inputs; and
10. marketer - coordinate product marketing.

Specific data gathered and concluded in the Field Tests can be found in Appendixes M-O. as identified in the following Table VII.

Table VII. Field Test Data Summary Appendixes

Country of Field Test	Data Summary
People's Republic of China	Appendix M.
Cambodia	Appendix N.
Turkmenistan	Appendix O.

CHAPTER IV. SUMMARY, CONCLUSIONS, RECOMMENDATIONS, AND IMPLICATIONS

IV-A. Project Summary

The purpose of this developmental research project was to identify the factors which should be considered when designing an effective agricultural extension education system for a given developing country and then link these factors to the components of existing extension models to "custom" design an appropriate, effective extension system for the country. This purpose was approached through specific objectives which included a review of literature, the design and refinement of two project instruments, and the field testing of these instruments.

The review of literature identified country specific factors which impact the effectiveness of an extension system, and the primary components of the seven major extension education models, and resulted in the initial development of the project instruments. The "Country Analysis Instrument" serves to identify and quantify various existing or desired characteristics which impact the development of an extension system and the "Model Correlation Instrument" correlates these identified impactors to particular components of existing models.

The designed instruments were subjected to a modified Delphi review by a panel of recognized specialists in extension education and international development, selected through a

non-probability, purposive sampling, for evaluation and refinement.

Under the modified Delphi method of review, the panel was divided into a Primary Review Panel of 20 members and a Secondary Review Panel of 10 members through random selection. The instruments were reviewed and evaluated in waves, first by the Primary Review Panel, followed by the Secondary Review Panel, and subsequently by the Complete Review Panel. Refinements were made to the instruments at the conclusion of each wave with the resulting modified instruments being extended to the next wave of review. The three successive refinements resulted in the final instruments in preparation for field testing.

Field testing of the final instruments was done in the People's Republic of China and Cambodia through a 1994 Fulbright Project and Turkmenistan in a 1995 USAID Project. The data collected and the results of the application of the instruments in these field tests are included in Appendixes M-O. with the associated suggested extension education system design parameters for each country again summarized in the Procedures and Outcomes, pages 122-124, 126-128, and 131-134. To repeat them here would be redundant.

IV-B. Conclusions

The primary goal and associated specific objectives of this developmental research project were successfully completed,

although the time frame for completion was significantly extended beyond the original anticipated schedule. This was due in large measure to the addition of the field testing component which was not a part of the original research proposal.

In general, the procedures outlined proved effective and appropriate for meeting the purpose and objectives of the research project. The literature reviewed, although primarily produced in the 1970s and 80s, represents the bulk of foundational work relevant to the study and thoroughly identifies problems encountered in current extension education systems, outlines theoretical considerations for the success of extension education systems in developing countries, and describes existing extension education models.

The modified Delphi review and associated refinement process, though requiring a longer period of time and being more difficult to manage than originally anticipated, appropriately refined the project instruments in preparation for practical application by verifying categories significant for investigation and consideration and enhancing instrument clarity, efficiency, and universality. The review process, however, does represent one of the primary limitations of the study. Selection of the Review Panel was central to the review and refinement of the instruments. As indicated earlier, a non-probability, purposive sample of recognized specialists in extension education and international development was utilized

as the Review Panel. While care was taken in the selection process to insure adequate representation by education, occupation, areas of specialization, and international experience, so as to enhance diversity and universality, the ultimate combination of panel members was subjectively determined. Although it is assumed that regression occurs and the considered opinions of the panel members will move toward the mean opinion of the selected review panel over the course of the review process, the makeup of the panel is a significant and critical factor and could limit the reliability of the project. Mortality, on the other hand, does not appear to be a significant limitation as 90 percent of the Review Panel members completed the review and evaluation process.

As discussed in Refinement Parameters, Section III-C1 in Procedures and Outcomes, refinements were made to the original instruments at the discretion of the researcher based upon the considered significance of the recommended changes to the predominate goal of improving the presentation of the instruments, their appropriateness for accomplishing the identified objectives, and the potential for their application. Such discretion was subjective and additionally limits the reliability of the project.

Finally, the field testing projects provided valuable experience in instrument application procedures. However, instrumentation, or the specific process of instrument

application, does provide an additional limitation to the reliability of the study. While this study utilized a defined field test procedure of resource referencing, interviews with educators and government decision-makers, and clientele focus groups to complete the instruments in each of the identified field tests, other application procedures may be equally or more effective and could potentially produce different conclusions.

These limitations afford recommendations for further study. It must be concluded, however, that while there are limitations to reliability, the research procedures did accommodate the purpose and objectives of the study and, therefore, substantiate project validity. Further, the field tests validated the instruments, the production of which was the ultimate goal of the project, as they proved capable of withstanding application in all three countries. Work done under the Fulbright Project in the People's Republic of China and Cambodia attested to the fact that the instruments are suitable for assisting with the evaluation and improvement of an existing extension education system, while the USAID Project in Turkmenistan substantiated the suitability of the instruments when designing a new extension system.

IV-C. Recommendations for Further Study

Additional research is recommended in order to enhance the reliability of the project, the instruments produced, and the conclusions drawn in their application. Such research should

include further instrument review and refinement and field testing. Review and refinement should focus on a methodology which would reduce the limitations to reliability created by the subjectivity of review panel selection and instrument refinement.

Additional field testing is recommended with emphasis in two primary areas. First is field testing for further refinement of the instruments to enhance their usefulness to a wide variety of developing countries. Second is the evaluation of various instrument application techniques to reduce the limitation to reliability due to instrumentation.

Obviously, actual implementation of the conclusions derived through instrument application in various countries and subsequent follow-up studies evaluating the effectiveness of a "custom designed" extension system would be the ultimate test of instrument validity.

IV-D. Implications

Instruments which allow professional project analysts to identify and quantify factors which impact the effectiveness of an agricultural extension system in developing countries and then correlate those factors with components of existing extension education models can be effective tools for designing country specific extension education systems. Such an approach to the "customization" of a technology transfer system will more effectively contribute to the growth and development of a rural

economy, thereby enhancing the ability of a country to meet defined developmental goals and is worthy of study.

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Original Draft - "Country Analysis Instrument"

1. Size of Country (km ²) _____	17. Length of Coast (km) _____
2. Number of Sub-Units (states, districts, etc.) _____	18. Major Rivers (list) _____ _____
3. Average Size of Sub-Units (km ²) _____	19. Major Lakes (list) _____ _____
4. Size of Largest Sub-Unit (km ²) _____	20. Desert Area yes no
5. Size of Smallest Sub-Unit (km ²) _____	21. Percentage of Land Area Covered by Desert _____ %
6. Latitude of Northern-Most Boundary _____	<u>Climatic Situation: (CS)</u>
7. Latitude of Southern-Most Boundary _____	1. Climate of Major Agricultural Area _____
8. Longitude of Eastern-Most Boundary _____	2. Average Annual Rainfall (cm) _____
9. Longitude of Western-Most Boundary _____	3. Annual Rainfall Range (cm) _____ to _____
10. Highest Altitude (m) _____	4. Regions of Heaviest/Lightest Rainfall _____ _____
11. Lowest Altitude (m) _____	5. Avg. Annual Temperature (C) _____
12. Mountain Range above 15,000m yes no	6. Annual Temperature Range (C) _____ to _____
13. Mountain Range above 40,000m yes no	7. Regions of Highest/Lowest Temperatures _____ _____
14. Mountain Range above 65,000m yes no	8. Growing Degree Days in Major Agricultural Area
15. Percentage of Land Area Covered by Mountains _____ %	
16. Coastal Area yes no	

Demographic Situation: (DS)

1. Population _____

2. Distribution:

#: Municipality % Population____ Villages
(1-4,999) _________ Towns
(5,000-49,999) _________ Cities
(50,000-99,999) _________ Metropolis
(100,000+) _____

3. Annual Growth Rate _____%

4. Percent Population by:

Age:

Race:

____ 0-24 _____ Asia/Pacific

____ 25-34 _____ Black

____ 35-44 _____ Caucasian

____ 45-54 _____ Hispanic

____ 55-64 _____ Indian

____ 65+ _____ Oriental

Education:

____ Primary (0-8 yrs)

____ Secondary (9-12 yrs)

____ Trade/Technical

____ University (1-4 yrs)

____ Graduate

Employment:

____ Unpaid Family

____ Private Wage/Salary

____ Government

____ Church

____ Self-employed

Sex:

____ Male

____ Female

5. Percent Population by:

Income:

% Relative
Standard____

Region or Tribe:

% Affiliation____

Religion:

% Affiliation____

Political Situation: (PS)**1. Form of Government:**

- ☐ Democratic
☐ Socialistic
☐ Military Dictatorship
☐ Benevolent Dictatorship
☐ Monarchy
☐ Other: _____

2. Administrative Organization:

3. Branch of Government

Responsible for Education:

4. Primary Responsibilities of the Education Branch Include:

- ☐ Policy Formulation
☐ Regulation/Enforcement
☐ Promotion
☐ Education
☐ Research
☐ Other: _____

5. Branch of Government

Responsible for Agriculture:

6. Primary Responsibilities of Agriculture Branch Include:

- ☐ Policy Formulation
☐ Regulation /Enforcement
☐ Promotion & Marketing
☐ Financing & Credit
☐ Input Supply
☐ Education
☐ Research
☐ Other: _____

7. Administrative Organization of Governmental Branches:

8. Established Method of Government Policy Formation:

Economic Situation: (ES)

1. Form of Currency: _____
2. Current Exchange Rate with
U.S. Dollar (\$) _____/\$
3. Per Capita GNP (\$) _____
4. Average Annual Growth in GNP
_____ %
5. Average Annual Rate of
Inflation _____ %
6. Gross Domestic Product
(GDP; \$) _____ \$
7. Percent Distribution of GDP:

%	Source
_____	Agriculture
_____	Industry
_____	Services
%	Demand
_____	Public Consumption
_____	Gross Domestic Investment
_____	Private Consumption
_____	Gross Domestic Saving
_____	Exports
8. Current Balance of Payments
(\$) _____ \$
9. External Public Debt (\$) _____ \$
10. External Public Debt as a
Percentage of GNP _____ %
11. Interest Payments on External
Public Debt (\$) _____ \$

12. Debt Service on External

Public Debt as Percentage of:

_____ % Exports of Goods &
Services

_____ % GNP

Agricultural Situation: (AS)

1. Percent of Land Area Suited
to Crop Production _____ %
2. Percent of Land Area Under
Cultivation _____ %
3. Percentage of Cultivated Land
by Crop:

%	Crop	%	Crop
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

4. Regional Crop Delineations:

Region	Major Crops
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

Agricultural Situation (cont.)

5. Major Livestock Species in

Order Economic Significance:

<u>Specie</u>	<u>Estimated Total #</u>	<u>Common to Majority of Farms?</u>	
_____	_____	yes	no
_____	_____	yes	no
_____	_____	yes	no
_____	_____	yes	no
_____	_____	yes	no
_____	_____	yes	no

6. Does Fishing Play Major Role
in Most Farm Families' lives?

yes no

7. If so, describe:

8. Percent Farm Families by:

Farming System:

<u>%</u>	<u>System</u>
_____	Permanent Cropland/Pasture
_____	Slash and Burn
_____	Nomadic
_____	Confinement Livestock
_____	Kampong/Scavenging Livestock
_____	Other: _____

Income Source:

% Source

_____	Husband & Wife Both Working on Farm Full-Time
_____	Wife Working on Farm Full- Time & Husband Employed Elsewhere Full-Time
_____	Husband Working on Farm Full-Time & Wife Employed Elsewhere Full-Time
_____	Both Partners Working on Farm with Husband Working Elsewhere Part-Time
_____	Both Partners Working on Farm with Wife Working Elsewhere Part-Time
_____	Both Partners Working on Farm & Working Elsewhere Part-Time

9. Estimated Number of Permanent
Farms _____10. Estimated Average Size of
Permanent Farms _____11. Percent Permanent Farmland Owned
by:% Entity

_____	Individual Farm Families
_____	Government
_____	Absentee Landowners
_____	Corporations
_____	Other: _____

12. Family Farm Management

Decisions are Generally Made:

_____	By the Male Head of Household
_____	By the Female Head of Household
_____	Jointly

Agricultural Situation (cont.)

13. Family Farm Labor

Distribution:

Task	Men	Women	Children
Clearing Land	___	___	___
Tilling Soil	___	___	___
Planting Crops	___	___	___
Cultivation	___	___	___
Harvesting	___	___	___
Crop Marketing	___	___	___
Caring/Feeding of Livestock	___	___	___
Slaughtering of Livestock	___	___	___
Livestock Marketing	___	___	___
Food Prep	___	___	___

14. % Field Labor Provided by:

%	Source
___	Petroleum Powered Equipment & Machinery
___	Animal Powered Equipment
___	Hand Labor
___	Other: _____

15. Percent Farm Financing

Obtained through:

%	Source
___	Self-Financing
___	Government Programs
___	Private Bank
___	Private Financier, Investor, Broker
___	Farm Credit System

16. Percent of Family Farm

Production:

___ % Consumed at Home

___ % Marketed

17. Describe Marketing System:

18. Government Branch Responsible
for Agricultural Education:

___ Agricultural Branch

___ Educational Branch

19. Percent Agricultural

Education by Source:

% Source

___	On-Farm Experience
___	Vo-Ag Training in Primary Secondary Schools
___	Technical School Training
___	College/University Training
___	Extension Program(s)
___	Other: _____

Agricultural Situation (cont.)

20. Goals of Ag Education may be

Ranked in Descending Order of
Importance as follows:

- _____ Increasing Food Production
- _____ Increasing Farm Income
- _____ Improving the Efficiency of Production
- _____ Providing Financial Counseling
- _____ Providing Farm Inputs
- _____ Providing Farm Markets
- _____ Organizing Farm Commodity Groups & Organizations
- _____ Other: _____

21. Organizational Body

Responsible for Agricultural
Research:

22. Linkage between Agricultural
Research and Education:

23. Current Agricultural Policy

may be characterized as:

- _____ Supporting Low Consumer Food Prices
- _____ Providing Economic Incentives for Increased Production
- _____ Emphasizing Increased Production for Export to Reduce Balance of Trade Deficit
- _____ Emphasizing Increased Production to Increase Real Income of Farmers
- _____ Supporting Large-Scale Farmers
- _____ Supporting All Farmers
- _____ Supporting Broad-Based Agricultural Development
- _____ Other: _____

24. The Primary Goals for
Agricultural Development Are:

Infrastructure Situation: (IS)**1. Percent Urban Households with following service:**

	Less 10%	10- 30%	30- 50%	50- 70%	70- 90%	Over 90%
Phone	___	___	___	___	___	___
Daily Mail	___	___	___	___	___	___
Daily Paper	___	___	___	___	___	___
Elec	___	___	___	___	___	___
TV	___	___	___	___	___	___

2. Percent Rural Households with following service:

	Less 10%	10- 30%	30- 50%	50- 70%	70- 90%	Over 90%
Phone	___	___	___	___	___	___
Daily Mail	___	___	___	___	___	___
Daily Paper	___	___	___	___	___	___
Elec	___	___	___	___	___	___
TV	___	___	___	___	___	___

3. Condition of Major Road-

Highway Arteries is:

_____ Excellent
 _____ Good
 _____ Fair
 _____ Poor

4. Condition of Rural Roads is:

_____ Excellent
 _____ Good
 _____ Fair
 _____ Poor

5. General Observations Regarding Roadways:

6. % Transportation Provided

	Urban Area	Rural Area
Family-Owned Automobile	___%	___%
Taxi/Limo/Jeepny	___%	___%
Walking	___%	___%
Animal/Animal Cart	___%	___%
Public Transport	___%	___%
Man-Powered Bike/Rickshaw	___%	___%
Other	___%	___%

7. General Observations on Air and Rail Transportation:

General or Desired
Characteristics Impacting an
Agricultural Extension Education
System: (DCS)

1. From Policy Makers'

Perspective, It is Considered
 Most Desirable for Ag
 Extension System to be

A. Administered by:

- _____ The Agricultural Branch
of the Federal Government
- _____ The Educational Branch of
the Federal Government
- _____ Another Branch of the
Federal Government:

- _____ An Agricultural College
or University
- _____ Another Public Body:

- _____ An Independent Company or
Organization
- _____ An Autonomous, Self-
Directed Extension System
- _____ Other: _____

B. Responsible for:

- _____ Regulation & Enforcement
- _____ Administration/Direction
- _____ Policy Formulation
- _____ Promotion & Marketing
- _____ Financing & Credit
- _____ Input Supply
- _____ Education
- _____ Research
- _____ Other: _____

**C. Organized with Staff and
 Offices on a:**

- _____ National Level
- _____ Sub-Unit Level
- _____ Local Level
- _____ Other: _____

D. Funded by:

- _____ Federal Government
- _____ Sub-Unit Governments
- _____ Local Governments
- _____ Self-Supported: Project
- _____ Profits, User Fees
- _____ Private Foundations
- _____ Development Assistance
Funds
- _____ Combination of Above:

- _____ Other: _____

E. Staffed by:

- _____ University Graduates at all
Levels
- _____ University Graduates at
Administrative Levels
and Technical School
Graduates at Local Levels
- _____ University Graduates at
Administrative Levels
and Specially Trained
Individuals at Local Levels
- _____ Technical School Graduates
at all Levels
- _____ Nationals at all Levels
- _____ A Mixture of Nationals and
Non-Nationals at all
Levels
- _____ Nationals at _____
Levels and Non-Nationals
at _____ Levels
- _____ Men at all Levels

E. Staffed by: (cont.)

- ___ A Mixture of Men and Women
at all Levels
- ___ Men at _____ Levels
and Women at _____
Levels
- ___ Other: _____

- ___ Other: _____

F. Directed in Terms of Program**Priorities by:**

- ___ Clientele Advisory Groups
- ___ Central Federal
Administration
- ___ University Administration
- ___ Autonomous Public Sector
Body
- ___ Donor-Assisted Project
Organization
- ___ Autonomous Economic and
Social Development Body
- ___ Other: _____

G. Staffed with/at:

	<u>Federal Level</u>	<u>Sub-Unit Level</u>	<u>Local Level</u>
Admini- stration	___	___	___
Subject Specialist	___	___	___
Extension Educators	___	___	___
Other:	___	___	___
_____	___	___	___
_____	___	___	___

H. Linked with Research Centers**through:**

- ___ Dual-Assigned Personnel
- ___ Locally Administered
Research Plots & Programs
- ___ Joint Determination of
Research Priorities
- ___ Co-Authored Research
Publications
- ___ Other: _____

I. Associated with/on:

	<u>Formal Basis</u>	<u>Informal Basis</u>
Farm Credit System	___	___
Farm Supply Organizations	___	___
Marketing Organizations	___	___
Promotional Groups	___	___
Other:	___	___
Other:	___	___

J. Supported with/at:

	<u>Federal Level</u>	<u>Sub-Unit Level</u>	<u>Local Level</u>
Office Space	___	___	___
Office Equipment	___	___	___
Office Supplies	___	___	___
Secretarial Staff	___	___	___
Transport	___	___	___
Educational Materials	___	___	___

J. Supported with/at: (cont.)

	<u>Federal Level</u>	<u>Sub-Unit Level</u>	<u>Local Level</u>
Audio-Visual Equipment _____	_____	_____	_____
Operating Capital _____	_____	_____	_____
Pre-Service Training _____	_____	_____	_____
In-Service Education _____	_____	_____	_____
Other: _____	_____	_____	_____
Other: _____	_____	_____	_____

2. From User's Perspective, It is
Considered Most Desirable for
Ag Extension System to be ..

A. Administered by:

_____ The Agricultural Branch of
the Federal Government

_____ The Educational Branch of
the Federal Government

_____ Another Branch of the
Federal Government:

_____ An Agricultural College or
University

_____ Another Public Body:

_____ An Independent Company or
Organization

_____ An Autonomous, Self-
Directed Extension System

_____ Other: _____

B. Responsible for:

_____ Regulation & Enforcement

_____ Administration/Direction

_____ Policy Formulation

_____ Promotion & Marketing

_____ Financing & Credit

_____ Input Supply

_____ Education

_____ Research

_____ Other: _____

C. Organized with Staff and**Offices on a:**

_____ National Level

_____ Sub-Unit Level

_____ Local Level

_____ Other: _____

D. Funded by:

_____ Federal Government

_____ Sub-Unit Governments

_____ Local Governments

_____ Self-Supported: Project
Profits, User Fees

_____ Private Foundations

_____ Development Assistance
Funds

_____ Combination of the Above:

_____ Other: _____

E. Staffed by:

- _____ University Graduates at all Levels
- _____ University Graduates at Administrative Levels and Technical School Graduates at Local Levels
- _____ University Graduates at Administrative Levels and Specially Trained Individuals at Local Levels
- _____ Technical School Graduates at all Levels
- _____ Nationals at all Levels
- _____ A Mixture of Nationals and Non-Nationals at all Levels
- _____ Nationals at _____ Levels and Non-Nationals at _____ Levels
- _____ Men at all Levels
- _____ A Mixture of Men and Women at all Levels
- _____ Men at _____ Levels and Women at _____ Levels
- _____ Other: _____
- _____ Other: _____

F. Directed in Terms of Program**Priorities by:**

- _____ Clientele Advisory Groups
- _____ Central Federal Administration
- _____ University Administration
- _____ Autonomous Public Sector Program Body
- _____ Donor-Assisted Project Organization
- _____ Autonomous Economic and Social Development Body
- _____ Other: _____

G. Associated with/on:

	<u>Formal Basis</u>	<u>Informal Basis</u>
Farm Credit System	_____	_____
Farm Supply Organizations	_____	_____
Marketing Organizations	_____	_____
Promotional Groups	_____	_____
Other:	_____	_____
Other:	_____	_____

Other Pertinent Observations:

1. _____
- _____
- _____
- _____
- _____
- _____
- _____
- _____
- _____
2. _____
- _____
- _____
- _____
- _____
- _____
- _____
- _____

3. _____

4. _____

5. _____

6. _____

7. _____

8. _____

9. _____

10. _____

APPENDIX B.

Original Draft - "Model Correlation Instrument"

Note:

1. This instrument should be used after completion of the "Country Analysis Instrument" and requires information and data derived from its application for completion.
2. For purposes of abbreviation, the following initials are used when referring to "Analysis Factors" included in the "Country Analysis Instrument":

GS	Geographic Situation	ES	Economic Situation
CS	Climatic Situation	AS	Agricultural Situation
DS	Demographic Situation	IS	Infrastructure Situation
PS	Political Situation	DCS	Desired Characteristics
3. For purposes of abbreviation, the following initials are used to identify the "Agricultural Extension Education Models" from which various components are derived:

CAES	Conventional Agricultural Extension System
TVS	Training and Visit System
UAES	University Agricultural Extension System
CDPS	Commodity Development and Production System
IADS	Integrated Agricultural Development System
IRDS	Integrated Rural Development System
FSRDS	Farming Systems Research and Development System
ALL	All of the Above Listed Systems

Model Objectives:

1. Objectives should be set by:

Analysis Factors - PS 3-6,8; AS 18; DCS 1B,1F,2B,2F

- _____ Clientele Advisory Groups (UAES)
- _____ Central Federal Administer (CAES,TVS)
- _____ University Administration (UAES)
- _____ Autonomous Public Sector Program Body (CDPS)
- _____ Donor-Assisted Project Organization (IADS)
- _____ Autonomous Economic and Social Development Organization (IRDS)
- _____ Other: _____

2. Objectives should be defined as:

Analysis Factors - AS 20,23,24

- _____ Providing &/or Maintaining Low Consumer Food Prices (UAES,CDPS)
- _____ Providing Economic Incentives for Increased Agricultural Production (CDPS,IADS,IRDS)
- _____ Increasing Agricultural Production for Export to Reduce Balance of Trade Deficit (CAES,CDPS)
- _____ Increasing Agricultural Production to Increase Real Income of Farmers (ALL)
- _____ Improving the Lot of Large-Scale Farmers (IADS)
- _____ Improving the Quality of Life for the Entire Rural Population (ALL)
- _____ Providing for Broad-Based Agricultural Development (CAES,TVS,UAES,FSRD)

2. Objectives should be defined as: (cont.)

Analysis Factors - AS 20,23,24

- _____ Strengthening the Family and Home (UAES)
- _____ Enhancing the Environment and the Use of Natural Resources (UAES,FSRD)
- _____ Supporting Communities Toward the Goal of Community Improvement (UAES)
- _____ Improving Local Leadership and Initiative (UAES,IRDS)
- _____ Increasing the Availability of Social Programs in Health, Nutrition, and Basic Education (IRDS)
- _____ Other: _____

Model Clientele:

1. Scope of Clientele should be:

Analysis Factors - DS 1,2,4,5; AS 8-13

- _____ Entire Population (UAES)
- _____ Entire Farm Population (TVS)
- _____ Large-Scale Farmers (CAES,IADS)
- _____ Small-Scale Farmers (IRDS,FSRD)
- _____ All Farmers within an Identified Project Area (IADS)
- _____ Other Target Groups within the Farm Population, ie. producers of specific commodities, women, etc. (CAES,CDPS)
- _____ Other: _____

Model Organization:

1. Should be Administered by:

**Analysis Factors - PS 1-3,5,7,8;
AS 18; DCS 1A,2A**

_____ Agricultural Branch of the
Federal Government
(CAES,TVS)

_____ Educational Branch of the
Federal Government

_____ Another Branch of Federal
Government:

_____ Agricultural College or
University (UAES)

_____ Another Public Body: (CDPS)

_____ Independent Company or
Organization (IADS,IRDS)

_____ Autonomous, Self-Directed
Extension System

_____ Other: _____

2. Should be Responsible for:

**Analysis Factors - PS 4,6; AS
18,21; DCS 1B,2B**

_____ Regulation and Enforcement
(CAES)

_____ Administration and
Direction (CAES)

_____ Policy Formulation

_____ Promotion and Marketing
(CDPS,IADS)

_____ Financing and Credit
(CDPS,IADS)

_____ Input Supply
(CAES,CDPS,IADS)

_____ Education (ALL)

_____ Research (FSRD)

_____ Other: _____

3. Should be Organized with Staff
and Offices on a:

**Analysis Factors - GS 1-21;CS 1-
8;DS 1-5;AS 1-9;IS 1-7;DCS 1C,2C**

_____ National Level
(CAES,TVS,UAES)

_____ Sub-Unit Level
(CAES,TVS,UAES,CDPS,FSRD);
if so, number of Sub-Unit
Facilities _____

_____ Local Level (ALL); if so,
number of Local Facilities _____

_____ Other: _____

4. Should be Funded by:

**Analysis Factors - DS 4,5; ES 1-
12; AS 15; DCS 1D,2D**

_____ Federal Government
(CAES,TVS,UAES)

_____ Sub-Unit Governments
(CAES,UAES)

_____ Local Governments (UAES)

_____ Self-Supported: Project
Profits, User Fees (CDPS)

_____ Private Foundations

_____ Development Assistance
Funds (IADS,ISRD)

_____ Combination of the Above
(FSRD)

_____ Other: _____

Model Organization (cont.)**5. Should be Staffed by:**

Analysis Factors - DS 4,5; PS 1,2,7; AS 8,12,13,19; DCS 1E,2E

____ University Graduates at all Levels (UAES,FSRD)

____ University Graduates at Administrative Levels & Technical School Graduates at Local Levels (CAES,CDPS,IADS,IRDS)

____ University Graduates at Administrative Levels & Specially Trained Individuals at Local Levels (TVS)

____ Technical School Graduates at all Levels

____ Nationals at all Levels (CAES,TVS,UAES,CDPS)

____ A Mixture of Nationals and Non-Nationals at all Levels (FSRD)

____ Nationals at _____ Levels and Non-Nationals at _____ Levels (IADS,IRDS)

____ Men at all Levels

____ A Mixture of Men and Women at all Levels (CAES,UAES)

____ Men at _____ Levels and Women at _____ Levels (TVS,CDPS,IADS,IRDS,FSRD)

____ Other: _____

____ Other: _____

____ Other: _____

____ Other: _____

6. Should be Staffed with:

Analysis Factors - PS 1-7; AS 18,21,22; DCS 1G

	<u>Federal Level</u>	<u>Sub-Unit Level</u>	<u>Local Level</u>
Admini- strators	(CAES,TVS,UAES)	(ALL)	(CAES,TVS,FSRD)
Subject Specialists	(CAES,TVS,UAES)	(ALL)	_____
Extension Educators	(CAES,TVS,UAES)	(CAES,TVS,UAES,CDPS,FSRD)	(ALL)

Other: _____

7. Should be Linked with Research Centers through:

Analysis Factors - PS 1-7; AS 21,22; DCS 1H

____ Dual-Assigned Personnel (CAES,UAES,FSRD)

____ Locally Administered Research Plots and Programs (FSRD)

____ Joint Determination of Research Priorities (CAES,TVS,UAES,CDPS,FSRD)

____ Co-Authored Research Publications (UAES)

____ Other: _____

____ Other: _____

____ Other: _____

Model Organization (cont.)

8. Should be Associated with:

Analysis Factors - PS 1-7; ES 6-12; AS 1-12,14-17; IS 1-7; DCS 1I,2G

	<u>Formal Basis</u>	<u>Informal Basis</u>
Farm Credit System	(CDPS, IADS, IRDS)	(CAES, TVS, UAES, FSRD)
Farm Supply Organizations	(CDPS, IADS, IRDS)	(CAES, TVS, UAES, FSRD)
Marketing Organizations	(CDPS, IADS, IRDS)	(CAES, TVS, UAES)
Promotional Groups	(CDPS, IADS, IRDS)	(CAES, TVS, UAES)
Other:	_____	_____
	_____	_____

9. Should be Supported with:

Analysis Factors - IS 1-7; DCS 1J

Component Derivation Inapplicable

	<u>Federal Level</u>	<u>Sub-Unit Level</u>	<u>Local Level</u>
Office Space	_____	_____	_____
Office Equipment	_____	_____	_____
Office Supplies	_____	_____	_____
Secretarial Staff	_____	_____	_____
Transport	_____	_____	_____
Educational Materials	_____	_____	_____
Reference Materials	_____	_____	_____
Audio-Visual Equipment	_____	_____	_____

9. Supported with: (cont.)

Analysis Factors - IS 1-7; DCS 1J

Component Derivation Inapplicable

	<u>Federal Level</u>	<u>Sub-Unit Level</u>	<u>Local Level</u>
Operating Capital	_____	_____	_____
Pre-Service Training	_____	_____	_____
In-Service Education	_____	_____	_____
Other:	_____	_____	_____
	_____	_____	_____

Model Approach:

1. Educational Approach should be:

Analysis Factors - GS 1-5; DS 1-5; AS 3-17,20; IS 1-7; DCS 1C-1J,2C-2G

_____ One-on-One Contact by Local Extension Workers through Irregular Home & Farm Visits & Office Calls (CAES,UAES)

_____ Agricultural Information Units for Production of Bulletins, Teaching Aids, Radio Programs, & Mass Media Materials (CAES)

_____ Local Extension Workers Contact Local Farmers on a Fixed Schedule (TVS)

_____ Local Extension Workers Receive Training on a Fixed Schedule (TVS)

_____ Local Advisory Councils Provide Guidance & Assistance in Financial, Operational, Programming, & Evaluation Processes of Extension Program (UAES,IRDS)

Model Approach (cont.):**1. Approach should be (cont.):**

Analysis Factors - GS 1-5; DS 1-5; AS 3-17,20; IS 1-7; DCS 1C-1J,2C-2G

- _____ Local Extension Personnel Use Research-Based Information to Help Local People Identify & Establish Need Priorities & then Request Instructional Assistance from Subject-Matter Specialists on Selected Topics (UAES)
- _____ Local Farmers Contract to Produce an Identified Commodity Using Recommended Practices & the Commodity Organization Contracts to Provide Commodity Research, Credit, Input Supply, Technical Assistance, & Marketing Services (CDPS)
- _____ Pilot Project Established in which the Organization Provides Previously Limited Inputs Assumes the Responsibility for Coordinating All Facets of Agricultural Production, Including Credit, Supply, Technical Assistance, & Marketing Services (IADS, IRDS)
- _____ Establishment of an Interdisciplinary Team which Conducts On-Farm Research to Evaluate the Interplay of the Production Components under Farmer's Control & the Physical, Biological & Socio-Economic Environments; Identifies & Generates New Technology; Adapts & Tests Technologies in Project Area Possessing Reasonably Uniform Characteristics (FSRD)
- _____ Other: _____
- _____
- _____
- _____
- _____

Model Role of Extension Personnel:**1. Role of Local Extension Personnel should be:**

Analysis Factors - PS 3-6; AS 20,21,24; DCS 1B,1D,2B,2D

- _____ Consultant; identify farmer problems/needs & production constraints (CAES, TVS, CDPS, IADS)
- _____ Advisor; work with local people to identify & prioritize problems/needs & possible solutions (UAES, IRDS, FSRD)
- _____ Communicator; communicate farmer problems/needs & production constraints to subject-matter specialists & research workers (CAES, TVS, UAES, FSRD)
- _____ Educator; disseminate research-based information about new technology & demonstrate its practical application to farmers (ALL)
- _____ Motivator; encourage application of improved methods or identified solutions to problems (TVS, UAES, IRDS, FSRD)
- _____ Evaluator; work with local people to evaluate the effectiveness of new techniques & extension programs (UAES, IRDS, FSRD)
- _____ Researcher; conduct on-farm research to determine the practicality & effectiveness of new technology (FSRD)
- _____ Government Administrator; administer government programs & policies on the local level (CAES)
- _____ Supplier; provide farmers with required inputs (CDPS, IADS)
- _____ Marketer; coordinate product marketing (CDPS, IADS, IRDS)
- _____ Other: _____

IDENTIFIED DESIGN PARAMETERS**I. Objectives to be Established by:**

II. Objectives to be Defined as:A.

B.

C.

D.

III. Scope of Clientele to be:

IV. Organization to be:**National Level**

Function:	Personnel Requirement:
<hr/> Administration	<hr/>
<hr/> Research	<hr/>
<hr/> Education	<hr/>
<hr/> Other:	<hr/>
<hr/>	
<hr/> Other:	<hr/>
<hr/>	

A. Sub-Unit Level 1

Function:	Personnel Requirement:
<hr/> Administration	<hr/>
<hr/> Research	<hr/>
<hr/> Education	<hr/>
<hr/> Other:	<hr/>
<hr/>	
<hr/> Other:	<hr/>
<hr/>	

1. Local Unit 1

Function:	Personnel Requirement:
<hr/> Administration	<hr/>
<hr/> Research	<hr/>
<hr/> Education	<hr/>
<hr/> Other:	<hr/>
<hr/>	
<hr/> Other:	<hr/>
<hr/>	

IV. Organization to be (cont.):

B. Sub-Unit Level 22. Local Unit 2

Function:	Personnel Requirement:	Function:	Personnel Requirement:
___ Administration	___	___ Administration	___
___ Research	___	___ Research	___
___ Education	___	___ Education	___
___ Other:	___	___ Other:	___
_____		_____	
___ Other:	___	___ Other:	___
_____		_____	

1. Local Unit 13. Local Unit 3

Function:	Personnel Requirement:	Function:	Personnel Requirement:
___ Administration	___	___ Administration	___
___ Research	___	___ Research	___
___ Education	___	___ Education	___
___ Other:	___	___ Other:	___
_____		_____	
___ Other:	___	___ Other:	___
_____		_____	

2. Local Unit 24. Local Unit 4

Function:	Personnel Requirement:	Function:	Personnel Requirement:
___ Administration	___	___ Administration	___
___ Research	___	___ Research	___
___ Education	___	___ Education	___
___ Other:	___	___ Other:	___
_____		_____	
___ Other:	___	___ Other:	___
_____		_____	

IV. Organisation to be (cont.):

1. Local Unit 13. Local Unit 3

Function:	Personnel Requirement:	Function:	Personnel Requirement:
___ Administration	___	___ Administration	___
___ Research	___	___ Research	___
___ Education	___	___ Education	___
___ Other:	___	___ Other:	___
___	___	___	___
___ Other:	___	___ Other:	___
___	___	___	___

2. Local Unit 24. Local Unit 4

Function:	Personnel Requirement:	Function:	Personnel Requirement:
___ Administration	___	___ Administration	___
___ Research	___	___ Research	___
___ Education	___	___ Education	___
___ Other:	___	___ Other:	___
___	___	___	___
___ Other:	___	___ Other:	___
___	___	___	___

3. Local Unit 3C. Sub-Unit Level 3

Function:	Personnel Requirement:	Function:	Personnel Requirement:
___ Administration	___	___ Administration	___
___ Research	___	___ Research	___
___ Education	___	___ Education	___
___ Other:	___	___ Other:	___
___	___	___	___
___ Other:	___	___ Other:	___
___	___	___	___

IV. Organisation to be (cont.):

2. Local Unit 24. Local Unit 4

Function:	Personnel Requirement:	Function:	Personnel Requirement:
___ Administration	___	___ Administration	___
___ Research	___	___ Research	___
___ Education	___	___ Education	___
___ Other:	___	___ Other:	___
___	___	___	___
___ Other:	___	___ Other:	___
___	___	___	___

3. Local Unit 3D. Sub-Unit Level 4

Function:	Personnel Requirement:	Function:	Personnel Requirement:
___ Administration	___	___ Administration	___
___ Research	___	___ Research	___
___ Education	___	___ Education	___
___ Other:	___	___ Other:	___
___	___	___	___
___ Other:	___	___ Other:	___
___	___	___	___

4. Local Unit 4.1. Local Unit 1

Function:	Personnel Requirement:	Function:	Personnel Requirement:
___ Administration	___	___ Administration	___
___ Research	___	___ Research	___
___ Education	___	___ Education	___
___ Other:	___	___ Other:	___
___	___	___	___
___ Other:	___	___ Other:	___
___	___	___	___

V. Educational Approach to be:

A. _____

B. _____

C. _____

D. _____

E. _____

VI. Role of Extension Personnel to be:

A. _____

B. _____

C. _____

D. _____

E. _____

APPENDIX C.

Instrument Evaluation Form

	Not At All	Slight Extent	Fair Extent	Great Extent
1. To what extent does the Country Analysis Instrument:				
a. identify impactors which affect success of an extension system?	_____	_____	_____	_____
b. provide appropriate quantitative evaluation of these impactors?	_____	_____	_____	_____
c. provide appropriate qualitative evaluation of these impactors?	_____	_____	_____	_____
d. list factor analysis questions in a logical order?	_____	_____	_____	_____
e. list questions in a manner which is easily interpreted and understood?	_____	_____	_____	_____
f. provide practical tool which can be used by analysts to determine situation in developing country?	_____	_____	_____	_____
2. What additional Analysis Categories should be included in the Country Analysis Instrument?				
_____ None, the instrument appears complete				
_____ Suggest the following additions to the instrument:				
_____	_____			
_____	_____			
3. What additional specific Analysis Factors should be included in the Country Analysis Instrument?				
_____ None, the instrument appears complete				
_____ Suggest the following additions to the instrument:				
_____	_____			
_____	_____			
_____	_____			

4. Which Analysis Factors currently included in the Country Analysis Instrument should be deleted?

_____ None, the instrument appears appropriate as is

_____ Suggest the following deletions from the instrument:

5. Which Analysis Factors currently included in the Country Analysis Instrument are appropriate considerations, but need considerable alteration in order to be understandable and/or provide the desired analysis information? Note: Please make suggested alterations on instrument copy.

_____ None, the instrument appears appropriate as is

_____ Suggest the following factors need alteration:

	Not At All	Slight Extent	Fair Extent	Great Extent
6. To what extent does the Model Correlation Instrument:				
a. identify existing alternative components?	_____	_____	_____	_____
b. identify alternative components with their model derivation?	_____	_____	_____	_____
c. identify analysis factors that should be considered when selecting appropriate component alternatives?	_____	_____	_____	_____
d. list model component areas in logical order?	_____	_____	_____	_____
e. list component alternatives in logical order?	_____	_____	_____	_____
f. list questions in manner easily interpreted & understood?	_____	_____	_____	_____
g. provide for definition & identification of appropriate design parameters?	_____	_____	_____	_____
h. provide practical tool for use by analysts to develop appropriate design parameters?	_____	_____	_____	_____

7. What additional Model Component Areas should be included in the Model Correlation Instrument?

_____ None, the instrument appears complete

_____ Suggest the following additions to the instrument:

_____	_____
_____	_____

8. What additional specific Component Alternatives should be included in the Model Correlation Instrument?

_____ None, the instrument appears complete

_____ Suggest the following additions to the instrument:

_____	_____
_____	_____
_____	_____

9. Which Component Alternatives currently included in the Model Correlation Instrument should be deleted?

_____ None, the instrument appears appropriate as is

_____ Suggest the following deletions from the instrument:

_____	_____
_____	_____

10. Which Component Alternatives currently included in the Model Correlation Instrument are appropriate considerations, but need considerable alteration in order to be understandable and/or provide the desired component selection? Note: Please make suggested alterations on instrument copy.

_____ None, the instrument appears appropriate as is

_____ Suggest the following factors need alteration:

_____	_____
_____	_____

11. To what extent are the Country Analysis and Model Correlation Instruments useful tools for analysts as they approach the project of designing an appropriate agricultural extension education system for a developing country?

_____ Not At All _____ Fair Extent
 _____ Slight Extent _____ Great Extent

12. To what extent would the instruments actually be used by analysts in development projects if they were available?

_____ Not At All _____ Fair Extent
 _____ Slight Extent _____ Great Extent

13. Additional Comments/Suggestions:

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.**Reviewers Name**

APPENDIX D.

Instrument Evaluation Form - First Wave Summary

Note: Total Respondents: 20

Figures above blanks represent actual numbers

Figures below blanks represent percentage of total

	Not At All	Slight Extent	Fair Extent	Great Extent
1. To what extent does the Country Analysis Instrument:				
a. identify impactors which affect success of an extension system?	<u>0</u> 0	<u>2</u> 10	<u>10</u> 50	<u>8</u> # 40 %
b. provide appropriate quantitative evaluation of these impactors?	<u>0</u> 0	<u>5</u> 25	<u>12</u> 60	<u>3</u> # 15 %
c. provide appropriate qualitative evaluation of these impactors?	<u>2</u> 10	<u>11</u> 55	<u>7</u> 35	<u>0</u> # 0 %
d. list factor analysis questions in a logical order?	<u>0</u> 0	<u>3</u> 15	<u>8</u> 40	<u>9</u> # 45 %
e. list questions in a manner which is easily interpreted and understood?	<u>0</u> 0	<u>1</u> 5	<u>5</u> 25	<u>14</u> # 70 %
f. provide practical tool which can be used by analysts to determine situation in developing country?	<u>1</u> 5	<u>4</u> 20	<u>10</u> 50	<u>5</u> # 25 %
2. What additional Analysis Categories should be included in the Country Analysis Instrument?				
	<u>14</u> # None, the instrument appears complete 70 %			
	<u>6</u> # Suggest the following additions to the instrument: 30 %			

<u>Suggested Additional Category</u>	<u>Number of Respondents</u>
Cultural Situation	4/6
Communication Network	2/6

3. What additional specific Analysis Factors should be included in the Country Analysis Instrument?

2 # None, the instrument appears complete
10 %

18 # Suggest the following additions to the instrument:
90 %

<u>Current Analysis Categories</u>	<u>Suggested Additional Analysis Factors</u>	<u>Number of Respondents</u>
N/A	Name of Country	7/18
N/A	Date of Analysis	10/18
Geographic	Sub-Units - add Provinces	1/18
Geographic	Add Lowlands/Flains	3/18
Climatic	Seasonal Variations	2/18
Agricultural	Add Total Number of Farms	5/18
Agricultural	Value of Crops by Sub-Units	8/20

4. Which Analysis Factors currently included in the Country Analysis Instrument should be deleted?

0 # None, the instrument appears appropriate as is
0 %

20 # Suggest the following deletions from the instrument:
100 %

<u>Current Analysis Categories</u>	<u>Suggested Analysis Factors to Eliminate</u>	<u>Number of Respondents</u>
Geographic	Average Size of Sub-Units	3/20
Geographic	Latitude, Longitude, Altitude	17/20
Geographic	Desert Area - yes, no	5/20
Demographic	Distribution by Municipality	13/20
Demographic	Population by Income Standard	14/20
Agricultural	Land Suited to Crop Production	9/20
Agricultural	# Permanent Farms/Avg Farm Size	10/20
Agricultural	Field Labor Provided by:	6/20

5. Which Analysis Factors currently included in the Country Analysis Instrument are appropriate considerations, but need considerable alteration in order to be understandable and/or provide the desired analysis information? Note: Please make suggested alterations on instrument copy.

0 # None, the instrument appears appropriate as is
0 %

20 # Suggest the following factors need alteration:
100 %

<u>Current Analysis Categories</u>	<u>Suggested Analysis Factors to Alter</u>	<u>Number of Respondents</u>
Geographic	Sub-Unit Size	15/20
Geographic	Mountain Range Designations	9/20
Geographic	Add Rivers & Lakes to Barriers	4/20
Climatic	Climate of Ag Area to Primary	10/20
Climatic	Temperature/Rainfall of Sub-Units	11/20
Climatic	Growing Degree Days to Season	17/20
Demographic	Change Race Designations	14/20
Demographic	Change Region, Tribe, Religion	8/20
Political	Identify Policy Formation Methods	1/20
Agricultural	Change Crop Designations	9/20
Agricultural	Change Livestock Designations	16/20
Agricultural	List Fish by Marine & Fresh	6/20

	Not At All	Slight Extent	Fair Extent	Great Extent
6. To what extent does the Model Correlation Instrument:				
a. identify existing alternative components?	<u>0</u> 0	<u>0</u> 0	<u>2</u> 10	<u>18</u> # 90 %
b. identify alternative components with their model derivation?	<u>0</u> 0	<u>0</u> 0	<u>1</u> 5	<u>19</u> # 95 %
c. identify analysis factors that should be considered when selecting appropriate component alternatives?	<u>0</u> 0	<u>1</u> 5	<u>4</u> 20	<u>15</u> # 75 %
d. list model component areas in logical order?	<u>0</u> 0	<u>0</u> 0	<u>0</u> 0	<u>20</u> # 100 %
e. list component alternatives in logical order?	<u>0</u> 0	<u>0</u> 0	<u>2</u> 10	<u>18</u> # 90 %
f. list questions in manner easily interpreted/understood?	<u>0</u> 0	<u>0</u> 0	<u>3</u> 15	<u>17</u> # 75 %
g. provide for definition & identification of appropriate design parameters?	<u>0</u> 0	<u>1</u> 5	<u>3</u> 15	<u>16</u> # 80 %
h. provide practical tool for use by analysts to develop appropriate design parameters?	<u>0</u> 0	<u>1</u> 5	<u>4</u> 20	<u>15</u> # 75 %
7. What additional Model Component Areas should be included in the Model Correlation Instrument?				
<u>19</u> # None, the instrument appears complete 95 %				
<u>1</u> # Suggest the following additions to the instrument: 5 %				
Suggested Additional Model Component	Number of Respondents			
Programming Prioritization	1/1			

8. What additional specific Component Alternatives should be included in the Model Correlation Instrument?

20 # None, the instrument appears complete
100 %

0 # Suggest the following additions to the instrument:
0 %

9. Which Component Alternatives currently included in the Model Correlation Instrument should be deleted?

16 # None, the instrument appears appropriate as is
80 %

4 # Suggest the following deletions from the instrument:
20 %

<u>Current Model Component</u>	<u>Suggested Component Alternative to Eliminate</u>	<u>Number of Respondents</u>
Organization	Supported with - All	4/4

10. Which Component Alternatives currently included in the Model Correlation Instrument are appropriate considerations, but need considerable alteration in order to be understandable and/or provide the desired component selection? Note: Please make suggested alterations on instrument copy.

14 # None, the instrument appears appropriate as is
70 %

6 # Suggest the following factors need alteration:
30 %

<u>Current Model Component</u>	<u>Suggested Component Alternative to Alter</u>	<u>Number of Respondents</u>
Identified Design Parameters	Organization to be - reduce	6/6

11. To what extent are the Country Analysis and Model Correlation Instruments useful tools for analysts as they approach the project of designing an appropriate agricultural extension education system for a developing country?

0 # Not At All 8 # Fair Extent
0 % 40 %

2 # Slight Extent 10 # Great Extent
10 % 50 %

12. To what extent would the instruments actually be used by analysts in development projects if they were available?

<u>1</u> # Not At All	<u>12</u> # Fair Extent
5 %	60 %
<u>6</u> # Slight Extent	<u>1</u> # Great Extent
30 %	5 %

13. Additional Comments/Suggestions:

<u>Paraphrased Comments</u>	<u>Number of Respondents</u>
a. Expand size and format dramatically to accommodate completion	16/20
b. Adjust format, language, punctuation of analysis instrument to increase understanding	12/20
c. Eliminate unnecessary analysis factors	9/20
d. Eliminate or change analysis factors with strong U.S. bias	8/20
e. Add country name and date of instrument completion	8/20
f. Clarify the analysis used to select components based on analysis factors	4/20

APPENDIX E.

First Revision - "Country Analysis Instrument"

Country: _____ Date _____

Geographic Situation: (GS)

1. Size of Country (km²) _____
2. Number of Sub-Units (districts, provinces, states, etc.) _____
3. Percentage of Total Land Area Covered by Mountains _____ %
4. Percentage of Total Land Area covered by Plains or Lowlands _____ %
5. Percentage of Total Land Area Covered by Desert _____ %
6. Percentage of Total Land Area Covered by Jungle _____ %
7. Coastal Area _____ Yes _____ No
8. If so, Total Length of Coast (km) _____
9. List the country sub-units and identify specific characteristics of each by filling-in blanks with specific areas, percentages, or simply checking all that apply. Combination situations may be accommodated by completing more than one blank per sub-unit as applicable.

<u>Sub-Unit</u>	<u>km²</u>	<u>Mountains</u>	<u>Desert</u>	<u>Jungle</u>	<u>Coast</u>	<u>Plains/ Lowlands</u>
_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____

10. Identify specific geographical barriers (ie. jungle area, mountainous region, major river or lake) in sub-units which potentially impede the development and/or success of an agricultural extension system.

<u>Sub-Unit</u>	<u>Potential Geographic Barrier</u>
_____	_____
_____	_____
_____	_____

Climatic Situation: (CS)

1. Primary Climate of Country (tropical, sub-tropical, arid, temperate) _____
2. Average Annual Rainfall of Country (cm) _____
3. Seasonal Variation: _____ Yes _____ No
4. If so, Identify Seasons and Associated Months:

<u>Season</u>	<u>From</u>	<u>Months</u>	<u>Through</u>
_____	_____		_____
_____	_____		_____
_____	_____		_____
_____	_____		_____

5. List the country sub-units and identify specific characteristics of each by filling-in blanks with specific information.

<u>Sub-Unit</u>	<u>Average Annual</u> <u>Rainfall</u>	<u>Temperature</u> <u>Normal High</u>	<u>Normal Low</u>	<u>Average Days</u> <u>in Growing</u> <u>Season</u>
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

Demographic Situation: (DS)

1. Total Population _____

2. Percent Annual Growth Rate _____ %

3. Identify the Percent Population by:

A. Sex:

_____ % Female _____ % Male

B. Age:

_____ % 0-24 years _____ % 45-54 years

_____ % 25-34 years _____ % 55-64 years

_____ % 35-44 years _____ % 65+ years

C. Education:

_____ % Primary _____ % Trade/Technical

_____ % Secondary _____ % University

_____ % Post Secondary _____ % Professional

D. Employment:

_____ % Unpaid Family _____ % Farming

_____ % Self-employed _____ % Fishing

_____ % Private Business _____ % Manufacturing

_____ % Government _____ % Retail

_____ % Church _____ % Service

_____ % Other _____ % Other

3. Identify the Percent Population by: (con'd.)

E. Cultural Heritage by Primary Racial Groups, Tribes,
Religions, Cultural Minorities, etc.

<u>Heritage</u>	<u>%</u>	<u>Heritage</u>	<u>%</u>
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

Political Situation: (PS)

1. Form of National Government:

_____ Monarchy	_____ Benevolent Dictatorship
_____ Socialism	_____ Military
_____ Democracy	_____ Other: _____
_____ Social Democracy	

2. National Administrative Organization:

A. Executive Branch

B. Representative Branch

3. Sub-Unit Administrative Organization:

A. Executive Branch

B. Representative Branch

4. Branch of Government Responsible for Education:

5. Primary Responsibilities of Government Branch Responsible for Education include: (Check all that apply.)

☐ Policy Formulation	☐ Education
☐ Regulation & Enforcement	☐ Research
☐ Promotion	☐ Other: _____

6. Branch of Government Responsible for Agriculture:

7. Primary Responsibilities of Government Branch Responsible for Agriculture include: (Check all that apply.)

☐ Policy Formulation	☐ Input Supply
☐ Regulation & Enforcement	☐ Education
☐ Promotion & Marketing	☐ Research
☐ Financing & Credit	☐ Other: _____

8. Administrative Organization of Governmental Branches:

9. Established Method of Government Policy Formation: (Check all that apply.)

- _____ Independent Administrative Determination
- _____ Representative Determination
- _____ Combination of Administrative & Representative Determination
- _____ Other: _____

Economic Situation: (ES)

1. Form of National Currency _____
2. Current Exchange Rate with U.S. Dollar (\$) _____/\$
3. Per Capita GNP in U.S. Dollars (\$) _____\$
4. Average Annual Percentage Growth in GNP _____%
5. Average Annual Percentage Rate of Inflation _____%
6. Gross Domestic Product in U.S. Dollars (\$) _____\$
7. Percent Distribution of GDP:

% <u>Source</u>	% <u>Demand</u>
_____ Agriculture	_____ Public Consumption
_____ Industry	_____ Gross Domestic Investment
_____ Services	_____ Private Consumption
	_____ Gross Domestic Saving
	_____ Exports
8. Current Balance of Payments in U.S. Dollars _____\$
9. External Public Debt in U.S. Dollars (\$) _____\$
10. External Public Debt as a Percentage of GNP _____%
11. Annual Interest Payments on External Public Debt in U.S. Dollars (\$) _____\$
12. Debt Service on External Public Debt:
 - a. as a Percentage of Exports of Goods & Services _____%
 - b. as a Percentage of GNP _____%

Agricultural Situation: (AS)

1. Total Cultivated Land Area (hectares) _____

2. Total Number of Farms _____

3. Average Farm Size (hectares) _____

4. Percent Farmland by Ownership:

% Entity

_____ Individual Farm Families

_____ Absentee/Investor Landlord

_____ Corporation

% Entity

_____ Government

_____ Other: _____

_____ Other: _____

5. Percent Farm Families by Farming System:

% System

_____ Nomadic

_____ Slash & Burn

_____ Permanent Cropland/Pasture

_____ Kampong/Scavenging Livestock

% System

_____ Confinement Livestock

_____ Communal/Enterprise

_____ Other: _____

_____ Other: _____

6. Total Production of Primary Agricultural Crops:

Major Crop**Total Production**

_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

7. Total Number of Head Each of Primary Livestock Species:

<u>Livestock Species</u>	<u>Total Head</u>
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

8. Does Fishing or Fish Culture Play a Major Role in the Lives of Most Farm Families?

_____ Yes _____ No

9. If so, Total Area and Output of Marine Fishing and Freshwater Fish Culture:

Marine Fishing Area	_____
Marine Fishing Output (Tons)	_____
Freshwater Fish Culture Area	_____
Freshwater Fish Culture Output (Tons)	_____

10. Government Branch Responsible for Agricultural Education:

11. Percent Agricultural Education by Source:

<u>%</u>	<u>Source</u>
_____	On-Farm Experience/Training
_____	Vocational Agriculture Training in Primary/Secondary Schools
_____	Technical School Training
_____	College/University Training
_____	Extension Programs
_____	Other: _____

12. The Current Goals of Agricultural Education may be Ranked in Order of Significance as follows:

- _____ Increasing Food Production
- _____ Increasing Farm Incomes
- _____ Improving the Efficiency of Production
- _____ Providing Financial Counseling
- _____ Providing Farm Inputs
- _____ Providing Farm Markets
- _____ Organizing Farm Commodity Groups & Organizations
- _____ Other: _____
- _____ Other: _____

13. Government/Organizational Body Responsible for Agricultural Research:

14. Linkage between Agricultural Research and Education:

15. Current National Agricultural Policy may be Characterized as:
(Check all that apply.)

- _____ Supporting Low Consumer Food Prices
- _____ Providing Economic Incentives for Increased Production
- _____ Emphasizing Increased Production for Export to Reduce
Balance of Trade Deficit
- _____ Emphasizing Increased Production to Increase Real Income
of Farmers
- _____ Supporting Large-Scale Farmers
- _____ Supporting All Farmers
- _____ Supporting Broad-Based Agricultural Development
- _____ Other: _____

16. The Primary Goals for Agricultural Development are:

17. Value of Agricultural Output in U.S. Dollars (\$) by Sub-Unit:

<u>Sub-Unit</u>	<u>Value</u>	<u>Sub-Unit</u>	<u>Value</u>
<hr/>	<hr/>	<hr/>	<hr/>
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18. Percent of Family Farm

A. Production:

_____ % Consumed at Home

_____ % Marketed

B. Financing Obtained through:

_____ % Family Income/Savings

_____ % Government Financing

_____ % Private Investor

_____ % Private Bank

_____ % Farm Credit Service

_____ % Other: _____

18. Percent of Family Farm (con'd.)

C. Income by Source:

- _____ % Husband & Wife Both Working on Farm Full-time
- _____ % Wife Working on Farm Full-time & Husband Employed
Elsewhere Full-time
- _____ % Husband Working on Farm Full-time & Wife Employed
Elsewhere Full-time
- _____ % Both Partners Working on Farm with Husband Employed
Elsewhere Part-time
- _____ % Both Partners Working on Farm with Wife Employed
Elsewhere Part-time
- _____ % Both Partners Working on Farm & Working Elsewhere
Part-time

19. Family Farm Management Decisions are Generally Made by:

- _____ Male Head of Household
- _____ Female Head of Household
- _____ Jointly

20. Farm Family Labor Distribution: (Check all that apply.)

Task	Primarily Performed By		
	Men	Women	Children
Clearing Land	_____	_____	_____
Tilling Cropland	_____	_____	_____
Planting Crops	_____	_____	_____
Cultivating	_____	_____	_____
Harvesting	_____	_____	_____
Crop Marketing	_____	_____	_____
Caring/Feeding Livestock	_____	_____	_____
Slaughtering Livestock	_____	_____	_____
Marketing Livestock	_____	_____	_____
Food Preparation	_____	_____	_____

21. Agricultural Marketing System may be Described as:

Infrastructure Situation: (IS)

1. Percent Urban Households with the Following Services:

<u>Service</u>	<u><10%</u>	<u>10-30%</u>	<u>30-50%</u>	<u>50-70%</u>	<u>70-90%</u>	<u>>90%</u>
Telephone	_____	_____	_____	_____	_____	_____
Daily Mail Delivery	_____	_____	_____	_____	_____	_____
Daily Newspaper	_____	_____	_____	_____	_____	_____
Electricity	_____	_____	_____	_____	_____	_____
Indoor Plumbing	_____	_____	_____	_____	_____	_____
Television	_____	_____	_____	_____	_____	_____

2. Percent Rural Households with the Following Services:

<u>Service</u>	<u><10%</u>	<u>10-30%</u>	<u>30-50%</u>	<u>50-70%</u>	<u>70-90%</u>	<u>>90%</u>
Telephone	_____	_____	_____	_____	_____	_____
Daily Mail Delivery	_____	_____	_____	_____	_____	_____
Daily Newspaper	_____	_____	_____	_____	_____	_____
Electricity	_____	_____	_____	_____	_____	_____
Indoor Plumbing	_____	_____	_____	_____	_____	_____
Television	_____	_____	_____	_____	_____	_____

3. General Road Conditions may be Described as:

	<u>Excellent</u>	<u>Good</u>	<u>Fair</u>	<u>Poor</u>
Town/City Streets	_____	_____	_____	_____
Major Roads/Highways	_____	_____	_____	_____
Rural Roads	_____	_____	_____	_____

4. General Observations Regarding Roadways:

5. Percent Transportation Provided by:

	<u>Urban Areas</u>	<u>Rural Areas</u>
Foot/Walking	_____ %	_____ %
Animal/Animal Cart	_____ %	_____ %
Manpowered Transport (Bicycle/Rickshaw)	_____ %	_____ %
Public Transportation (Bus, Tram)	_____ %	_____ %
Taxi/Limo/Jeepny	_____ %	_____ %
Family-owned Automobile	_____ %	_____ %
Other: _____	_____ %	_____ %

6. General Observations Regarding Air & Rail Transportation:

General or Desired Characteristics Impacting an Agricultural Extension Education System: (DCS)

1. From Policy Makers' Perspective, It is Considered Most Desirable for Agricultural Extension Education System to be:

A. Administered by:

_____ The Agricultural Branch of the Federal Government

_____ The Educational Branch of the Federal Government

_____ Another Branch of the Federal Government:

_____ An Agricultural College or University

_____ Another Public Body:

_____ An Independent Company or Organization

_____ An Autonomous, Self-Directed Extension System

_____ Other: _____

B. Responsible for: (Check all that apply.)

_____ Regulation & Enforcement

_____ Input Supply

_____ Administration/Direction

_____ Education

_____ Policy Formulation

_____ Research

_____ Promotion & Marketing

_____ Other: _____

_____ Financing & Credit

_____ Other: _____

C. Organized with Staff & Offices on a: (Check all that apply.)

_____ National Level

_____ Local Level

_____ Sub-Unit Level

_____ Other: _____

1. From Policy Makers' Perspective, It is Considered Most Desirable for Agricultural Extension Education System to be: (con'd.)

D. Funded by:

☐ Federal Government	☐ Private Foundation
☐ Sub-Unit Governments	☐ Development Assistance Funds
☐ Local Governments	☐ Combination of Above:
☐ Self-Supported/Project	_____
☐ Profits/User Fees	☐ Other: _____

E. Staffed by: (Check all that apply.)

☐ University Graduates at All Levels

☐ University Graduates at Administrative Levels and Technical School Graduates at Local Levels

☐ University Graduates at Administrative Levels & Specially Trained Individuals at Local Levels

☐ Technical School Graduates at All Levels

☐ Nationals at All Levels

☐ A Mixture of Nationals & Non-nationals at All Levels

☐ Nationals at _____ & Non-Nationals at _____ Levels

☐ Men at All Levels

☐ A Mixture of Men & Women at All Levels

☐ Men at _____ Levels & Women at _____ Levels

☐ Other: _____

☐ Other: _____

F. Directed in Terms of Program Priorities by:

☐ Clientele Advisory Groups	☐ Donor-Assisted Project Organization
☐ Central Federal Administration	☐ Autonomous Economic & Social Development Body
☐ University Administration	☐ Other: _____
☐ Autonomous Public Sector Body	

1. From Policy Makers' Perspective, It is Considered Most Desirable for Agricultural Extension Education System to be: (con'd.)

G. Staffed with/at:

	<u>Federal Level</u>	<u>Sub-Unit Level</u>	<u>Local Level</u>
Administrators	_____	_____	_____
Subject Matter Specialists	_____	_____	_____
Extension Educators	_____	_____	_____
Other: _____	_____	_____	_____
Other: _____	_____	_____	_____

H. Linked with Research Centers through: (Check all that apply.)

_____ Dual-Assigned Personnel

_____ Locally Administered Research Plots & Programs

_____ Joint Determination of Research Priorities

_____ Co-Authored Research Publications

_____ Other: _____

I. Associated with/on: (Check all that apply.)

	<u>Formal Basis</u>	<u>Informal Basis</u>
Farm Credit System	_____	_____
Farm Supply Organizations	_____	_____
Marketing Organizations	_____	_____
Promotional Groups	_____	_____
Other: _____	_____	_____
Other: _____	_____	_____

1. From Policy Makers' Perspective, It is Considered Most Desirable for Agricultural Extension Education System to be: (con'd.)

J. Supported with/at: (Check all that apply.)

	Federal Level	Sub-Unit Level	Local Level
Office Space	_____	_____	_____
Office Equipment	_____	_____	_____
Office Supplies	_____	_____	_____
Secretarial Staff	_____	_____	_____
Transportation	_____	_____	_____
Educational Materials	_____	_____	_____
Audio-Visual Equipment	_____	_____	_____
Operating Capital	_____	_____	_____
Pre-Service Training	_____	_____	_____
In-Service Education	_____	_____	_____
Other: _____	_____	_____	_____

2. From Users'/Clientele Perspective, It is Considered Most Desirable for Agricultural Extension Education System to be:

A. Administered by:

_____ The Agricultural Branch of the Federal Government

_____ The Educational Branch of the Federal Government

_____ Another Branch of the Federal Government:

_____ An Agricultural College or University

_____ Another Public Body:

_____ An Independent Company or Organization

_____ An Autonomous, Self-Directed Extension System

_____ Other: _____

B. Responsible for: (Check all that apply.)☐ Regulation & Enforcement☐ Input Supply☐ Administration/Direction☐ Education☐ Policy Formulation☐ Research☐ Promotion & Marketing☐ Other: _____☐ Financing & Credit☐ Other: _____**C. Organized with Staff & Offices on a: (Check all that apply.)**☐ National Level☐ Local Level☐ Sub-Unit Level☐ Other: _____**D. Funded by:**☐ Federal Government☐ Private Foundation☐ Sub-Unit Governments☐ Development Assistance Funds☐ Local Governments☐ Combination of Above: _____☐ Self-Supported/Project

☐ Profits/User Fees☐ Other: _____**E. Staffed by: (Check all that apply.)**☐ University Graduates at All Levels☐ University Graduates at Administrative Levels and Technical School Graduates at Local Levels☐ University Graduates at Administrative Levels & Specially Trained Individuals at Local Levels☐ Technical School Graduates at All Levels☐ Nationals at All Levels☐ A Mixture of Nationals & Non-nationals at All Levels☐ Nationals at _____ & Non-Nationals at _____ Levels☐ Men at All Levels☐ A Mixture of Men & Women at All Levels☐ Men at _____ Levels & Women at _____ Levels

2. From Users'/Clientele Perspective, It is Considered Most Desirable for Agricultural Extension Education System to be: (con'd.)

E. Staffed by: (con'd.)

_____ Other: _____

_____ Other: _____

F. Directed in Terms of Program Priorities by:

_____ Clientele Advisory Groups	_____ Donor-Assisted Project Organization
_____ Central Federal Administration	
_____ University Administration	_____ Autonomous Economic & Social Development Body
_____ Autonomous Public Sector Body	_____ Other: _____

I. Associated with/on: (Check all that apply.)

	<u>Formal</u> <u>Basis</u>	<u>Informal</u> <u>Basis</u>
Farm Credit System	_____	_____
Farm Supply Organizations	_____	_____
Marketing Organizations	_____	_____
Promotional Groups	_____	_____
Other: _____	_____	_____
Other: _____	_____	_____

Other Pertinent Observations:

1. _____

2. _____

Other Pertinent Observations: (con'd.)

3. _____

4. _____

5. _____

6. _____

7. _____

8. _____

APPENDIX F.

First Revision - "Model Correlation Instrument"

Note:

1. This instrument should be used after completion of the "Country Analysis Instrument" and requires information and data derived from its application for completion.
2. For purposes of abbreviation, the following initials are used when referring to "Analysis Factors" included in the "Country Analysis Instrument":

GS	Geographic Situation	ES	Economic Situation
CS	Climatic Situation	AS	Agricultural Situation
DS	Demographic Situation	IS	Infrastructure Situation
PS	Political Situation	DCS	Desired Characteristics

3. For purposes of abbreviation, the following initials are used to identify the "Agricultural Extension Education Models" from which various components are derived:

CAES	Conventional Agricultural Extension System
TVS	Training and Visit System
UAES	University Agricultural Extension System
CDPS	Commodity Development and Production System
IADS	Integrated Agricultural Development System
IRDS	Integrated Rural Development System
FSRDS	Farming Systems Research and Development System
ALL	All of the Above Listed Systems

MODEL OBJECTIVES:**1. Objectives should be set by: Analysis Factors - PS 4-7,9; AS 10; DCS 1B,1F,2B,2F**

- ___ Clientele Advisory Groups (UAES)
- ___ Central Federal Administration (CAES,TVS)
- ___ University Administration (UAES)
- ___ Autonomous Public Sector Program Body (CDPS)
- ___ Donor-Assisted Project Organization (IADS)
- ___ Autonomous Economic and Social Development Organization (IRDS)
- ___ Other: _____

2. Objectives should be defined as: Analysis Factors - AS 12,15,16

- ___ Providing &/or Maintaining Low Consumer Food Prices (UAES,CDPS)
- ___ Providing Economic Incentives for Increased Agricultural Production (CDPS,IADS,IRDS)
- ___ Increasing Agricultural Production for Export to Reduce Balance of Trade Deficit (CAES,CDPS)
- ___ Increasing Agricultural Production to Increase Real Income of Farmers (ALL)
- ___ Improving the Lot of Large-Scale Farmers (IADS)
- ___ Improving the Quality of Life for the Entire Rural Population (ALL)
- ___ Providing for Broad-Based Agricultural Development (CAES,TVS,UAES,FSRD)
- ___ Strengthening the Family and Home (UAES)
- ___ Enhancing the Environment and the Use of Natural Resources (UAES,FSRD)
- ___ Supporting Communities Toward the Goal of Community Improvement (UAES)
- ___ Improving Local Leadership and Initiative (UAES,IRDS)
- ___ Increasing the Availability of Social Programs in Health, Nutrition, and Basic Education (IRDS)
- ___ Other: _____

MODEL CLIENTELE:

1. Scope of Clientele should be: Analysis Factors - DS 1-3; AS 4-5,
19-20

- ___ Entire Population (UAES)
- ___ Entire Farm Population (TVS)
- ___ Large-Scale Farmers (CAES, IADS)
- ___ Small-Scale Farmers (IRDS, FSRD)
- ___ All Farmers within an Identified Project Area (IADS)
- ___ Other Target Groups within the Farm Population, ie. producers
of specific commodities, women, etc. (CAES, CDPS)
- ___ Other: _____

MODEL ORGANIZATION:

1. Should be Administered by: Analysis Factors - PS 1-9; AS 10;
DCS 1A, 2A

- ___ Agricultural Branch of the Federal Government (CAES, TVS)
- ___ Educational Branch of the Federal Government
- ___ Another Branch of Federal Government:

- ___ Agricultural College or University (UAES)
- ___ Another Public Body: (CDPS)

- ___ Independent Company or Organization (IADS, IRDS)
- ___ Autonomous, Self-Directed Extension System
- ___ Other: _____
- ___ Other: _____

MODEL ORGANIZATION: (con'd.)**2. Should be Responsible for: Analysis Factors - PS 5,7; AS 10,13; DCS 1B,2B**

_____ Regulation and Enforcement (CAES)

_____ Administration and Direction (CAES)

_____ Policy Formulation

_____ Promotion and Marketing (CDPS, IADS)

_____ Financing and Credit (CDPS, IADS)

_____ Input Supply (CAES, CDPS, IADS)

_____ Education (ALL)

_____ Research (FSRD)

_____ Other: _____

3. Should be Organized with Staff and Offices on a: Analysis Factors - GS 1-10; CS 1-5; DS 1-3; AS 1,5-9,17; IS 1-6; DCS 1C,2C

_____ National Level (CAES, TVS, UAES)

_____ Sub-Unit Level (CAES, TVS, UAES, CDPS, FSRD); if so,
number of Sub-Unit Facilities should be: _____

_____ Local Level (ALL); if so,
number of Local Facilities should be: _____

_____ Other: _____

4. Should be Funded by: Analysis Factors - DS 3; ES 1-12; AS 18; DCS 1D,2D

_____ Federal Government (CAES, TVS, UAES)

_____ Sub-Unit Governments (CAES, UAES)

_____ Local Governments (UAES)

_____ Self-Supported: Project Profits, User Fees (CDPS)

_____ Private Foundations

_____ Development Assistance Funds (IADS, ISRD)

_____ Combination of the Above (FSRD)

_____ Other: _____

MODEL ORGANIZATION: (con'd.)**5. Should be Staffed by: Analysis Factors - DS 3; PS 1-3,8; AS 5, 11,18-20; DCS 1E,2E**

- _____ University Graduates at all Levels (UAES,FSRD)
- _____ University Graduates at Administrative Levels & Technical School Graduates at Local Levels (CAES,CDPS,IADS,IRDS)
- _____ University Graduates at Administrative Levels & Specially Trained Individuals at Local Levels (TVS)
- _____ Technical School Graduates at all Levels
- _____ Nationals at all Levels (CAES,TVS,UAES,CDPS)
- _____ A Mixture of Nationals and Non-Nationals at all Levels (FSRD)
- _____ Nationals at _____ Levels & Non-Nationals at _____ Levels (IADS,IRDS)
- _____ Men at all Levels
- _____ A Mixture of Men and Women at all Levels (CAES,UAES)
- _____ Men at _____ Levels and Women at _____ Levels (TVS,CDPS,IADS,IRDS,FSRD)
- _____ Other: _____
- _____ Other: _____
- _____ Other: _____

6. Should be Staffed with: Analysis Factors - PS 1-8; AS 10,13-14; DCS 1G

	<u>Federal Level</u>	<u>Sub-Unit Level</u>	<u>Local Level</u>
Administrators	(CAES,TVS,UAES)	(ALL)	(CAES,TVS,FSRD)
Subject Specialists	(CAES,TVS,UAES)	(ALL)	_____
Extension Educators	(CAES,TVS,UAES)	(CAES,TVS,UAES CDPS,FSRD)	(ALL)
Other: _____	_____	_____	_____
Other: _____	_____	_____	_____

MODEL ORGANIZATION: (con'd.)**7. Should be Linked with Research Centers through: Analysis Factors - PS 1-8; AS 13-14; DCS 1H**

- _____ Dual-Assigned Personnel (CAES,UAES,FSRD)
- _____ Locally Administered Research Plots and Programs (FSRD)
- _____ Joint Determination of Research Priorities (CAES,TVS,UAES, CDPS,FSRD)
- _____ Co-Authored Research Publications (UAES)
- _____ Other: _____
- _____ Other: _____
- _____ Other: _____

8. Should be Associated with: Analysis Factors - PS 1-8; ES 6-12; AS 1-2,4-9,17-19,21; IS 1-6; DCS 1I,2G

	<u>Formal Basis</u>	<u>Informal Basis</u>
Farm Credit System	_____ (CDPS, IADS, IRDS)	_____ (CAES, TVS, UAES, FSRD)
Farm Supply Organizations	_____ (CDPS, IADS, IRDS)	_____ (CAES, TVS, UAES, FSRD)
Marketing Organizations	_____ (CDPS, IADS, IRDS)	_____ (CAES, TVS, UAES)
Promotional Groups	_____ (CDPS, IADS, FSRD)	_____ (CAES, TVS, UAES)
Other: _____	_____	_____
Other: _____	_____	_____

MODEL APPROACH:**1. Educational Approach should be: Analysis Factors - GS 1,2,9; DS 1-3;
AS 4-9,17-21; IS 1-6; DCS 1C-1J,2C-2G**

- _____ One-on-One Contact by Local Extension Workers through Irregular Home & Farm Visits & Office Calls (CAES,UAES)
- _____ Agricultural Information Units for Production of Bulletins, Teaching Aids, Radio Programs, & Mass Media Materials (CAES)
- _____ Local Extension Workers Contact Local Farmers on a Fixed Schedule (TVS)
- _____ Local Extension Workers Receive Training on a Fixed Schedule (TVS)
- _____ Local Advisory Councils Provide Guidance & Assistance in Financial, Operational, Programming, & Evaluation Processes of Extension Program (UAES,IRDS)
- _____ Local Extension Personnel Use Research-Based Information to Help Local People Identify & Establish Need Priorities & then Request Instructional Assistance from Subject-Matter Specialists on Selected Topics (UAES)
- _____ Local Farmers Contract to Produce an Identified Commodity Using Recommended Practices & the Commodity Organization Contracts to Provide Commodity Research, Credit, Input Supply, Technical Assistance, & Marketing Services (CDPS)
- _____ Pilot Project Established in which the Organization Provides Previously Limited Inputs Assumes the Responsibility for Coordinating All Facets of Agricultural Production, Including Credit, Supply, Technical Assistance, & Marketing Services (IADS,IRDS)
- _____ Establishment of an Interdisciplinary Team which Conducts On-Farm Research to Evaluate the Interplay of the Production Components under Farmer's Control & the Physical, Biological & Socio-Economic Environments; Identifies & Generates New Technology; Adapts & Tests Technologies in Project Area Possessing Reasonably Uniform Characteristics (FSRD)
- _____ Other: _____
- _____ Other: _____

MODEL ROLE OF EXTENSION PERSONNEL:**1. Role of Local Extension Personnel should be: Analysis Factors - PS 4-7; AS 12-13,16-17,20; DCS 1B,1D,2B,2D**

- _____ Consultant; identify farmer problems/needs & production constraints (CAES,TVS,CDPS,IADS)
- _____ Advisor; work with local people to identify & prioritize problems/needs & possible solutions (UAES,IRDS,FSRD)
- _____ Communicator; communicate farmer problems/needs & production constraints to subject-matter specialists & research workers (CAES,TVS,UAES,FSRD)
- _____ Educator; disseminate research-based information about new technology & demonstrate its practical application to farmers (ALL)
- _____ Motivator; encourage application of improved methods or identified solutions to problems (TVS,UAES,IRDS,FSRD)
- _____ Evaluator; work with local people to evaluate the effectiveness of new techniques & extension programs (UAES,IRDS,FSRD)
- _____ Researcher; conduct on-farm research to determine the practicality & effectiveness of new technology (FSRD)
- _____ Government Administrator; administer government programs & policies on the local level (CAES)
- _____ Supplier; provide farmers with required inputs (CDPS,IADS)
- _____ Marketer; coordinate product marketing (CDPS,IADS,IRDS)
- _____ Other: _____
- _____ Other: _____

IDENTIFIED DESIGN PARAMETERS:**I. Objectives to be Established by:**

II. Objectives to be Defined as:

A.

B.

C.

D.

E.

III. Scope of Clientele to be:

IV. Organization to be: (Sub-Unit and Local Levels should be repeated and staffed as required.)

A. National Level

<u>Function:</u>	<u>Number of Personnel Required:</u>
___ Administration	___
___ Research	___
___ Education	___
___ Other: _____	___
___ Other: _____	___

1. Sub-Unit Level

<u>Function:</u>	<u>Number of Personnel Required:</u>
___ Administration	___
___ Research	___
___ Education	___
___ Other: _____	___
___ Other: _____	___

a. Local Level

<u>Function:</u>	<u>Number of Personnel Required:</u>
___ Administration	___
___ Research	___
___ Education	___
___ Other: _____	___
___ Other: _____	___

V. Educational Approach to be:

- A. _____

- B. _____

- C. _____

- D. _____

VI. Role of Extension Personnel to be:

- A. _____

- B. _____

- C. _____

- D. _____

APPENDIX G.

Instrument Evaluation Form - Second Wave Summary

Note: Total Respondents: 10

Figures above blanks represent actual numbers

Figures below blanks represent percentage of total

	Not At <u>All</u>	Slight <u>Extent</u>	Fair <u>Extent</u>	Great <u>Extent</u>
1. To what extent does the Country Analysis Instrument:				
a. identify impactors which affect success of an extension system?	<u>0</u> 0	<u>0</u> 0	<u>2</u> 20	<u>8</u> # 80 %
b. provide appropriate quantitative evaluation of these impactors?	<u>0</u> 0	<u>0</u> 0	<u>3</u> 30	<u>7</u> # 70 %
c. provide appropriate qualitative evaluation of these impactors?	<u>0</u> 0	<u>1</u> 10	<u>2</u> 20	<u>7</u> # 70 %
d. list factor analysis questions in a logical order?	<u>0</u> 0	<u>0</u> 0	<u>0</u> 0	<u>10</u> # 100 %
e. list questions in a manner which is easily interpreted and understood?	<u>0</u> 0	<u>0</u> 0	<u>1</u> 10	<u>9</u> # 90 %
f. provide practical tool which can be used by analysts to determine situation in developing country?	<u>0</u> 0	<u>0</u> 0	<u>3</u> 30	<u>7</u> # 70 %
2. What additional Analysis Categories should be included in the Country Analysis Instrument?				
<u>10</u> # None, the instrument appears complete 100 %				
<u>0</u> # Suggest the following additions to the instrument: 0 %				
3. What additional specific Analysis Factors should be included in the Country Analysis Instrument?				
<u>2</u> # None, the instrument appears complete 10 %				
<u>8</u> # Suggest the following additions to the instrument: 80 %				

<u>Current Analysis Categories</u>	<u>Suggested Additional Analysis Factors</u>	<u>Number of Respondents</u>
N/A	Change Date to Analysis Period	1/8
Geographic	Add Hills/Highlands	1/8
Demographic	Associate Cultural Groups with Sub-Units	2/8
Demographic	Add Labels: Percent Population by Employment by Source & Industry	1/8
Economic	Define Period for Average GNP	2/8
Infrastructure	Add Radio to Percent Households with Services	1/8

4. Which Analysis Factors currently included in the Country Analysis Instrument should be deleted?

9 # None, the instrument appears appropriate as is
90 %

1 # Suggest the following deletions from the instrument:
10 %

<u>Current Analysis Categories</u>	<u>Suggested Analysis Factors to Eliminate</u>	<u>Number of Respondents</u>
Economic	Average Annual Percentage of Inflation	1/1

5. Which Analysis Factors currently included in the Country Analysis Instrument are appropriate considerations, but need considerable alteration in order to be understandable and/or provide the desired analysis information? Note: Please make suggested alterations on instrument copy.

8 # None, the instrument appears appropriate as is
80 %

2 # Suggest the following factors need alteration:
20 %

<u>Current Analysis Categories</u>	<u>Suggested Analysis Factors to Alter</u>	<u>Number of Respondents</u>
Climatic	Account for Variations in Seasons from North to South	1/2
Agricultural	Identify Marketing Alternatives	1/2

	Not At All	Slight Extent	Fair Extent	Great Extent
6. To what extent does the Model Correlation Instrument:				
a. identify existing alternative components?	<u>0</u> 0	<u>0</u> 0	<u>0</u> 0	<u>10</u> # 100 %
b. identify alternative components with their model derivation?	<u>0</u> 0	<u>0</u> 0	<u>0</u> 0	<u>10</u> # 100 %
c. identify analysis factors that should be considered when selecting appropriate component alternatives?	<u>0</u> 0	<u>1</u> 10	<u>2</u> 20	<u>7</u> # 70 %
d. list model component areas in logical order?	<u>0</u> 0	<u>0</u> 0	<u>0</u> 0	<u>10</u> # 100 %
e. list component alternatives in logical order?	<u>0</u> 0	<u>0</u> 0	<u>0</u> 0	<u>10</u> # 100 %
f. list questions in manner easily interpreted/understood?	<u>0</u> 0	<u>0</u> 0	<u>1</u> 10	<u>9</u> # 90 %
g. provide for definition & identification of appropriate design parameters?	<u>0</u> 0	<u>0</u> 0	<u>2</u> 20	<u>8</u> # 80 %
h. provide practical tool for use by analysts to develop appropriate design parameters?	<u>0</u> 0	<u>1</u> 10	<u>2</u> 20	<u>7</u> # 70 %
7. What additional Model Component Areas should be included in the Model Correlation Instrument?				
<u>10</u> # None, the instrument appears complete 100 %				
<u>0</u> # Suggest the following additions to the instrument: 0 %				
8. What additional specific Component Alternatives should be included in the Model Correlation Instrument?				
<u>9</u> # None, the instrument appears complete 90 %				
<u>1</u> # Suggest the following additions to the instrument: 10 %				

<u>Current Model Component</u>	<u>Suggested Additional Component Alternatives</u>	<u>Number of Respondents</u>
Organization	Associated with - Add 'None'	1/1

9. Which Component Alternatives currently included in the Model Correlation Instrument should be deleted?

10 # None, the instrument appears appropriate as is
100 %

0 # Suggest the following deletions from the instrument:
0 %

10. Which Component Alternatives currently included in the Model Correlation Instrument are appropriate considerations, but need considerable alteration in order to be understandable and/or provide the desired component selection? Note: Please make suggested alterations on instrument copy.

10 # None, the instrument appears appropriate as is
100 %

0 # Suggest the following factors need alteration:
0 %

11. To what extent are the Country Analysis and Model Correlation Instruments useful tools for analysts as they approach the project of designing an appropriate agricultural extension education system for a developing country?

0 # Not At All 2 # Fair Extent
0 % 20 %

0 # Slight Extent 8 # Great Extent
0 % 80 %

12. To what extent would the instruments actually be used by analysts in development projects if they were available?

0 # Not At All 4 # Fair Extent
0 % 40 %

0 # Slight Extent 6 # Great Extent
0 % 60 %

13. Additional Comments/Suggestions:

<u>Paraphrased Comments</u>	<u>Number of Respondents</u>
a. Change 'Date Completed' to 'Analysis Period'	1/10
b. Add section for reference citations	2/10
c. Open the 'Analysis Instrument' as much as possible	2/10
d. Add directions for application of 'Model Correlation Instrument'	3/10

APPENDIX H.

Second Revision - "Country Analysis Instrument"

Country: _____

Analysis Period: From _____ **To** _____

Reference Notations:

Geographic Situation: (GS)

1. Size of Country (km²) _____
2. Number of Sub-Units (districts, provinces, states, etc.) _____
3. Percentage of Total Land Area Covered by Mountains _____ %
4. Percentage of Total Land Area Covered by Highlands or Hills _____ %
5. Percentage of Total Land Area covered by Plains _____ %
6. Percentage of Total Land Area covered by Lowlands _____ %
7. Percentage of Total Land Area Covered by Desert _____ %
8. Percentage of Total Land Area Covered by Jungle _____ %
9. Coastal Area _____ Yes _____ No
10. If so, Total Length of Coast (km) _____

11. List the country sub-units and identify specific characteristics of each by filling-in blanks with specific areas, percentages, or simply checking all that apply. Combination situations may be accommodated by completing more than one blank per sub-unit as applicable.

<u>Sub-Unit</u>	<u>km²</u>	<u>Mounts</u>	<u>Hills</u>	<u>Plains</u>	<u>Lows</u>	<u>Coast</u>	<u>Desert</u>	<u>Jungle</u>
_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____

12. Identify specific geographic barriers (ie. jungle area, mountainous region, major river or lake) in sub-units which potentially impede the development and/or success of an agricultural extension system.

<u>Sub-Unit</u>	<u>Potential Geographic Barrier</u>
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

Climatic Situation: (CS)

1. Primary Climate of Country (tropical, sub-tropical, arid, temperate) _____
2. Average Annual Rainfall of Country (cm) _____
3. Seasonal Variation: _____ Yes _____ No
4. If so, Identify Seasons and Associated Months:

Northern Climate Seasons	Months	
	From	Through
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

Southern Climate Seasons	Months	
	From	Through
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

5. List the country sub-units and identify specific characteristics of each by filling-in blanks with specific information.

Sub-Unit	Average Annual Rainfall	Temperature		Average Days in Growing Season
		Normal	High Low	
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

Demographic Situation: (DS)

1. Total Population _____
2. Percent Annual Growth Rate _____ %

3. Identify the Percent Population by:

A. Sex:

_____ % Female _____ % Male

B. Age:

_____ % 0-24 years _____ % 45-54 years

_____ % 25-34 years _____ % 55-64 years

_____ % 35-44 years _____ % 65+ years

C. Education:

_____ % Primary _____ % Trade/Technical

_____ % Secondary _____ % University

_____ % Post Secondary _____ % Professional

D. Employment: By SourceBy Industry

_____ % Unpaid Family _____ % Farming

_____ % Self-employed _____ % Fishing

_____ % Private Business _____ % Manufacturing

_____ % Government _____ % Retail

_____ % Church _____ % Service

_____ % Other _____ % Other

E. Cultural Heritage by Primary Racial Groups, Tribes, Religions, Cultural Minorities, etc.

<u>Heritage</u>	<u>%</u>	<u>Heritage</u>	<u>%</u>
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

4. Sub-Unit Location of Largest Cultural Heritage Groups:

<u>Sub-Unit</u>	<u>Major Cultural Heritage Groups</u>
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

Political Situation: (PS)

1. Form of National Government:

_____ Monarchy	_____ Benevolent Dictatorship
_____ Socialism	_____ Military
_____ Democracy	_____ Other: _____
_____ Social Democracy	

2. National Administrative Organization:

A. Executive Branch

B. Representative Branch

3. Sub-Unit Administrative Organization:

A. Executive Branch

B. Representative Branch

4. Branch of Government Responsible for Education:

5. Primary Responsibilities of Government Branch Responsible for Education include: (Check all that apply.)

☐ Policy Formulation	☐ Education
☐ Regulation & Enforcement	☐ Research
☐ Promotion	☐ Other: _____

6. Branch of Government Responsible for Agriculture:

7. Primary Responsibilities of Government Branch Responsible for Agriculture include: (Check all that apply.)

☐ Policy Formulation	☐ Input Supply
☐ Regulation & Enforcement	☐ Education
☐ Promotion & Marketing	☐ Research
☐ Financing & Credit	☐ Other: _____

8. Administrative Organization of Governmental Branches:

9. Established Method of Government Policy Formation: (Check all that apply.)

- _____ Independent Administrative Determination
- _____ Representative Determination
- _____ Combination of Administrative & Representative Determination
- _____ Other: _____

Economic Situation: (ES)

1. Form of National Currency _____
2. Current Exchange Rate with US Dollar (\$) _____/\$
3. Per Capita GNP in US Dollars (\$) _____\$
4. Average Annual Percentage Growth in GNP (past 5 years) _____%
5. Per Capita GDP in US Dollars (\$) _____\$
6. Percent Distribution of GDP:

<u>%</u>	<u>By Source</u>	<u>%</u>	<u>By Demand</u>
_____	Agriculture	_____	Public Consumption
_____	Industry	_____	Gross Domestic Investment
_____	Services	_____	Private Consumption
		_____	Gross Domestic Saving
		_____	Exports

7. Current Balance of Payments in U.S. Dollars _____\$
8. External Public Debt in U.S. Dollars (\$) _____\$
9. External Public Debt as a Percentage of GNP _____%
10. Annual Interest Payments on External Public Debt in U.S. Dollars (\$) _____\$
11. Debt Service on External Public Debt:
- a. as a Percentage of Exports of Goods & Services _____%
- b. as a Percentage of GNP _____%

Agricultural Situation: (AS)

1. Total Cultivated Land Area (hectares) _____

2. Total Number of Farms _____

3. Average Farm Size (hectares) _____

4. Percent Farmland by Ownership:

<u>%</u>	<u>Entity</u>	<u>%</u>	<u>Entity</u>
_____	Individual Farm Families	_____	Government
_____	Absentee/Investor Landlord	_____	Other: _____
_____	Corporation	_____	Other: _____

5. Percent Farm Families by Farming System:

<u>%</u>	<u>System</u>	<u>%</u>	<u>System</u>
_____	Nomadic	_____	Confinement Livestock
_____	Slash & Burn	_____	Communal/Enterprise
_____	Permanent Cropland/Pasture	_____	Other: _____
_____	Kampong/Scavenging Livestock	_____	Other: _____

6. Total Production of Primary Agricultural Crops:

<u>Major Crops</u>	<u>Total Production</u>
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

7. Total Number of Head Each of Primary Livestock Species:

<u>Livestock Species</u>	<u>Total Head</u>
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

8. Does Fishing or Fish Culture Play a Major Role in the Lives of Most Farm Families?

_____ Yes _____ No

9. If so, Total Area and Output of Marine Fishing and Freshwater Fish Culture:

Marine Fishing Area	_____
Marine Fishing Output (Tons)	_____
Freshwater Fish Culture Area	_____
Freshwater Fish Culture Output (Tons)	_____

10. Government Branch Responsible for Agricultural Education:

11. Percent Agricultural Education by Source:

<u>%</u>	<u>Source</u>
_____	On-Farm Experience/Training
_____	Vocational Agriculture Training in Primary/Secondary Schools
_____	Technical School Training
_____	College/University Training
_____	Extension Programs
_____	Other: _____

12. The Current Goals of Agricultural Education may be Ranked in Order of Significance as follows:

☐ Increasing Food Production
☐ Increasing Farm Incomes
☐ Improving the Efficiency of Production
☐ Providing Financial Counseling
☐ Providing Farm Inputs
☐ Providing Farm Markets
☐ Organizing Farm Commodity Groups & Organizations
☐ Other: _____

13. Government/Organizational Body Responsible for Agricultural Research:

14. Linkage between Agricultural Research and Education:

15. Current National Agricultural Policy may be Characterized as:
(Check all that apply.)

☐ Supporting Low Consumer Food Prices
☐ Providing Economic Incentives for Increased Production
☐ Emphasizing Increased Production for Export to Reduce Balance of Trade Deficit
☐ Emphasizing Increased Production to Increase Real Income of Farmers
☐ Supporting Large-Scale Farmers
☐ Supporting All Farmers
☐ Supporting Broad-Based Agricultural Development
☐ Other: _____

16. The Primary Goals for Agricultural Development are:

17. Value of Agricultural Output in U.S. Dollars (\$) by Sub-Unit: .

<u>Sub-Unit</u>	<u>Value</u>	<u>Sub-Unit</u>	<u>Value</u>
<hr/>	<hr/>	<hr/>	<hr/>
<hr/>	<hr/>	<hr/>	<hr/>
<hr/>	<hr/>	<hr/>	<hr/>
<hr/>	<hr/>	<hr/>	<hr/>

18. Percent of Family Farm

A. Production:

_____ % Consumed at Home

_____ % Marketed

B. Financing Obtained through:

_____ % Family Income/Savings

_____ % Private Bank

_____ % Government Financing

_____ % Farm Credit Service

_____ % Private Investor

_____ % Other: _____

C. Income by Source:

_____ % Husband & Wife Both Working on Farm Full-time

_____ % Wife Working on Farm Full-time & Husband Employed
Elsewhere Full-time

_____ % Husband Working on Farm Full-time & Wife Employed
Elsewhere Full-time

_____ % Both Partners Working on Farm with Husband Employed
Elsewhere Part-time

_____ % Both Partners Working on Farm with Wife Employed
Elsewhere Part-time

_____ % Both Partners Working on Farm & Working Elsewhere
Part-time

19. Family Farm Management Decisions are Generally Made by:

- ☐ Male Head of Household
☐ Female Head of Household
☐ Jointly

20. Farm Family Labor Distribution: (Check all that apply.)

Task	Primarily Performed By		
	Men	Women	Children
Clearing Land	☐	☐	☐
Tilling Cropland	☐	☐	☐
Planting Crops	☐	☐	☐
Cultivating	☐	☐	☐
Harvesting	☐	☐	☐
Crop Marketing	☐	☐	☐
Caring/Feeding Livestock	☐	☐	☐
Slaughtering Livestock	☐	☐	☐
Marketing Livestock	☐	☐	☐
Food Preparation	☐	☐	☐

21. Agricultural Marketing System may be Described as: (Check all that apply.)

- ☐ Local Family/Roadside Market
☐ Local Community Market/Bazaar
☐ Regional Commodity Marketing Organization
☐ Privately-Owned Commodity Market
☐ Government Marketing Program, Domestic
☐ Government Marketing Program, Export
☐ Privately-Owned Export Company
☐ Other: _____
☐ Other: _____

Infrastructure Situation: (IS)**1. Percent Urban Households with the Following Services:**

<u>Service</u>	<u><10%</u>	<u>10-30%</u>	<u>30-50%</u>	<u>50-70%</u>	<u>70-90%</u>	<u>>90%</u>
Telephone	_____	_____	_____	_____	_____	_____
Daily Mail Delivery	_____	_____	_____	_____	_____	_____
Daily Newspaper	_____	_____	_____	_____	_____	_____
Electricity	_____	_____	_____	_____	_____	_____
Indoor Plumbing	_____	_____	_____	_____	_____	_____
Television	_____	_____	_____	_____	_____	_____
Radio	_____	_____	_____	_____	_____	_____

2. Percent Rural Households with the Following Services:

<u>Service</u>	<u><10%</u>	<u>10-30%</u>	<u>30-50%</u>	<u>50-70%</u>	<u>70-90%</u>	<u>>90%</u>
Telephone	_____	_____	_____	_____	_____	_____
Daily Mail Delivery	_____	_____	_____	_____	_____	_____
Daily Newspaper	_____	_____	_____	_____	_____	_____
Electricity	_____	_____	_____	_____	_____	_____
Indoor Plumbing	_____	_____	_____	_____	_____	_____
Television	_____	_____	_____	_____	_____	_____
Radio	_____	_____	_____	_____	_____	_____

3. General Road Conditions may be Described as:

	<u>Excellent</u>	<u>Good</u>	<u>Fair</u>	<u>Poor</u>
Town/City Streets	_____	_____	_____	_____
Major Roads/Highways	_____	_____	_____	_____
Rural Roads	_____	_____	_____	_____

4. General Observations Regarding Roadways:

5. Percent Transportation Provided by:

	<u>Urban Areas</u>	<u>Rural Areas</u>
Foot/Walking	_____ %	_____ %
Animal/Animal Cart	_____ %	_____ %
Manpowered Transport (Bicycle/Rickshaw)	_____ %	_____ %
Public Transportation (Bus, Tram)	_____ %	_____ %
Taxi/Limo/Jeepny	_____ %	_____ %
Family-owned Automobile	_____ %	_____ %
Other: _____	_____ %	_____ %

6. General Observations Regarding Air & Rail Transportation:

General or Desired Characteristics Impacting an Agricultural Extension Education System: (DCS)

1. From Policy Makers' Perspective, It is Considered Most Desirable for Agricultural Extension Education System to be:

A. Administered by:

_____ The Agricultural Branch of the Federal Government

_____ The Educational Branch of the Federal Government

_____ Another Branch of the Federal Government:

_____ An Agricultural College or University

_____ Another Public Body:

_____ An Independent Company or Organization

_____ An Autonomous, Self-Directed Extension System

_____ Other: _____

B. Responsible for: (Check all that apply.)

_____ Regulation & Enforcement _____ Input Supply

_____ Administration/Direction _____ Education

_____ Policy Formulation _____ Research

_____ Promotion & Marketing _____ Other: _____

_____ Financing & Credit _____ Other: _____

C. Organised with Staff & Offices on a: (Check all that apply.)

_____ National Level _____ Local Level

_____ Sub-Unit Level _____ Other: _____

1. From Policy Makers' Perspective, It is Considered Most Desirable for Agricultural Extension Education System to be: (con'd.)

D. Funded by:

☐ Federal Government	☐ Private Foundation
☐ Sub-Unit Governments	☐ Development Assistance Funds
☐ Local Governments	☐ Combination of Above:
☐ Self-Supported/Project	_____
☐ Profits/User Fees	☐ Other: _____

E. Staffed by: (Check all that apply.)

☐ University Graduates at All Levels

☐ University Graduates at Administrative Levels and Technical School Graduates at Local Levels

☐ University Graduates at Administrative Levels & Specially Trained Individuals at Local Levels

☐ Technical School Graduates at All Levels

☐ Nationals at All Levels

☐ A Mixture of Nationals & Non-nationals at All Levels

☐ Nationals at _____ & Non-Nationals at _____ Levels

☐ Men at All Levels

☐ A Mixture of Men & Women at All Levels

☐ Men at _____ Levels & Women at _____ Levels

☐ Other: _____

☐ Other: _____

F. Directed in Terms of Program Priorities by:

☐ Clientele Advisory Groups	☐ Donor-Assisted Project Organization
☐ Central Federal Administration	☐ Autonomous Economic & Social Development Body
☐ University Administration	☐ Other: _____
☐ Autonomous Public Sector Body	

1. From Policy Makers' Perspective, It is Considered Most Desirable for Agricultural Extension Education System to be: (con'd.)

G. Staffed with/at:

	<u>Federal Level</u>	<u>Sub-Unit Level</u>	<u>Local Level</u>
Administrators	_____	_____	_____
Subject Matter Specialists	_____	_____	_____
Extension Educators	_____	_____	_____
Other: _____	_____	_____	_____
Other: _____	_____	_____	_____

H. Linked with Research Centers through: (Check all that apply.)

- _____ Dual-Assigned Personnel
- _____ Locally Administered Research Plots & Programs
- _____ Joint Determination of Research Priorities
- _____ Co-Authored Research Publications
- _____ Other: _____

I. Associated with/on: (Check all that apply.)

	<u>Formal Basis</u>	<u>Informal Basis</u>
Farm Credit System	_____	_____
Farm Supply Organizations	_____	_____
Marketing Organizations	_____	_____
Promotional Groups	_____	_____
Other: _____	_____	_____
Other: _____	_____	_____
Other: _____	_____	_____

1. From Policy Makers' Perspective, It is Considered Most Desirable for Agricultural Extension Education System to be: (con'd.)

J. Supported with/at: (Check all that apply.)

	<u>Federal Level</u>	<u>Sub-Unit Level</u>	<u>Local Level</u>
Office Space	_____	_____	_____
Office Equipment	_____	_____	_____
Office Supplies	_____	_____	_____
Secretarial Staff	_____	_____	_____
Transportation	_____	_____	_____
Educational Materials	_____	_____	_____
Audio-Visual Equipment	_____	_____	_____
Operating Capital	_____	_____	_____
Pre-Service Training	_____	_____	_____
In-Service Education	_____	_____	_____
Other: _____	_____	_____	_____

2. From Users'/Clientele Perspective, It is Considered Most Desirable for Agricultural Extension Education System to be:

A. Administered by:

_____ The Agricultural Branch of the Federal Government

_____ The Educational Branch of the Federal Government

_____ Another Branch of the Federal Government:

_____ An Agricultural College or University

_____ Another Public Body:

_____ An Independent Company or Organization

_____ An Autonomous, Self-Directed Extension System

_____ Other: _____

B. Responsible for: (Check all that apply.)

☐ Regulation & Enforcement	☐ Input Supply
☐ Administration/Direction	☐ Education
☐ Policy Formulation	☐ Research
☐ Promotion & Marketing	☐ Other: _____
☐ Financing & Credit	☐ Other: _____

C. Organized with Staff & Offices on the following Levels:

☐ National; ☐ Sub-Unit; ☐ Local; ☐ Other: _____

D. Funded by:

☐ Federal Government	☐ Private Foundation
☐ Sub-Unit Governments	☐ Development Assistance Funds
☐ Local Governments	☐ Combination of Above: _____
☐ Self-Supported/Project	_____
☐ Profits/User Fees	☐ Other: _____

E. Staffed by: (Check all that apply.)

☐ University Graduates at All Levels

☐ University Graduates at Administrative Levels and Technical School Graduates at Local Levels

☐ University Graduates at Administrative Levels & Specially Trained Individuals at Local Levels

☐ Technical School Graduates at All Levels

☐ Nationals at All Levels

☐ A Mixture of Nationals & Non-nationals at All Levels

☐ Nationals at _____ & Non-Nationals at _____ Levels

☐ Men at All Levels

☐ A Mixture of Men & Women at All Levels

☐ Men at _____ Levels & Women at _____ Levels

☐ Other: _____

2. From Users'/Clientele Perspective, It is Considered Most Desirable for Agricultural Extension Education System to be: (con'd.)

F. Directed in Terms of Program Priorities by:

_____ Clientele Advisory Groups	_____ Donor-Assisted Project Organization
_____ Central Federal Administration	
_____ University Administration	_____ Autonomous Economic & Social Development Body
_____ Autonomous Public Sector Body	_____ Other: _____

G. Associated with/on: (Check all that apply.)

	<u>Formal Basis</u>	<u>Informal Basis</u>
Farm Credit System	_____	_____
Farm Supply Organizations	_____	_____
Marketing Organizations	_____	_____
Promotional Groups	_____	_____
Other: _____	_____	_____
Other: _____	_____	_____

Other Pertinent Observations:

1. _____

2. _____

Other Pertinent Observations: (con'd.)

3. _____

4. _____

5. _____

6. _____

7. _____

8. _____

APPENDIX I.

Second Revision - "Model Correlation Instrument"

Note:

1. This instrument should be used after completion of the "Country Analysis Instrument" and requires information and data derived from its application for completion.
2. When selecting appropriate model components, refer to the indicated "Analysis Factors" found in the "Country Analysis Instrument" and the associated "Agricultural Extension Education Models".
3. For purposes of abbreviation, the following initials are used when referring to "Analysis Factors" included in the "Country Analysis Instrument":

GS	Geographic Situation	ES	Economic Situation
CS	Climatic Situation	AS	Agricultural Situation
DS	Demographic Situation	IS	Infrastructure Situation
PS	Political Situation	DCS	Desired Characteristics
4. For purposes of abbreviation, the following initials are used to identify the "Agricultural Extension Education Models" from which various components are derived:

CAES	Conventional Agricultural Extension System
TVS	Training and Visit System
UAES	University Agricultural Extension System
CDPS	Commodity Development and Production System
IADS	Integrated Agricultural Development System
IRDS	Integrated Rural Development System
FSRDS	Farming Systems Research and Development System
ALL	All of the Above Listed Systems

MODEL OBJECTIVES:**1. Objectives should be set by: Analysis Factors - PS 4-7,9; AS 10; DCS 1B,1F,2B,2F**

- ___ Clientele Advisory Groups (UAES)
- ___ Central Federal Administration (CAES,TVS)
- ___ University Administration (UAES)
- ___ Autonomous Public Sector Program Body (CDPS)
- ___ Donor-Assisted Project Organization (IADS)
- ___ Autonomous Economic and Social Development Organization (IRDS)
- ___ Other: _____

2. Objectives should be defined as: Analysis Factors - AS 12,15,16

- ___ Providing &/or Maintaining Low Consumer Food Prices (UAES,CDPS)
- ___ Providing Economic Incentives for Increased Agricultural Production (CDPS,IADS,IRDS)
- ___ Increasing Agricultural Production for Export to Reduce Balance of Trade Deficit (CAES,CDPS)
- ___ Increasing Agricultural Production to Increase Real Income of Farmers (ALL)
- ___ Improving the Lot of Large-Scale Farmers (IADS)
- ___ Improving the Quality of Life for the Entire Rural Population (ALL)
- ___ Providing for Broad-Based Agricultural Development (CAES,TVS,UAES,FSRD)
- ___ Strengthening the Family and Home (UAES)
- ___ Enhancing the Environment and the Use of Natural Resources (UAES,FSRD)
- ___ Supporting Communities Toward the Goal of Community Improvement (UAES)
- ___ Improving Local Leadership and Initiative (UAES,IRDS)
- ___ Increasing the Availability of Social Programs in Health, Nutrition, and Basic Education (IRDS)
- ___ Other: _____

MODEL CLIENTELE:

1. Scope of Clientele should be: Analysis Factors - DS 1-4; AS 4-5,
19-21

- ___ Entire Population (UAES)
- ___ Entire Farm Population (TVS)
- ___ Large-Scale Farmers (CAES, IADS)
- ___ Small-Scale Farmers (IRDS, FSRD)
- ___ All Farmers within an Identified Project Area (IADS)
- ___ Other Target Groups within the Farm Population, ie. producers
of specific commodities, women, etc. (CAES, CDPS)
- ___ Other: _____

MODEL ORGANIZATION:

1. Should be Administered by: Analysis Factors - PS 1-9; AS 10;
DCS 1A, 2A

- ___ Agricultural Branch of the Federal Government (CAES, TVS)
- ___ Educational Branch of the Federal Government
- ___ Another Branch of Federal Government:

- ___ Agricultural College or University (UAES)
- ___ Another Public Body: (CDPS)

- ___ Independent Company or Organization (IADS, IRDS)
- ___ Autonomous, Self-Directed Extension System
- ___ Other: _____
- ___ Other: _____

MODEL ORGANIZATION: (con'd.)**2. Should be Responsible for: Analysis Factors - PS 5,7; AS 10,13; DCS 1B,2B**

- ☐ Regulation and Enforcement (CAES)
- ☐ Administration and Direction (CAES)
- ☐ Policy Formulation
- ☐ Promotion and Marketing (CDPS, IADS)
- ☐ Financing and Credit (CDPS, IADS)
- ☐ Input Supply (CAES, CDPS, IADS)
- ☐ Education (ALL)
- ☐ Research (FSRD)
- ☐ Other: _____

3. Should be Organized with Staff and Offices on a: Analysis Factors - GS 1-12; CS 1-5; DS 1-4; AS 1,5-9,17; IS 1-6; DCS 1C,2C

- ☐ National Level (CAES, TVS, UAES)
- ☐ Sub-Unit Level (CAES, TVS, UAES, CDPS, FSRD); if so, number of Sub-Unit Facilities should be: _____
- ☐ Local Level (ALL); if so, number of Local Facilities should be: _____
- ☐ Other: _____

4. Should be Funded by: Analysis Factors - DS 3-4; ES 1-11; AS 18; DCS 1D,2D

- ☐ Federal Government (CAES, TVS, UAES)
- ☐ Sub-Unit Governments (CAES, UAES)
- ☐ Local Governments (UAES)
- ☐ Self-Supported: Project Profits, User Fees (CDPS)
- ☐ Private Foundations
- ☐ Development Assistance Funds (IADS, ISRD)
- ☐ Combination of the Above (FSRD)
- ☐ Other: _____

MODEL ORGANIZATION: (con'd.)**5. Should be Staffed by: Analysis Factors - DS 3-4; PS 1-3,8; AS 5, 11,18-20; DCS 1E,2E**

- ___ University Graduates at all Levels (UAES,FSRD)
- ___ University Graduates at Administrative Levels & Technical School Graduates at Local Levels (CAES,CDPS,IADS,IRDS)
- ___ University Graduates at Administrative Levels & Specially Trained Individuals at Local Levels (TVS)
- ___ Technical School Graduates at all Levels
- ___ Nationals at all Levels (CAES,TVS,UAES,CDPS)
- ___ A Mixture of Nationals and Non-Nationals at all Levels (FSRD)
- ___ Nationals at _____ Levels & Non-Nationals at _____ Levels (IADS,IRDS)
- ___ Men at all Levels
- ___ A Mixture of Men and Women at all Levels (CAES,UAES)
- ___ Men at _____ Levels and Women at _____ Levels (TVS,CDPS,IADS,IRDS,FSRD)
- ___ Other: _____
- ___ Other: _____
- ___ Other: _____

6. Should be Staffed with: Analysis Factors - PS 1-8; AS 10,13-14; DCS 1G

	<u>Federal Level</u>	<u>Sub-Unit Level</u>	<u>Local Level</u>
Administrators	(CAES,TVS,UAES)	(ALL)	(CAES,TVS,FSRD)
Subject Specialists	(CAES,TVS,UAES)	(ALL)	_____
Extension Educators	(CAES,TVS,UAES)	(CAES,TVS,UAES CDPS,FSRD)	(ALL)
Other: _____	_____	_____	_____
Other: _____	_____	_____	_____

MODEL ORGANIZATION: (con'd.)**7. Should be Linked with Research Centers through: Analysis Factors - PS 1-8; AS 13-14; DCS 1H**

- _____ Dual-Assigned Personnel (CAES,UAES,FSRD)
- _____ Locally Administered Research Plots and Programs (FSRD)
- _____ Joint Determination of Research Priorities (CAES,TVS,UAES, CDPS,FSRD)
- _____ Co-Authored Research Publications (UAES)
- _____ Other: _____
- _____ Other: _____
- _____ Other: _____

8. Should be Associated with: Analysis Factors - PS 1-8; ES 6-11; AS 1,4-9,17-19,21; IS 1-6; DCS 1I,2G

	<u>Formal Basis</u>	<u>Informal Basis</u>
Farm Credit System	_____	_____
	(CDPS, IADS, IRDS)	(CAES, TVS, UAES, FSRD)
Farm Supply Organizations	_____	_____
	(CDPS, IADS, IRDS)	(CAES, TVS, UAES, FSRD)
Marketing Organizations	_____	_____
	(CDPS, IADS, IRDS)	(CAES, TVS, UAES)
Promotional Groups	_____	_____
	(CDPS, IADS, FSRD)	(CAES, TVS, UAES)
Other: _____	_____	_____
Other: _____	_____	_____
No Other Association	_____	_____

MODEL APPROACH:**1. Educational Approach should be: Analysis Factors - GS 1,2,11; DS 1-4; AS 4-9,17-21; IS 1-6; DCS 1C-1J,2C-2G**

- _____ One-on-One Contact by Local Extension Workers through Irregular Home & Farm Visits & Office Calls (CAES,UAES)
- _____ Agricultural Information Units for Production of Bulletins, Teaching Aids, Radio Programs, & Mass Media Materials (CAES)
- _____ Local Extension Workers Contact Local Farmers on a Fixed Schedule (TVS)
- _____ Local Extension Workers Receive Training on a Fixed Schedule (TVS)
- _____ Local Advisory Councils Provide Guidance & Assistance in Financial, Operational, Programming, & Evaluation Processes of Extension Program (UAES,IRDS)
- _____ Local Extension Personnel Use Research-Based Information to Help Local People Identify & Establish Need Priorities & then Request Instructional Assistance from Subject-Matter Specialists on Selected Topics (UAES)
- _____ Local Farmers Contract to Produce an Identified Commodity Using Recommended Practices & the Commodity Organization Contracts to Provide Commodity Research, Credit, Input Supply, Technical Assistance, & Marketing Services (CDPS)
- _____ Pilot Project Established in which the Organization Provides Previously Limited Inputs Assumes the Responsibility for Coordinating All Facets of Agricultural Production, Including Credit, Supply, Technical Assistance, & Marketing Services (IADS,IRDS)
- _____ Establishment of an Interdisciplinary Team which Conducts On-Farm Research to Evaluate the Interplay of the Production Components under Farmer's Control & the Physical, Biological & Socio-Economic Environments; Identifies & Generates New Technology; Adapts & Tests Technologies in Project Area Possessing Reasonably Uniform Characteristics (FSRD)
- _____ Other: _____
- _____ Other: _____

MODEL ROLE OF EXTENSION PERSONNEL:**1. Role of Local Extension Personnel should be: Analysis Factors - PS 4-7; AS 12-13,16-17,20; DCS 1B,1D,1H,2B,2D**

- _____ Consultant; identify farmer problems/needs & production constraints (CAES,TVS,CDPS,IADS)
- _____ Advisor; work with local people to identify & prioritize problems/needs & possible solutions (UAES,IRDS,FSRD)
- _____ Communicator; communicate farmer problems/needs & production constraints to subject-matter specialists & research workers (CAES,TVS,UAES,FSRD)
- _____ Educator; disseminate research-based information about new technology & demonstrate its practical application to farmers (ALL)
- _____ Motivator; encourage application of improved methods or identified solutions to problems (TVS,UAES,IRDS,FSRD)
- _____ Evaluator; work with local people to evaluate the effectiveness of new techniques & extension programs (UAES,IRDS,FSRD)
- _____ Researcher; conduct on-farm research to determine the practicality & effectiveness of new technology (FSRD)
- _____ Government Administrator; administer government programs & policies on the local level (CAES)
- _____ Supplier; provide farmers with required inputs (CDPS,IADS)
- _____ Marketer; coordinate product marketing (CDPS,IADS,IRDS)
- _____ Other: _____

- _____ Other: _____

IDENTIFIED DESIGN PARAMETERS:**I. Objectives to be Established by:**

II. Objectives to be Defined as:

A.

B.

C.

D.

E.

III. Scope of Clientele to be:

IV. Organization to be: (Sub-Unit and Local Levels should be repeated and staffed as required.)

A. National Level

<u>Function:</u>	<u>Number of Personnel Required:</u>
___ Administration	___
___ Research	___
___ Education	___
___ Other: _____	___
___ Other: _____	___

1. Sub-Unit Level

<u>Function:</u>	<u>Number of Personnel Required:</u>
___ Administration	___
___ Research	___
___ Education	___
___ Other: _____	___
___ Other: _____	___

a. Local Level

<u>Function:</u>	<u>Number of Personnel Required:</u>
___ Administration	___
___ Research	___
___ Education	___
___ Other: _____	___
___ Other: _____	___

V. Educational Approach to be:

- A. _____

- B. _____

- C. _____

- D. _____

VI. Role of Extension Personnel to be:

- A. _____

- B. _____

- C. _____

- D. _____

APPENDIX J.

Instrument Evaluation Form - Final Wave Summary

Note: Total Respondents: 27

Figures above blanks represent actual numbers

Figures below blanks represent percentage of total

	Not At All	Slight Extent	Fair Extent	Great Extent
1. To what extent does the Country Analysis Instrument:				
a. identify impactors which affect success of an extension system?	<u>0</u> 0	<u>1</u> 3.7	<u>4</u> 14.8	<u>22</u> # 81.5%
b. provide appropriate quantitative evaluation of these impactors?	<u>0</u> 0	<u>1</u> 3.7	<u>5</u> 18.5	<u>21</u> # 77.8%
c. provide appropriate qualitative evaluation of these impactors?	<u>0</u> 0	<u>1</u> 3.7	<u>5</u> 18.5	<u>21</u> # 77.8%
d. list factor analysis questions in a logical order?	<u>0</u> 0	<u>0</u> 0	<u>2</u> 7.4	<u>25</u> # 92.6%
e. list questions in a manner which is easily interpreted and understood?	<u>0</u> 0	<u>0</u> 0	<u>3</u> 11.1	<u>24</u> # 88.9%
f. provide practical tool which can be used by analysts to determine situation in developing country?	<u>0</u> 0	<u>1</u> 3.7	<u>6</u> 22.2	<u>20</u> # 74.1%
2. What additional Analysis Categories should be included in the Country Analysis Instrument?				

25 # None, the instrument appears complete
92.6%

2 # Suggest the following additions to the instrument:
7.4%

<u>Suggested Additional Category</u>	<u>Number of Respondents</u>
Cultural Situation	2/27

3. What additional specific Analysis Factors should be included in
the Country Analysis Instrument?

23 # None, the instrument appears complete
85.2%

4 # Suggest the following additions to the instrument:
14.8%

<u>Current Analysis Categories</u>	<u>Suggested Additional Analysis Factors</u>	<u>Number of Respondents</u>
N/A	Cultural Traditions which may Impact Extension System	1/27
N/A	Cultural/Heritage Group Leadership Organizational Structure	1/27
N/A	Identification of Specific Educational Needs of Cultural Groups	1/27
N/A	Identification of National Educational Goals	1/27

4. Which Analysis Factors currently included in the Country Analysis Instrument should be deleted?

20 # None, the instrument appears appropriate as is
74.1%

7 # Suggest the following deletions from the instrument:
25.9%

<u>Current Analysis Categories</u>	<u>Suggested Analysis Factors to Eliminate</u>	<u>Number of Respondents</u>
Geographic	Coastal Area - yes, no	1/27
Agricultural	Farm Family Labor Distribution	2/27
Agricultural	Fishing, Fish Culture Important - yes, no	2/27
Desired Characteristics from Policy Makers' Perspective	Supported with Section	2/27

5. Which Analysis Factors currently included in the Country Analysis Instrument are appropriate considerations, but need considerable alteration in order to be understandable and/or provide the desired analysis information? Note: Please make suggested alterations on instrument copy.

23 # None, the instrument appears appropriate as is
85.2%

4 # Suggest the following factors need alteration:
14.8%

<u>Current Analysis Categories</u>	<u>Suggested Analysis Factors to Alter</u>	<u>Number of Respondents</u>
Demographic	Percent Population by Heritage Groups to Include Primary Traditions	1/27
Political	Identify National/Sub-Unit Administrative/Representative Branch Organization Alternatives	1/27
Agricultural	Identify Ag Development Goal Alternatives	1/27
Agricultural	Identify Linkage between Research and Education Alternatives	1/27

	<u>Not At All</u>	<u>Slight Extent</u>	<u>Fair Extent</u>	<u>Great Extent</u>
6. To what extent does the Model Correlation Instrument:				
a. identify existing alternative components?	<u>0</u> 0	<u>0</u> 0	<u>1</u> 3.7	<u>26</u> # 96.3%
b. identify alternative components with their model derivation?	<u>0</u> 0	<u>0</u> 0	<u>0</u> 0	<u>27</u> # 100 %
c. identify analysis factors that should be considered when selecting appropriate component alternatives?	<u>0</u> 0	<u>2</u> 7.4	<u>3</u> 11.1	<u>22</u> # 81.5%
d. list model component areas in logical order?	<u>0</u> 0	<u>0</u> 0	<u>0</u> 0	<u>27</u> # 100 %
e. list component alternatives in logical order?	<u>0</u> 0	<u>0</u> 0	<u>1</u> 3.7	<u>26</u> # 96.3%
f. list questions in manner easily interpreted/understood?	<u>0</u> 0	<u>0</u> 0	<u>0</u> 0	<u>27</u> # 100 %
g. provide for definition & identification of appropriate design parameters?	<u>0</u> 0	<u>1</u> 3.7	<u>3</u> 11.1	<u>23</u> # 85.2%
h. provide practical tool for use by analysts to develop appropriate design parameters?	<u>0</u> 0	<u>1</u> 3.7	<u>3</u> 11.1	<u>23</u> # 85.2%

7. What additional Model Component Areas should be included in the Model Correlation Instrument?

27 # None, the instrument appears complete
100 %

0 # Suggest the following additions to the instrument:
0 %

8. What additional specific Component Alternatives should be included in the Model Correlation Instrument?

27 # None, the instrument appears complete
100 %

0 # Suggest the following additions to the instrument:
0 %

9. Which Component Alternatives currently included in the Model Correlation Instrument should be deleted?

27 # None, the instrument appears appropriate as is
100 %

0 # Suggest the following deletions from the instrument:
0 %

10. Which Component Alternatives currently included in the Model Correlation Instrument are appropriate considerations, but need considerable alteration in order to be understandable and/or provide the desired component selection? Note: Please make suggested alterations on instrument copy.

27 # None, the instrument appears appropriate as is
100 %

0 # Suggest the following factors need alteration:
0 %

11. To what extent are the Country Analysis and Model Correlation Instruments useful tools for analysts as they approach the project of designing an appropriate agricultural extension education system for a developing country?

0 # Not At All
0 %

2 # Fair Extent
7.4 %

1 # Slight Extent
3.7 %

24 # Great Extent
88.9 %

12. To what extent would the instruments actually be used by analysts in development projects if they were available?

<u>0</u> # Not At All	<u>3</u> # Fair Extent
0 %	11.1%
<u>2</u> # Slight Extent	<u>22</u> # Great Extent
7.4%	81.5%

13. Additional Comments/Suggestions:

<u>Paraphrased Comments</u>	<u>Number of Respondents</u>
a. Add general directions for instrument usage and implementation	2/27
b. Maintain consistency in format	1/27
c. Open both instruments as much as possible	1/27

APPENDIX K.

Final Revision - "Country Analysis Instrument"

Agricultural Extension Education Design Parameter Instruments

The attached instruments are intended for use by a project analyst or consultant team charged with the task of assisting with the design or evaluation of agricultural extension education systems in developing countries. The first, the **"Country Analysis Instrument"**, is an evaluation tool which serves to identify and quantify the various existing or desired characteristics which impact the development of an agricultural extension education system within a developing country. The second, the **"Model Correlation Instrument"**, is a key which allows those identified impactors to be correlated with particular components of existing extension education models. When used in order, these instruments afford the opportunity to "custom" design an appropriate, effective agricultural extension education system for the country in question.

The **"Country Analysis Instrument"** should be completed in-country by referencing current available statistical data, interviewing educators and policy makers, and conducting focus sessions of policy maker and clientele groups. Care should be taken to insure accuracy in areas of objective evaluation and to reflect priority attitudes, goals, and opinions in those of subjective evaluation.

Based upon an analysis of the information gathered through implementation of the first instrument, the **"Model Correlation Instrument"** can be employed by project personnel to correlate identified impactors with particular components of existing extension education models. This task should be completed in cooperation with national decision-makers and through careful consideration of the existing conditions within the country in question; the desired characteristics of an extension education system as perceived by educators, policy makers, and clientele; and the identified model component alternatives. A summary of selected component alternatives provides design parameters for an agricultural extension education system in the country.

"Country Analysis Instrument"

Country: _____

Analysis Period: From _____ To _____

Reference Notations:

Geographic Situation: (GS)

1. Size of Country (km²) _____
2. Number of Sub-Units (districts, provinces, states, etc.) _____
3. Percentage of Total Land Area Covered by Mountains _____ %
4. Percentage of Total Land Area Covered by Highlands or Hills _____ %
5. Percentage of Total Land Area covered by Plains _____ %
6. Percentage of Total Land Area covered by Lowlands _____ %
7. Percentage of Total Land Area Covered by Desert _____ %
8. Percentage of Total Land Area Covered by Jungle _____ %
9. Total Length of Coastline(s) (km) _____

10. List the country sub-units and identify specific characteristics of each by filling-in blanks with specific areas, percentages, or simply checking all that apply. Combination situations may be accommodated by completing more than one blank per sub-unit as applicable.

<u>Sub-Unit</u>	<u>km²</u>	<u>Mounts</u>	<u>Hills</u>	<u>Plains</u>	<u>Lows</u>	<u>Coast</u>	<u>Desert</u>	<u>Jungle</u>
_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____

11. Identify specific geographic barriers (ie. jungle area, mountainous region, major river or lake) in sub-units which potentially impede the development and/or success of an agricultural extension system.

<u>Sub-Unit</u>	<u>Potential Geographic Barrier</u>
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

Climatic Situation: (CS)

1. Primary Climate of Country (tropical, sub-tropical, arid, temperate) _____
2. Average Annual Rainfall of Country (cm) _____
3. Seasonal Variation: _____ Yes _____ No
4. If so, Identify Seasons and Associated Months:

Northern Climate Seasons	Months From	Through
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

Southern Climate Seasons	Months From	Through
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

5. List the country sub-units and identify specific characteristics of each by filling-in blanks with specific information.

Sub-Unit	Average Annual Rainfall	Temperature		Average Days in Growing Season
		Normal High	Normal Low	
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

Demographic Situation: (DS)

1. Total Population _____

2. Percent Annual Growth Rate _____ %

3. Identify the Percent Population by:

A. Sex:

_____ % Female

_____ % Male

B. Age:

_____ % 0-24 years

_____ % 45-54 years

_____ % 25-34 years

_____ % 55-64 years

_____ % 35-44 years

_____ % 65+ years

C. Education:

_____ % Primary

_____ % Trade/Technical

_____ % Secondary

_____ % University

_____ % Post Secondary

_____ % Professional

D. Employment: By SourceBy Industry

_____ % Unpaid Family

_____ % Farming

_____ % Self-employed

_____ % Fishing

_____ % Private Business

_____ % Manufacturing

_____ % Government

_____ % Retail

_____ % Church

_____ % Service

_____ % Other

_____ % Other

E. Cultural Heritage by Primary Racial Groups, Tribes,
Religions, Cultural Minorities, etc.Heritage

%

Heritage

%

4. Sub-Unit Location of Major Cultural Heritage Groups:

<u>Sub-Unit</u>	<u>Major Cultural Heritage Groups</u>
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

Political Situation: (PS)

1. Form of National Government:

_____ Monarchy	_____ Benevolent Dictatorship
_____ Socialism	_____ Military
_____ Democracy	_____ Other: _____
_____ Social Democracy	

2. National Administrative Organization:

A. Executive Branch

B. Representative Branch

3. Sub-Unit Administrative Organization:

A. Executive Branch

B. Representative Branch

4. Branch of Government Responsible for Education:

5. Primary Responsibilities of Government Branch Responsible for Education include: (Check all that apply.)

☐ Policy Formulation	☐ Education
☐ Regulation & Enforcement	☐ Research
☐ Promotion	☐ Other: _____

6. Branch of Government Responsible for Agriculture:

7. Primary Responsibilities of Government Branch Responsible for Agriculture include: (Check all that apply.)

☐ Policy Formulation	☐ Input Supply
☐ Regulation & Enforcement	☐ Education
☐ Promotion & Marketing	☐ Research
☐ Financing & Credit	☐ Other: _____

8. Administrative Organization of Governmental Branches:

9. Established Method of Government Policy Formation: (Check all that apply.)

- _____ Independent Administrative Determination
- _____ Representative Determination
- _____ Combination of Administrative & Representative Determination
- _____ Other: _____

Economic Situation: (ES)

1. Form of National Currency _____
2. Current Exchange Rate with US Dollar (\$) _____/\$
3. Per Capita GNP in US Dollars (\$) _____\$
4. Average Annual Percentage Growth in GNP (past 5 years) _____%
5. Per Capita GDP in US Dollars (\$) _____\$
6. Percent Distribution of GDP:

% <u>By Source</u>	% <u>By Demand</u>
_____ Agriculture	_____ Public Consumption
_____ Industry	_____ Gross Domestic Investment
_____ Services	_____ Private Consumption
	_____ Gross Domestic Saving
	_____ Exports
7. Current Balance of Payments in U.S. Dollars _____\$
8. External Public Debt in U.S. Dollars (\$) _____\$
9. External Public Debt as a Percentage of GNP _____%
10. Annual Interest Payments on External Public Debt in U.S. Dollars (\$) _____\$
11. Debt Service on External Public Debt:
 - a. as a Percentage of Exports of Goods & Services _____%
 - b. as a Percentage of GNP _____%

Agricultural Situation: (AS)

1. Total Cultivated Land Area (hectares) _____

2. Total Number of Farms _____

3. Average Farm Size (hectares) _____

4. Percent Farmland by Ownership:

<u>%</u> <u>Entity</u>	<u>%</u> <u>Entity</u>
_____ Individual Farm Families	_____ Government
_____ Absentee/Investor Landlord	_____ Other: _____
_____ Corporation	_____ Other: _____

5. Percent Farm Families by Farming System:

<u>%</u> <u>System</u>	<u>%</u> <u>System</u>
_____ Nomadic	_____ Confinement Livestock
_____ Slash & Burn	_____ Communal/Enterprise
_____ Permanent Cropland/Pasture	_____ Other: _____
_____ Kampong/Scavenging Livestock	_____ Other: _____

6. Total Production of Primary Agricultural Crops:

<u>Major Crops</u>	<u>Total Production</u>
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

7. Total Number of Head Each of Primary Livestock Species:

<u>Livestock Species</u>	<u>Total Head</u>
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

8. If Fishing or Fish Culture is Important to Rural Life or Economy, Identify Total Area and Output of Marine Fishing and Freshwater Fish Culture:

Marine Fishing Area	_____
Marine Fishing Output (Tons)	_____
Freshwater Fish Culture Area	_____
Freshwater Fish Culture Output (Tons)	_____

9. Government Branch Responsible for Agricultural Education:

10. Percent Agricultural Education by Source:

% Source

_____	On-Farm Experience/Training
_____	Vocational Agriculture Training in Primary/Secondary Schools
_____	Technical School Training
_____	College/University Training
_____	Extension Programs
_____	Other: _____

11. The Current Goals of Agricultural Education may be Ranked in Order of Significance as follows:

- ☐ Increasing Food Production
- ☐ Increasing Farm Incomes
- ☐ Improving the Efficiency of Production
- ☐ Providing Financial Counseling
- ☐ Providing Farm Inputs
- ☐ Providing Farm Markets
- ☐ Organizing Farm Commodity Groups & Organizations
- ☐ Other: _____

12. Government/Organizational Body Responsible for Ag Research:

13. Linkage between Agricultural Research and Education:

- ☐ Dual-Assigned Personnel
- ☐ Locally Administered Research Plots and Programs
- ☐ Joint Determination of Research Priorities
- ☐ Co-Authored Research Publications
- ☐ Other: _____

14. Current National Agricultural Policy may be Characterized as:
(Check all that apply.)

- ☐ Supporting Low Consumer Food Prices
- ☐ Providing Economic Incentives for Increased Production
- ☐ Emphasizing Increased Production for Export to Reduce Balance of Trade Deficit
- ☐ Emphasizing Increased Production to Increase Farm Incomes
- ☐ Supporting Large-Scale Farmers
- ☐ Supporting All Farmers
- ☐ Supporting Broad-Based Agricultural Development
- ☐ Other: _____

15. The Primary Goals for Agricultural Development are: (Check all that apply.)

- _____ Increase Agricultural Production for Export to Reduce Balance of Trade Deficit
- _____ Increase Agricultural Production to Increase Real Income of Farmers
- _____ Increase Agricultural Production to Improve or Stabilize Food Supplies at Reasonable Prices for Urban Populations
- _____ Improve the Quality of Life for the Entire Rural Population
- _____ Enhance the Environment and the Use of Natural Resources
- _____ Support Communities Toward the Goal of Community Improvement
- _____ Improve the Availability of Social Programs in Health, Nutrition, and Basic Education
- _____ Strengthen the Family and Home
- _____ Improve Local Leadership and Initiative
- _____ Other: _____
- _____ Other: _____

16. Value of Agricultural Output in U.S. Dollars (\$) by Sub-Unit:

<u>Sub-Unit</u>	<u>Value</u>
_____	\$ _____
_____	\$ _____
_____	\$ _____
_____	\$ _____
_____	\$ _____
_____	\$ _____
_____	\$ _____
_____	\$ _____

17. Percent of Family Farm

A. Production:

_____ % Consumed at Home

_____ % Marketed

B. Financing Obtained through:

_____ % Family Income/Savings

_____ % Government Financing

_____ % Private Investor

_____ % Private Bank

_____ % Farm Credit Service

_____ % Other: _____

C. Income by Source:

_____ % Husband & Wife Both Working on Farm Full-time

_____ % Wife Working on Farm Full-time & Husband Employed
Elsewhere Full-time_____ % Husband Working on Farm Full-time & Wife Employed
Elsewhere Full-time_____ % Both Partners Working on Farm with Husband Employed
Elsewhere Part-time_____ % Both Partners Working on Farm with Wife Employed
Elsewhere Part-time_____ % Both Partners Working on Farm & Working Elsewhere
Part-time

18. Family Farm Management Decisions Made by:

_____ Male Head of Household

_____ Female Head of Household

_____ Jointly

19. Ag Marketing System may be Described as: (Check all that apply.)

- ☐ Local Family/Roadside Market
☐ Local Community Market/Bazaar
☐ Regional Commodity Marketing Organization
☐ Privately-Owned Commodity Market
☐ Government Marketing Program; Domestic and/or Export
☐ Privately-Owned Export Company
☐ Other: _____

Infrastructure Situation: (IS)

1. Percent Urban Households with the Following Services:

<u>Service</u>	<u><10%</u>	<u>10-30%</u>	<u>30-50%</u>	<u>50-70%</u>	<u>70-90%</u>	<u>>90%</u>
Telephone	_____	_____	_____	_____	_____	_____
Daily Mail Delivery	_____	_____	_____	_____	_____	_____
Daily Newspaper	_____	_____	_____	_____	_____	_____
Electricity	_____	_____	_____	_____	_____	_____
Indoor Plumbing	_____	_____	_____	_____	_____	_____
Television	_____	_____	_____	_____	_____	_____
Radio	_____	_____	_____	_____	_____	_____

2. Percent Rural Households with the Following Services:

<u>Service</u>	<u><10%</u>	<u>10-30%</u>	<u>30-50%</u>	<u>50-70%</u>	<u>70-90%</u>	<u>>90%</u>
Telephone	_____	_____	_____	_____	_____	_____
Daily Mail Delivery	_____	_____	_____	_____	_____	_____
Daily Newspaper	_____	_____	_____	_____	_____	_____
Electricity	_____	_____	_____	_____	_____	_____
Indoor Plumbing	_____	_____	_____	_____	_____	_____
Television	_____	_____	_____	_____	_____	_____
Radio	_____	_____	_____	_____	_____	_____

3. General Road Conditions may be Described as:

	<u>Excellent</u>	<u>Good</u>	<u>Fair</u>	<u>Poor</u>
Town/City Streets	_____	_____	_____	_____
Major Roads/Highways	_____	_____	_____	_____
Rural Roads	_____	_____	_____	_____

4. General Observations Regarding Roadways:

5. Percent Transportation Provided by:

	<u>Urban Areas</u>	<u>Rural Areas</u>
Foot/Walking	_____ %	_____ %
Animal/Animal Cart	_____ %	_____ %
Manpowered Transport (Bicycle/Rickshaw)	_____ %	_____ %
Public Transportation (Bus, Tram)	_____ %	_____ %
Taxi/Limo/Jeepny	_____ %	_____ %
Family-owned Automobile	_____ %	_____ %
Other: _____	_____ %	_____ %

6. General Observations Regarding Air & Rail Transportation:

General or Desired Characteristics Impacting an Agricultural Extension Education System: (DCS)

1. From Policy Makers' Perspective, It is Considered Most Desirable for Agricultural Extension Education System to be:

A. Administered by:

_____ The Agricultural Branch of the Federal Government

_____ The Educational Branch of the Federal Government

_____ Another Branch of the Federal Government:

_____ An Agricultural College or University

_____ Another Public Body:

_____ An Independent Company or Organization

_____ An Autonomous, Self-Directed Extension System

_____ Other: _____

B. Responsible for: (Check all that apply.)

_____ Regulation & Enforcement

_____ Input Supply

_____ Administration/Direction

_____ Education

_____ Policy Formulation

_____ Research

_____ Promotion & Marketing

_____ Other: _____

_____ Financing & Credit

_____ Other: _____

C. Organized with Staff & Offices on a: (Check all that apply.)

_____ National Level

_____ Local Level

_____ Sub-Unit Level

_____ Other: _____

1. From Policy Makers' Perspective, It is Considered Most Desirable for Agricultural Extension Education System to be: (con'd.)

D. Funded by:

☐ Federal Government	☐ Private Foundation
☐ Sub-Unit Governments	☐ Development Assistance Funds
☐ Local Governments	☐ Combination of Above:
☐ Self-Supported/Project	_____
☐ Profits/User Fees	☐ Other: _____

E. Staffed by: (Check all that apply.)

☐ University Graduates at All Levels

☐ University Graduates at Administrative Levels and Technical School Graduates at Local Levels

☐ University Graduates at Administrative Levels & Specially Trained Individuals at Local Levels

☐ Technical School Graduates at All Levels

☐ Nationals at All Levels

☐ A Mixture of Nationals & Non-nationals at All Levels

☐ Nationals at _____ & Non-Nationals at _____ Levels

☐ Men at All Levels

☐ A Mixture of Men & Women at All Levels

☐ Men at _____ Levels & Women at _____ Levels

☐ Other: _____

☐ Other: _____

F. Directed in Terms of Program Priorities by:

☐ Clientele Advisory Groups	☐ Donor-Assisted Project Organization
☐ Central Federal Administration	
☐ University Administration	☐ Autonomous Economic & Social Development Body
☐ Autonomous Public Sector Body	☐ Other: _____

1. From Policy Makers' Perspective, It is Considered Most Desirable for Agricultural Extension Education System to be: (con'd.)

G. Staffed with/at:

	<u>Federal Level</u>	<u>Sub-Unit Level</u>	<u>Local Level</u>
Administrators	_____	_____	_____
Subject Matter Specialists	_____	_____	_____
Extension Educators	_____	_____	_____
Other: _____	_____	_____	_____
Other: _____	_____	_____	_____

H. Linked with Research Centers through: (Check all that apply.)

_____ Dual-Assigned Personnel

_____ Locally Administered Research Plots & Programs

_____ Joint Determination of Research Priorities

_____ Co-Authored Research Publications

_____ Other: _____

I. Associated with/on: (Check all that apply.)

	<u>Formal Basis</u>	<u>Informal Basis</u>
Farm Credit System	_____	_____
Farm Supply Organizations	_____	_____
Marketing Organizations	_____	_____
Promotional Groups	_____	_____
Other: _____	_____	_____
Other: _____	_____	_____

2. From Users'/Clientele Perspective, It is Considered Most Desirable for Agricultural Extension Education System to be:

A. Administered by:

_____ The Agricultural Branch of the Federal Government

_____ The Educational Branch of the Federal Government

_____ Another Branch of the Federal Government:

_____ An Agricultural College or University

_____ Another Public Body:

_____ An Independent Company or Organization

_____ An Autonomous, Self-Directed Extension System

_____ Other: _____

B. Responsible for: (Check all that apply.)

_____ Regulation & Enforcement _____ Input Supply

_____ Administration/Direction _____ Education

_____ Policy Formulation _____ Research

_____ Promotion & Marketing _____ Other: _____

_____ Financing & Credit _____ Other: _____

C. Organised with Staff & Offices on the following Levels:

_____ National; _____ Sub-Unit; _____ Local; _____ Other: _____

D. Funded by:

_____ Federal Government _____ Private Foundation

_____ Sub-Unit Governments _____ Development Assistance Funds

_____ Local Governments _____ Combination of Above:

_____ Self-Supported/Project _____

_____ Profits/User Fees _____ Other: _____

2. From Users'/Clientele Perspective, It is Considered Most Desirable for Agricultural Extension Education System to be: (con'd.)

E. Staffed by: (Check all that apply.)

- ☐ University Graduates at All Levels
- ☐ University Graduates at Administrative Levels and Technical School Graduates at Local Levels
- ☐ University Graduates at Administrative Levels & Specially Trained Individuals at Local Levels
- ☐ Technical School Graduates at All Levels
- ☐ Nationals at All Levels
- ☐ A Mixture of Nationals & Non-nationals at All Levels
- ☐ Nationals at _____ & Non-Nationals at _____ Levels
- ☐ Men at All Levels
- ☐ A Mixture of Men & Women at All Levels
- ☐ Men at _____ Levels & Women at _____ Levels
- ☐ Other: _____

F. Directed in Terms of Program Priorities by:

☐ Clientele Advisory Groups	☐ Donor-Assisted Project Organization
☐ Central Federal Administration	
☐ University Administration	☐ Autonomous Economic & Social Development Body
☐ Autonomous Public Sector Body	☐ Other: _____

G. Associated with/on: (Check all that apply.)

- | | <u>Formal</u>
<u>Basis</u> | <u>Informal</u>
<u>Basis</u> |
|---------------------------|-------------------------------|---------------------------------|
| Farm Credit System | ☐ | ☐ |
| Farm Supply Organizations | ☐ | ☐ |
| Marketing Organizations | ☐ | ☐ |
| Promotional Groups | ☐ | ☐ |
| Other: _____ | ☐ | ☐ |

Other Pertinent Observations:

1. _____

2. _____

3. _____

4. _____

5. _____

APPENDIX L.

Final Revision - "Model Correlation Instrument"

for

Country: _____

Note:

1. This instrument should be used after completion of the "Country Analysis Instrument" and requires information and data derived from its application for completion.
2. When selecting appropriate model components, refer to the indicated "Analysis Factors" found in the "Country Analysis Instrument" and the associated "Agricultural Extension Education Models".
3. For purposes of abbreviation, the following initials are used when referring to "Analysis Factors" included in the "Country Analysis Instrument":

GS	Geographic Situation	ES	Economic Situation
CS	Climatic Situation	AS	Agricultural Situation
DS	Demographic Situation	IS	Infrastructure Situation
PS	Political Situation	DCS	Desired Characteristics
4. For purposes of abbreviation, the following initials are used to identify the "Agricultural Extension Education Models" from which various components are derived:

CAES	Conventional Agricultural Extension System
TVS	Training and Visit System
UAES	University Agricultural Extension System
CDPS	Commodity Development and Production System
IADS	Integrated Agricultural Development System
IRDS	Integrated Rural Development System
FSRDS	Farming Systems Research and Development System
ALL	All of the Above Listed Systems

MODEL OBJECTIVES:**1. Objectives should be set by: Analysis Factors - PS 4-7,9; AS 9; DCS 1A,1B,1F,2A,2B,2F**

- ___ Clientele Advisory Groups (UAES)
- ___ Central Federal Administration (CAES,TVS)
- ___ University Administration (UAES)
- ___ Autonomous Public Sector Program Body (CDPS)
- ___ Donor-Assisted Project Organization (IADS)
- ___ Autonomous Economic and Social Development Organization (IRDS)
- ___ Other: _____

2. Objectives should be defined as: Analysis Factors - AS 11,14,15

- ___ Providing &/or Maintaining Low Consumer Food Prices (UAES,CDPS)
- ___ Providing Economic Incentives for Increased Agricultural Production (CDPS,IADS,IRDS)
- ___ Increasing Agricultural Production for Export to Reduce Balance of Trade Deficit (CAES,CDPS)
- ___ Increasing Agricultural Production to Increase Real Income of Farmers (ALL)
- ___ Improving the Lot of Large-Scale Farmers (IADS)
- ___ Improving the Quality of Life for the Entire Rural Population (ALL)
- ___ Providing for Broad-Based Agricultural Development (CAES,TVS,UAES,FSRD)
- ___ Strengthening the Family and Home (UAES)
- ___ Enhancing the Environment and the Use of Natural Resources (UAES,FSRD)
- ___ Supporting Communities Toward the Goal of Community Improvement (UAES)
- ___ Improving Local Leadership and Initiative (UAES,IRDS)
- ___ Increasing the Availability of Social Programs in Health, Nutrition, and Basic Education (IRDS)
- ___ Other: _____

MODEL CLIENTELE:

1. Scope of Clientele should be: Analysis Factors - DS 1-4; AS 4-5,
17-19

- ____ Entire Population (UAES)
- ____ Entire Farm Population (TVS)
- ____ Large-Scale Farmers (CAES, IADS)
- ____ Small-Scale Farmers (IRDS, FSRD)
- ____ All Farmers within an Identified Project Area (IADS)
- ____ Other Target Groups within the Farm Population, ie. producers
of specific commodities, women, etc. (CAES, CDPS)
- ____ Other: _____

MODEL ORGANIZATION:

1. Should be Administered by: Analysis Factors - PS 1-9; AS 9;
DCS 1A, 2A

- ____ Agricultural Branch of the Federal Government (CAES, TVS)
- ____ Educational Branch of the Federal Government
- ____ Another Branch of Federal Government:

- ____ Agricultural College or University (UAES)
- ____ Another Public Body: (CDPS)

- ____ Independent Company or Organization (IADS, IRDS)
- ____ Autonomous, Self-Directed Extension System
- ____ Other: _____
- ____ Other: _____

MODEL ORGANIZATION: (con'd.)**2. Should be Responsible for: Analysis Factors - PS 5,7; AS 9,11-13; DCS 1B,2B**

- ___ Regulation and Enforcement (CAES)
- ___ Administration and Direction (CAES)
- ___ Policy Formulation
- ___ Promotion and Marketing (CDPS, IADS)
- ___ Financing and Credit (CDPS, IADS)
- ___ Input Supply (CAES, CDPS, IADS)
- ___ Education (ALL)
- ___ Research (FSRD)
- ___ Other: _____

3. Should be Organized with Staff and Offices on a: Analysis Factors - GS 1-11; CS 1-5; DS 1-4; AS 1-8,16; IS 1-6; DCS 1C,2C

- ___ National Level (CAES, TVS, UAES)
- ___ Sub-Unit Level (CAES, TVS, UAES, CDPS, FSRD); if so,
number of Sub-Unit Facilities should be: _____
- ___ Local Level (ALL); if so,
number of Local Facilities should be: _____
- ___ Other: _____

4. Should be Funded by: Analysis Factors - DS 3-4; ES 1-11; AS 16-17; DCS 1D,2D

- ___ Federal Government (CAES, TVS, UAES)
- ___ Sub-Unit Governments (CAES, UAES)
- ___ Local Governments (UAES)
- ___ Self-Supported: Project Profits, User Fees (CDPS)
- ___ Private Foundations
- ___ Development Assistance Funds (IADS, ISRD)
- ___ Combination of the Above (FSRD)
- ___ Other: _____

MODEL ORGANIZATION: (con'd.)**5. Should be Staffed by: Analysis Factors - DS 3-4; PS 1-3,8-9; AS 5, 10,17-18; DCS 1E,2E**

- ___ University Graduates at all Levels (UAES,FSRD)
- ___ University Graduates at Administrative Levels & Technical School Graduates at Local Levels (CAES,CDPS,IADS,IRDS)
- ___ University Graduates at Administrative Levels & Specially Trained Individuals at Local Levels (TVS)
- ___ Technical School Graduates at all Levels
- ___ Nationals at all Levels (CAES,TVS,UAES,CDPS)
- ___ A Mixture of Nationals and Non-Nationals at all Levels (FSRD)
- ___ Nationals at _____ Levels & Non-Nationals at _____ Levels (IADS,IRDS)
- ___ Men at all Levels
- ___ A Mixture of Men and Women at all Levels (CAES,UAES)
- ___ Men at _____ Levels and Women at _____ Levels (TVS,CDPS,IADS,IRDS,FSRD)
- ___ Other: _____
- ___ Other: _____
- ___ Other: _____

6. Should be Staffed with: Analysis Factors - PS 1-9; AS 9,12-13; DCS 1G

	<u>Federal Level</u>	<u>Sub-Unit Level</u>	<u>Local Level</u>
Administrators	(CAES,TVS,UAES)	(ALL)	(CAES,TVS,FSRD)
Subject Specialists	(CAES,TVS,UAES)	(ALL)	_____
Extension Educators	(CAES,TVS,UAES)	(CAES,TVS,UAES CDPS,FSRD)	(ALL)
Other: _____	_____	_____	_____
Other: _____	_____	_____	_____

MODEL ORGANIZATION: (con'd.)**7. Should be Linked with Research Centers through: Analysis Factors - PS 1-8; AS 12-13; DCS 1H**

- ___ Dual-Assigned Personnel (CAES,UAES,FSRD)
- ___ Locally Administered Research Plots and Programs (FSRD)
- ___ Joint Determination of Research Priorities (CAES,TVS,UAES,CDPS,FSRD)
- ___ Co-Authored Research Publications (UAES)
- ___ Other: _____
- ___ Other: _____
- ___ Other: _____

8. Should be Associated with: Analysis Factors - PS 1-8; ES 6-11; AS 1,4-8,16-18,19; IS 1-6; DCS 1I,2G

	<u>Formal Basis</u>	<u>Informal Basis</u>
Farm Credit System	(CDPS, IADS, IRDS)	(CAES, TVS, UAES, FSRD)
Farm Supply Organizations	(CDPS, IADS, IRDS)	(CAES, TVS, UAES, FSRD)
Marketing Organizations	(CDPS, IADS, IRDS)	(CAES, TVS, UAES)
Promotional Groups	(CDPS, IADS, FSRD)	(CAES, TVS, UAES)
Other: _____	_____	_____
Other: _____	_____	_____
No Other Association	_____	_____

MODEL APPROACH:**1. Educational Approach should be: Analysis Factors - GS 1,2,10-11, DS 1-4; AS 4-8,16-18; IS 1-6; DCS 1C-1I,2C-2G**

- _____ One-on-One Contact by Local Extension Workers through Irregular Home & Farm Visits & Office Calls (CAES,UAES)
- _____ Agricultural Information Units for Production of Bulletins, Teaching Aids, Radio Programs, & Mass Media Materials (CAES)
- _____ Local Extension Workers Contact Local Farmers on a Fixed Schedule (TVS)
- _____ Local Extension Workers Receive Training on a Fixed Schedule (TVS)
- _____ Local Advisory Councils Provide Guidance & Assistance in Financial, Operational, Programming, & Evaluation Processes of Extension Program (UAES,IRDS)
- _____ Local Extension Personnel Use Research-Based Information to Help Local People Identify & Establish Need Priorities & then Request Instructional Assistance from Subject-Matter Specialists on Selected Topics (UAES)
- _____ Local Farmers Contract to Produce an Identified Commodity Using Recommended Practices & the Commodity Organization Contracts to Provide Commodity Research, Credit, Input Supply, Technical Assistance, & Marketing Services (CDPS)
- _____ Pilot Project Established in which the Organization Provides Previously Limited Inputs Assumes the Responsibility for Coordinating All Facets of Agricultural Production, Including Credit, Supply, Technical Assistance, & Marketing Services (IADS,IRDS)
- _____ Establishment of an Interdisciplinary Team which Conducts On-Farm Research to Evaluate the Interplay of the Production Components under Farmer's Control & the Physical, Biological & Socio-Economic Environments; Identifies & Generates New Technology; Adapts & Tests Technologies in Project Area Possessing Reasonably Uniform Characteristics (FSRD)
- _____ Other: _____
- _____ Other: _____

MODEL ROLE OF EXTENSION PERSONNEL:**1. Role of Local Extension Personnel should be: Analysis Factors - PS 4-7; AS 11-12,15,19; DCS 1B,1D,1H,2B,2D**

- _____ Consultant; identify farmer problems/needs & production constraints (CAES,TVS,CDPS,IADS)
- _____ Advisor; work with local people to identify & prioritize problems/needs & possible solutions (UAES,IRDS,FSRD)
- _____ Communicator; communicate farmer problems/needs & production constraints to subject-matter specialists & research workers (CAES,TVS,UAES,FSRD)
- _____ Educator; disseminate research-based information about new technology & demonstrate its practical application to farmers (ALL)
- _____ Motivator; encourage application of improved methods or identified solutions to problems (TVS,UAES,IRDS,FSRD)
- _____ Evaluator; work with local people to evaluate the effectiveness of new techniques & extension programs (UAES,IRDS,FSRD)
- _____ Researcher; conduct on-farm research to determine the practicality & effectiveness of new technology (FSRD)
- _____ Government Administrator; administer government programs & policies on the local level (CAES)
- _____ Supplier; provide farmers with required inputs (CDPS,IADS)
- _____ Marketer; coordinate product marketing (CDPS,IADS,IRDS)
- _____ Other: _____
- _____ Other: _____

IDENTIFIED DESIGN PARAMETERS:**I. Objectives to be Established by:**

II. Objectives to be Defined as:

A.

B.

C.

D.

E.

III. Scope of Clientele to be:

IV. Organization to be: (Sub-Unit and Local Levels should be repeated and staffed as required.)

A. National Level

<u>Function:</u>	<u>Number of Personnel Required:</u>
___ Administration	___
___ Research	___
___ Education	___
___ Other: _____	___
___ Other: _____	___

1. Sub-Unit Level

<u>Function:</u>	<u>Number of Personnel Required:</u>
___ Administration	___
___ Research	___
___ Education	___
___ Other: _____	___
___ Other: _____	___

a. Local Level

<u>Function:</u>	<u>Number of Personnel Required:</u>
___ Administration	___
___ Research	___
___ Education	___
___ Other: _____	___
___ Other: _____	___

V. Educational Approach to be:

- A. _____

- B. _____

- C. _____

- D. _____

VI. Role of Extension Personnel to be:

- A. _____

- B. _____

- C. _____

- D. _____

APPENDIX M.

Design Parameter Instruments - People's Republic of China

Agricultural Extension Education Design Parameter Instruments

The attached instruments are intended for use by a project analyst or consultant team charged with the task of assisting with the design or evaluation of agricultural extension education systems in developing countries. The first, the **"Country Analysis Instrument"**, is an evaluation tool which serves to identify and quantify the various existing or desired characteristics which impact the development of an agricultural extension education system within a developing country. The second, the **"Model Correlation Instrument"**, is a key which allows those identified impactors to be correlated with particular components of existing extension education models. When used in order, these instruments afford the opportunity to "custom" design an appropriate, effective agricultural extension education system for the country in question.

The **"Country Analysis Instrument"** should be completed in-country by referencing current available statistical data, interviewing educators and policy makers, and conducting focus sessions of policy maker and clientele groups. Care should be taken to insure accuracy in areas of objective evaluation and to reflect priority attitudes, goals, and opinions in those of subjective evaluation.

Based upon an analysis of the information gathered through implementation of the first instrument, the **"Model Correlation Instrument"** can be employed by project personnel to correlate identified impactors with particular components of existing extension education models. This task should be completed in cooperation with national decision-makers and through careful consideration of the existing conditions within the country in question; the desired characteristics of an extension education system as perceived by educators, policy makers, and clientele; and the identified model component alternatives. A summary of selected component alternatives provides design parameters for an agricultural extension education system in the country.

"Country Analysis Instrument"

Country: Peoples' Republic of China

Analysis Period: From May, 1994 To June, 1994

Reference Notations:

Chinese Academy of Social Sciences. (1993). Statistical yearbook of China. Beijing: Author.

Li Shi. (1993). Almanac of China's economy. Beijing: Institute of Economics.

Ministry of Agriculture. (1993). China agriculture yearbook. Beijing: Author.

State Education Commission. (1993). Essential statistics of education in China. Beijing: Author.

Beijing University Faculty Interviews with: Professors Lin Chengjie, Yang Xin, Zheng Bijun, Wu Rongzeng, Wang Bangwei, Rong Xinjiang, and Jiang Fei Fei and Associate Professors Zhu Xiaoyuan, Li Xiaocong, and Cheng Hanchang.

Ministry of Agriculture Interviews with: Associate Ministers Yue Qingping and Cheng Hancheng; Assistant Minister Wu Xiang; and Bureau Chief Zhu Baoxin.

Ministry of Education Interviews with: Associate Minister Wang Shougiang, Assistant Minister Xie Hua, and Bureau Chief Xiao Wanjun.

Institute of Economics Representatives Interviews with: Chen Jiyuan and Yang Yongzhe.

Shenzen Economic Council Representatives Interviews with: Huang Haiguang and Cai Shenglin.

Geographic Situation: (GS)

1. Size of Country (km ²)	9,542,580 sq.km.
2. Number of Sub-Units (districts, provinces, states, etc.)	22 Provinces
5 Autonomous Regions & 3 Municipalities
3. Percentage of Total Land Area Covered by Mountains	42.33%
4. Percentage of Total Land Area Covered by Highlands or Hills	26.51%

5. Percentage of Total Land Area covered by Plains 11.98%
6. Percentage of Total Land Area covered by Lowlands 19.18%
7. Percentage of Total Land Area Covered by Desert 31.00%
8. Percentage of Total Land Area Covered by Jungle 13.40%
9. Total Length of Coastline(s) (km) 14,497 km.

10. List the country sub-units and identify specific characteristics of each by filling-in blanks with specific areas, percentages, or simply checking all that apply. Combination situations may be accommodated by completing more than one blank per sub-unit as applicable.

<u>Sub-Unit</u>	<u>km²</u>	<u>Mounts</u>	<u>Hills</u>	<u>Plains</u>	<u>Lows</u>	<u>Coast</u>	<u>Desert</u>	<u>Jungle</u>
Beijing	40880	_____	_____	_____	<u>X</u>	_____	_____	_____
Tianjin	42960	_____	_____	_____	<u>X</u>	<u>X</u>	_____	_____
Hebei	654370	_____	<u>X</u>	_____	<u>X</u>	<u>X</u>	_____	_____
Shanxi	368050	_____	<u>X</u>	_____	_____	_____	_____	_____
Inner Mongolia	508170	_____	<u>X</u>	_____	_____	_____	<u>X</u>	_____
Liaoning	345220	_____	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	_____	_____
Jilin	393160	_____	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	_____	_____
Heilongjiang	890460	_____	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	_____	_____
Shanghai	31780	_____	_____	_____	<u>X</u>	<u>X</u>	_____	_____
Jiangsu	452190	_____	_____	_____	<u>X</u>	<u>X</u>	_____	_____
Zhejiang	169120	_____	<u>X</u>	_____	<u>X</u>	<u>X</u>	_____	_____
Anhui	433410	_____	_____	_____	<u>X</u>	_____	_____	_____
Fujian	122870	_____	<u>X</u>	_____	<u>X</u>	<u>X</u>	_____	_____
Jiangxi	233690	_____	_____	_____	<u>X</u>	_____	_____	_____
Shandong	679780	_____	_____	_____	<u>X</u>	<u>X</u>	_____	_____
Henan	688740	_____	<u>X</u>	_____	<u>X</u>	_____	_____	_____

<u>Sub-Unit</u>	<u>km²</u>	<u>Mounts</u>	<u>Hills</u>	<u>Plains</u>	<u>Lows</u>	<u>Coast</u>	<u>Desert</u>	<u>Jungle</u>
Hubei	342150	_____	<u> X </u>	_____	<u> X </u>	_____	_____	_____
Hunan	329590	_____	_____	_____	<u> X </u>	_____	_____	_____
Guangdong	244360	_____	<u> X </u>	_____	<u> X </u>	<u> X </u>	_____	_____
Guangxi	261080	_____	<u> X </u>	_____	_____	<u> X </u>	_____	_____
Hainan	43570	_____	_____	_____	<u> X </u>	<u> X </u>	_____	_____
Sichuan	625550	<u> X </u>	<u> X </u>	<u> X </u>	_____	_____	_____	_____
Guizhou	184900	_____	<u> X </u>	_____	_____	_____	_____	_____
Yunnan	285770	_____	<u> X </u>	_____	_____	_____	_____	_____
Tibet	22360	<u> X </u>	_____	_____	_____	_____	_____	<u> X </u>
Shaanxi	348760	_____	<u> X </u>	<u> X </u>	_____	_____	_____	_____
Gansu	348180	_____	<u> X </u>	_____	_____	_____	<u> X </u>	_____
Qinghai	57950	<u> X </u>	<u> X </u>	_____	_____	_____	<u> X </u>	_____
Ningxia	80110	_____	<u> X </u>	_____	_____	_____	_____	_____
Xinjiang	313400	<u> X </u>	<u> X </u>	<u> X </u>	_____	_____	<u> X </u>	_____

11. Identify specific geographic barriers (ie. jungle area, mountainous region, major river or lake) in sub-units which potentially impede the development and/or success of an agricultural extension system.

<u>Sub-Unit</u>	<u>Potential Geographic Barrier</u>
Xinjiang	Tian Mountains & Pendi & Gobi Deserts
Tibet	Himalaya Mountains and tropical jungle area
Qinghai	Bayan Har Mountains

Climatic Situation: (CS)

1. Primary Climate of Country (tropical, sub-tropical, arid, temperate) Arid/Temperate/Sub-tropical
2. Average Annual Rainfall of Country (cm) 82.21 cm

3. Seasonal Variation:

 X Yes No

4. If so, Identify Seasons and Associated Months:

A. MAJORITY OF THE COUNTRY:

<u>Seasons</u>	<u>From</u>	Months	<u>Through</u>
Winter	December		February
Spring	March		April
Summer	May		September
Fall	October		November

B. EXCEPTIONS:

For: Northern Heilongjiang
 Northeast Inner Mongolia
 West & Southwest Xinjiang
 Tibet

<u>Seasons</u>	<u>From</u>	Months	<u>Through</u>
Winter	October		May
Spring	June		July
Fall	August		September

For: Southern Guangdong
 Southern Guangxi
 Southern Yunnan
 Hainan

<u>Seasons</u>	<u>From</u>	Months	<u>Through</u>
Summer	January		December
Rainy	May		September
Dry	October		April

5. List the country sub-units and identify specific characteristics of each by filling-in blanks with specific information.

<u>Sub-Unit</u>	<u>Average Annual Rainfall</u>	<u>Temperature</u>		<u>Average Days in Growing Season</u>
		<u>Normal High</u>	<u>Normal Low</u>	
Beijing	868.9mm	26C	-4C	179
Tianjin	885.2mm	26C	-2C	182
Hebei	791.2mm	28C	3C	187
Shanxi	747.6mm	28C	4C	171
Inner Mongolia	287.1mm	28C	-20C	156
Liaoning	1081.6mm	24C	-10C	154
Jilin	529.6mm	24C	-15C	114
Heilongjiang	554.0mm	22C	-18C	110
Shanghai	1415.8mm	27C	2C	231
Jiangsu	987.8mm	26C	0C	228
Zhejiang	2023.5mm	28C	3C	254
Anhui	869.5mm	28C	2C	223
Fujian	1722.5mm	29C	8C	336
Jiangxi	1578.0mm	26C	4C	324
Shandong	679.1mm	26C	0C	191
Henan	747.6mm	28C	4C	188
Hubei	885.3mm	29C	2C	243
Hunan	1563.1mm	28C	5C	252
Guangdong	2226.8mm	30C	12C	348
Guangxi	2032.4mm	33C	14C	339
Hainan	2115.3mm	35C	18C	365
Sichuan	996.4mm	26C	4C	317
Guizhou	1116.4mm	32C	9C	218
Yunnan	1352.4mm	30C	12C	326

<u>Sub-Unit</u>	<u>Average Annual Rainfall</u>	<u>Temperature Normal High</u>	<u>Normal Low</u>	<u>Average Days in Growing Season</u>
Tibet	2432.8mm	14C	-30C	12
Shaanxi	859.3mm	29C	5C	184
Gansu	407.0mm	28C	-8C	153
Qinghai	48.6mm	32C	-10C	62
Ningxia	425.2mm	27C	4C	52
Xinjiang	32.4mm	36C	-10C	164

Demographic Situation: (DS)

1. Total Population 1,190,431,106
2. Percent Annual Growth Rate 1.47%
3. Identify the Percent Population by:

A. Sex:

48.95% Female

51.05% Male

B. Age:

27.70% 0-14 years

66.70% 15-64 years

Mean Age 25.25 years

5.60% 65+ years

C. Education:

97.83% Primary

1.74% Trade/Technical

26.50% Secondary

0.97% University

7.30% Post Secondary

0.62% Professional

3. Identify the Percent Population by: (con'd.)

D. Employment: By Source

25.15% Unpaid Family Labor

74.85% Employed Labor:

73.60% State-owned Business

25.20% Cooperatively-owned Business

1.20% Individual/Joint Business

Employment: By Industry

58.65% Farming

12.60% Service

1.63% Fishing

1.93% Government

17.20% Manufacturing

2.42% Other

5.57% Retail

E. Cultural Heritage by Primary Racial Groups, Tribes,
Religions, Cultural Minorities, etc.

<u>Heritage</u>	<u>%</u>	<u>Heritage</u>	<u>%</u>
Han Chinese	92.0%	Yi	.6%
Zhuang	1.3%	Tujia	.5%
Manchus	.8%	Mongols	.4%
Hui	.7%	Tibetans	.4%
Miao	.6%	Bouyei	.2%
Uygur	.6%	Koreans	.2%

4. Sub-Unit Location of Major Cultural Heritage Groups:

<u>Sub-Unit</u>	<u>Major Cultural Heritage Groups</u>
Guangxi	Zhuang, Yi
Qinghai	Hui, Tibetans
Gansu	Hui, Mongols
Guizhou	Miao

4. Sub-Unit Location of Major Cultural Heritage Groups: (con'd.)

<u>Sub-Unit</u>	<u>Major Cultural Heritage Groups</u>
Xinjiang	Uygur, Mongols
Yunnan	Miao, Yi
Sichuan	Yi
Tibet	Tibetans
Ningsia	Hui
Hunan	Miao
Inner Mongolia	Mongolians

Political Situation: (PS)

1. Form of National Government:

☐ Monarchy	☐ Benevolent Dictatorship
☒ Socialism	☐ Military
☐ Democracy	☒ Other: <u>Socialist Dictatorship</u>
☐ Social Democracy	

2. National Administrative Organization:

A. Executive Branch

President with largely ceremonial authority; Executive powers rest with the State Council, headed by the Premier, charged with administering various areas of state business. National military command belongs to the Central Military Commission. The positions of greatest authority in the government are the Premier and the General Secretary of the Communist Party.

B. Representative Branch

National People's Congress are chosen for five-year terms with each Province electing one representative or deputy per 400,000 people with at least ten deputies per Province. The eighth People's Congress convened in March, 1993 with 2,970 deputies. The National People's Congress has the power to pass laws, amend the constitution, and approve the national budget and economic plans. It also appoints the State Council. The Council is the central governmental body of the Congress and is led by the Premiere, Vice-Premiere, and various Ministers and Commissioners.

3. Sub-Unit Administrative Organization:

A. Executive Branch

Level One - Provinces;

Level Two - Prefectures, Counties and Municipalities; and

Level Three - Municipal Sub-divisions, Administrative Towns and Villages

Leadership is provided by the Central Communist Party which is led by the sub-unit Party Chairman. Although much authority has been vested in each level, each is submissive to the higher level of organizational authority.

B. Representative Branch

All levels of organization elect representatives to the local Communist Party which is vested with local authority.

4. Branch of Government Responsible for Education:

State Education Commission

5. Primary Responsibilities of Government Branch Responsible for Education include: (Check all that apply.)

☒ Policy Formulation	☒ Education
☒ Regulation & Enforcement	☒ Research
☒ Promotion	☒ Other: Statistics & Curriculum Development

6. Branch of Government Responsible for Agriculture:

Ministry of Agriculture

7. Primary Responsibilities of Government Branch Responsible for Agriculture include: (Check all that apply.)

☒ Policy Formulation	☒ Input Supply
☒ Regulation & Enforcement	☒ Education
☒ Promotion & Marketing	☒ Research
☒ Financing & Credit	Other: _____

8. Administrative Organization of Governmental Branches:

Vice-Premiere or Minister with appropriate Vice-Ministers, Vice-Directors, and Commissioners

9. Established Method of Government Policy Formation: (Check all that apply.)

_____ Independent Administrative Determination

_____ Representative Determination

 X Combination of Administrative & Representative Determination

 X Other: Advisory Committees at most Levels

Economic Situation: (ES)

1. Form of National Currency Yuan

2. Current Exchange Rate with US Dollar (\$) 8.71Y/\$1

3. Per Capita Income in US Dollars (\$) \$371.82

GNP in US Dollars (\$) \$444.0 billion

4. Average Annual Percentage Growth in GNP (past 5 years) 16.38%

5. Per Capita GDP in US Dollars (\$) \$457.13

6. Percent Distribution of GDP:

% By Source

29.2% Agriculture

49.4% Industry

21.4% Services

% By Demand

16.5% Public Consumption

16.6% Gross Domestic Investment

28.3% Private Consumption

23.0% Gross Domestic Saving

15.6% Exports

7. Current Balance of Payments in U.S. Dollars \$4.34 billion

8. External Public Debt in U.S. Dollars (\$) \$7.96 billion

9. External Public Debt as a Percentage of GNP 2.89%

10. Annual Interest Payments on External
Public Debt in U.S. Dollars (\$) \$921.5 million

11. Debt Service on External Public Debt:

a. as a Percentage of Exports of Goods & Services	10.85%
b. as a Percentage of GNP	2.07%

Agricultural Situation: (AS)

1. Total Cultivated Land Area (hectares)	149 million hectares
2. Total Number of Farms	20.79 million
3. Average Farm Size (hectares)	7.17 hectares

4. Percent Farmland by Ownership:

<u>%</u>	<u>Entity</u>	<u>%</u>	<u>Entity</u>
0.0%	Individual Farm Families	100.0%	Government
0.0	Absentee/Investor Landlord	_____	Other: _____
0.0	Corporation	_____	Other: _____

5. Percent Farm Families by Farming System:

<u>%</u>	<u>System</u>	<u>%</u>	<u>System</u>
N/A	Nomadic	24.4%	Confinement Livestock
N/A	Slash & Burn	96.6%	Communal/Enterprise
63.5%	Permanent Cropland/Pasture	_____	Other: _____
12.1%	Kampong/Scavenging Livestock	_____	Other: _____

6. Total Production of Primary Agricultural Crops:

<u>Major Crops</u>	<u>Total Production</u>
Rice	189.92 million tons
Wheat	103.43 million tons
Corn	98.16 million tons
Millet	3.38 million tons
Sorghum	4.74 million tons
Tubers	28.66 million tons

6. Total Production of Primary Agricultural Crops: (con'd.)

Soybeans	10.42 million tons
Cotton	4.51 million tons
Peanuts	5.95 million tons
Rapeseed	7.65 million tons
Sesame	.52 million tons
Sunflower	1.47 million tons
Sugarcane	73.01 million tons
Sugar beets	15.07 million tons
Tobacco	3.50 million tons

7. Total Number of Head Each of Primary Livestock Species:

<u>Livestock Species</u>	<u>Total Head</u>
Oxen	82.50 million
Dairy Cows	2.94 million
Buffalo	22.20 million
Horses	10.02 million
Donkeys	10.98 million
Mules	5.61 million
Camels	.40 million
Pigs	384.21 million
Goats	97.61 million
Sheep	109.72 million
Bee Hives	701.20 thousand

8. If Fishing or Fish Culture is Important to Rural Life or Economy, Identify Total Area and Output of Marine Fishing and Freshwater Fish Culture:

Marine Fishing Area	499.04 thousand hectares
Marine Fishing Output (Tons)	6.91 million tons
Freshwater Fish Culture Area	3.98 million hectares
Freshwater Fish Culture Output (Tons)	6.24 million tons

9. Government Branch Responsible for Agricultural Education:

Ministry of Agriculture

10. Percent Agricultural Education by Source:

1 Source

7.17% On-Farm Experience/Training

48.97% Vocational Agriculture Training in Primary/Secondary Schools

9.49% Technical School Training

1.91% College/University Training

32.46% Extension Programs

Other: _____

11. The Current Goals of Agricultural Education may be Ranked in Order of Significance as follows:

3 Increasing Food Production

2 Increasing Farm Incomes

1 Improving the Efficiency of Production

7 Providing Financial Counseling

6 Providing Farm Inputs

5 Providing Farm Markets

4 Organizing Farm Commodity Groups & Organizations

Other: _____

12. Government/Organizational Body Responsible for Ag Research:

Ministry of Agriculture with Provincial Research Centers

13. Linkage between Agricultural Research and Education:

☐ Dual-Assigned Personnel

☒ Locally Administered Research Plots and Programs

☒ Joint Determination of Research Priorities

☐ Co-Authored Research Publications

☐ Other: _____

14. Current National Agricultural Policy may be Characterized as:
(Check all that apply.)

☒ Supporting Low Consumer Food Prices

☐ Providing Economic Incentives for Increased Production

☐ Emphasizing Increased Production for Export to Reduce
Balance of Trade Deficit

☒ Emphasizing Increased Production to Increase Farm Incomes

☐ Supporting Large-Scale Farmers

☐ Supporting All Farmers

☒ Supporting Broad-Based Agricultural Development

☒ Other: Supporting Identified Production Units

15. The Primary Goals for Agricultural Development are: (Check all that apply.)

☐ Increase Agricultural Production for Export to Reduce Balance
of Trade Deficit

☒ Increase Agricultural Production to Increase Real Income of
Farmers

☒ Increase Agricultural Production to Improve or Stabilize Food
Supplies at Reasonable Prices for Urban Populations

☒ Improve the Quality of Life for the Entire Rural Population

☐ Enhance the Environment and the Use of Natural Resources

☒ Support Communities Toward the Goal of Community Improvement

15. The Primary Goals for Agricultural Development are: (con'd.)
(Check all that apply.)

- _____ Improve the Availability of Social Programs in Health,
Nutrition, and Basic Education
- _____ Strengthen the Family and Home
- _____ Improve Local Leadership and Initiative
- _____ Other: _____
- _____ Other: _____

16. Value of Agricultural Output in U.S. Dollars (\$) by Sub-Unit:

<u>Sub-Unit</u>	<u>Value</u>	<u>Sub-Unit</u>	<u>Value</u>
Beijing	\$.97 billion	Henan	\$6.59 billion
Tianjin	\$.71 billion	Hubei	\$4.99 billion
Hebei	\$4.82 billion	Hunan	\$5.41 billion
Shanxi	\$1.51 billion	Guangdong	\$8.46 billion
Inner Mongolia	\$2.07 billion	Guangxi	\$3.82 billion
Liaoning	\$3.91 billion	Hainan	\$1.00 billion
Jilin	\$2.35 billion	Sichuan	\$8.55 billion
Heilongjiang	\$3.27 billion	Guizhou	\$2.03 billion
Shanghai	\$.92 billion	Yunnan	\$2.87 billion
Jinagsu	\$7.73 billion	Tibet	\$2.58 billion
Zhejiang	\$4.65 billion	Shaanxi	\$2.36 billion
Anhui	\$4.48 billion	Gansu	\$1.41 billion
Fujian	\$3.45 billion	Qinghai	\$.31 billion
Jiangxi	\$3.43 billion	Ningxia	\$.33 billion
Shandong	\$9.65 billion	Xinjiang	\$1.98 billion

17. Percent of Family Farm

A. Production:

54.50% Consumed at Home

45.50% Marketed

B. Financing Obtained through:

26.70% Family Income/Savings

52.10% Government Financing

14.90% Private Investor

_____ % Private Bank

_____ % Farm Credit Service

6.30% Other: International Development Assistance

C. Income by Source:

12.30% Husband & Wife Both Working on Farm Full-time

9.42% Wife Working on Farm Full-time & Husband Employed
Elsewhere Full-time38.67% Husband Working on Farm Full-time & Wife Employed
Elsewhere Full-time1.55% Both Partners Working on Farm with Husband Employed
Elsewhere Part-time29.88% Both Partners Working on Farm with Wife Employed
Elsewhere Part-time8.18% Both Partners Working on Farm & Working Elsewhere
Part-time

18. Family Farm Management Decisions Made by:

☒ Male Head of Household

_____ Female Head of Household

_____ Jointly

19. Ag Marketing System may be Described as: (Check all that apply.)

- ☒ Local Family/Roadside Market
- ☒ Local Community Market/Bazaar
- ☒ Regional Commodity Marketing Organization
- ☐ Privately-Owned Commodity Market
- ☒ Government Marketing Program; Domestic and/or Export
- ☐ Privately-Owned Export Company
- ☐ Other: _____

Infrastructure Situation: (IS)

1. Percent Urban Households with the Following Services:

Service	<10%	10-30%	30-50%	50-70%	70-90%	>90%
Telephone	☒	☐	☐	☐	☐	☐
Daily Mail Delivery	☐	☐	☐	☐	☒	☐
Daily Newspaper	☐	☐	☐	☒	☐	☐
Electricity	☐	☐	☐	☐	☐	☒
Indoor Plumbing	☐	☐	☐	☐	☐	☒
Television	☐	☐	☐	☒	☐	☐
Radio	☐	☒	☐	☐	☐	☐

2. Percent Rural Households with the Following Services:

Service	<10%	10-30%	30-50%	50-70%	70-90%	>90%
Telephone	☒	☐	☐	☐	☐	☐
Daily Mail Delivery	☐	☐	☐	☒	☐	☐
Daily Newspaper	☐	☐	☒	☐	☐	☐
Electricity	☐	☐	☐	☐	☒	☐
Indoor Plumbing	☐	☐	☐	☐	☒	☐
Television	☐	☒	☐	☐	☐	☐
Radio	☒	☐	☐	☐	☐	☐

3. General Road Conditions may be Described as:

	<u>Excellent</u>	<u>Good</u>	<u>Fair</u>	<u>Poor</u>
Town/City Streets	—	<u>X</u>	—	—
Major Roads/Highways	—	<u>X</u>	—	—
Rural Roads	—	—	<u>X</u>	—

4. General Observations Regarding Roadways:

1,041,300 km of roads and highways of which 17% are paved and the remaining 63% are gravel or improved earth.

5. Percent Transportation Provided by:

	<u>Urban Areas</u>	<u>Rural Areas</u>
Foot/Walking	11.8%	18.2%
Animal/Animal Cart	.3%	10.6%
Manpowered Transport (Bicycle/Rickshaw)	38.6%	40.9%
Public Transportation (Bus, Tram)	24.4%	6.2%
Taxi/Limo/Jeepny	6.2%	.2%
Family-owned Automobile	2.4%	3.3%
Other: Railroad	16.3%	20.6%

6. General Observations Regarding Air & Rail Transportation:

International airport established in Beijing in 1980 with other regional/municipal airports in over 90 other cities. 72,000 km of improved railroad lines.

General or Desired Characteristics Impacting an Agricultural Extension Education System: (DCS)

1. From Policy Makers' Perspective, It is Considered Most Desirable for Agricultural Extension Education System to be:

A. Administered by:

- ☒ The Agricultural Branch of the Federal Government
- ☐ The Educational Branch of the Federal Government
- ☐ Another Branch of the Federal Government: _____
- ☐ An Agricultural College or University
- ☒ Another Public Body: Local Government Units at each Sub-Unit Level
- ☐ An Independent Company or Organization
- ☐ An Autonomous, Self-Directed Extension System
- ☐ Other: _____

B. Responsible for: (Check all that apply.)

☐ Regulation & Enforcement	☒ Input Supply
☐ Administration/Direction	☒ Education
☐ Policy Formulation	☒ Research
☐ Promotion & Marketing	☐ Other: _____
☐ Financing & Credit	☐ Other: _____

C. Organized with Staff & Offices on a: (Check all that apply.)

- ☒ National Level ☒ Local Level: Prefecture, County, & Township
- ☒ Sub-Unit Level: Provincial

1. From Policy Makers' Perspective, It is Considered Most Desirable for Agricultural Extension Education System to be: (con'd.)

D. Funded by:

☒ Federal Government	☐ Private Foundation
☐ Sub-Unit Governments	☐ Development Assistance Funds
☒ Local Governments	☐ Combination of Above:
☐ Self-Supported/Project	_____
☒ Profits/User Fees	☐ Other: _____

E. Staffed by: (Check all that apply.)

☐ University Graduates at All Levels

☒ University Graduates at Administrative Levels and Technical School Graduates at Local Levels

☐ University Graduates at Administrative Levels & Specially Trained Individuals at Local Levels

☐ Technical School Graduates at All Levels

☒ Nationals at All Levels

☐ A Mixture of Nationals & Non-nationals at All Levels

☐ Nationals at _____ & Non-Nationals at _____ Levels

☐ Men at All Levels

☒ A Mixture of Men & Women at All Levels

☐ Men at _____ Levels & Women at _____ Levels

☐ Other: _____

☐ Other: _____

F. Directed in Terms of Program Priorities by:

☐ Clientele Advisory Groups	☐ Donor-Assisted Project Organization
☒ Central Federal Administration	☐ Autonomous Economic & Social Development Body
☐ University Administration	☐ Other: _____
☐ Autonomous Public Sector Body	

1. From Policy Makers' Perspective, It is Considered Most Desirable for Agricultural Extension Education System to be: (con'd.)

G. Staffed with/at:

	<u>Federal Level</u>	<u>Sub-Unit Level</u>	<u>Local Level</u>
Administrators	<u> X </u>	<u> X </u>	<u> </u>
Subject Matter Specialists	<u> </u>	<u> </u>	<u> X </u>
Extension Educators	<u> </u>	<u> </u>	<u> X </u>
Other: <u> </u>	<u> </u>	<u> </u>	<u> </u>
Other: <u> </u>	<u> </u>	<u> </u>	<u> </u>

H. Linked with Research Centers through: (Check all that apply.)

- X Dual-Assigned Personnel
- X Locally Administered Research Plots & Programs
- Joint Determination of Research Priorities
- Co-Authored Research Publications
- Other:

I. Associated with/on: (Check all that apply.)

	<u>Formal Basis</u>	<u>Informal Basis</u>
Farm Credit System	<u> </u>	<u> </u>
Farm Supply Organizations	<u> </u>	<u> X </u>
Marketing Organizations	<u> </u>	<u> X </u>
Promotional Groups	<u> </u>	<u> </u>
Other: <u> </u>	<u> </u>	<u> </u>
Other: <u> </u>	<u> </u>	<u> </u>

2. From Users'/Clientele Perspective, It is Considered Most Desirable for Agricultural Extension Education System to be:

A. Administered by:

- ☒ The Agricultural Branch of the Federal Government
- ☐ The Educational Branch of the Federal Government
- ☐ Another Branch of the Federal Government: _____
- ☐ An Agricultural College or University
- ☒ Another Public Body: Federal Branch in Cooperation with
Local Government Units
- ☐ An Independent Company or Organization
- ☐ An Autonomous, Self-Directed Extension System
- ☐ Other: _____

B. Responsible for: (Check all that apply.)

☐ Regulation & Enforcement	☒ Input Supply
☐ Administration/Direction	☒ Education
☐ Policy Formulation	☒ Research
☒ Promotion & Marketing	☐ Other: _____
☐ Financing & Credit	☐ Other: _____

C. Organized with Staff & Offices on the following Levels:

- ☒ National; ☒ Sub-Unit; ☒ Local; ☐ Other: _____

D. Funded by:

☒ Federal Government	☐ Private Foundation
☐ Sub-Unit Governments	☐ Development Assistance Funds
☐ Local Governments	☐ Combination of Above: _____
☐ Self-Supported/Project	_____
☒ Profits/User Fees	☐ Other: _____

2. From Users'/Clientele Perspective, It is Considered Most Desirable for Agricultural Extension Education System to be: (con'd.)

E. Staffed by: (Check all that apply.)

- ☐ University Graduates at All Levels
- ☒ University Graduates at Administrative Levels and Technical School Graduates at Local Levels
- ☐ University Graduates at Administrative Levels & Specially Trained Individuals at Local Levels
- ☐ Technical School Graduates at All Levels
- ☒ Nationals at All Levels
- ☐ A Mixture of Nationals & Non-nationals at All Levels
- ☐ Nationals at _____ & Non-Nationals at _____ Levels
- ☐ Men at All Levels
- ☒ A Mixture of Men & Women at All Levels
- ☐ Men at _____ Levels & Women at _____ Levels
- ☐ Other: _____

F. Directed in Terms of Program Priorities by:

☐ Clientele Advisory Groups	☐ Donor-Assisted Project Organization
☒ Central Federal Administration	☐ Autonomous Economic & Social Development Body
☐ University Administration	☒ Other: Local Government
☐ Autonomous Public Sector Body	

G. Associated with/on: (Check all that apply.)

- | | Formal
Basis | Informal
Basis |
|---------------------------|--------------------------|-------------------------------------|
| Farm Credit System | ☐ | ☒ |
| Farm Supply Organizations | ☐ | ☒ |
| Marketing Organizations | ☐ | ☒ |
| Promotional Groups | ☐ | ☐ |
| Other: _____ | ☐ | ☐ |

Other Pertinent Observations:

1. Extension system should be reorganized to overcome observed problems with current system. Identified problems include:
 - a. system over-staffed at all levels,
 - b. system administratively top-heavy,
 - c. system low in researchers and subject-matter specialists,
 - d. extension personnel lack adequate educational qualifications, particularly at the local levels,
 - e. system does not support adequate new technology research for practical application at current production levels, and
 - f. programming decisions made at federal level are frequently divergent with locally identified needs.
2. Extension education system should be cooperatively associated with agricultural research units to insure local technology needs are being considered and met.
3. Prefectural extension units should be responsible for developing technical/educational brochures based on research and local language/educational needs.
4. Local extension workers should establish regular schedule of visits to production units for dissemination of technology information and farmer assistance.
5. Local extension workers should assist farmers with identifying local production needs, communicate those needs to researchers, disseminate new technology education to local farms, evaluate effectiveness of new technology, and assist with production input distribution.
6. Extension programming priorities should be cooperatively established between local government units and Ministry of Agriculture.
7. Government emphasis should be on increasing output of basic commodities of pork, poultry, eggs, and cereal grains.

"Model Correlation Instrument"

for

Country: People's Republic of China

Note:

1. This instrument should be used after completion of the **"Country Analysis Instrument"** and requires information and data derived from its application for completion.
2. When selecting appropriate model components, refer to the indicated **"Analysis Factors"** found in the **"Country Analysis Instrument"** and the associated **"Agricultural Extension Education Models"**.
3. For purposes of abbreviation, the following initials are used when referring to **"Analysis Factors"** included in the **"Country Analysis Instrument"**:

GS	Geographic Situation	ES	Economic Situation
CS	Climatic Situation	AS	Agricultural Situation
DS	Demographic Situation	IS	Infrastructure Situation
PS	Political Situation	DCS	Desired Characteristics

4. For purposes of abbreviation, the following initials are used to identify the **"Agricultural Extension Education Models"** from which various components are derived:

CAES	Conventional Agricultural Extension System
TVS	Training and Visit System
UAES	University Agricultural Extension System
CDPS	Commodity Development and Production System
IADS	Integrated Agricultural Development System
IRDS	Integrated Rural Development System
FSRDS	Farming Systems Research and Development System
ALL	All of the Above Listed Systems

MODEL OBJECTIVES:**1. Objectives should be set by: Analysis Factors - PS 4-7,9; AS 9; DCS
1A,1B,1F,2A,2B,2F**

- ☐ Clientele Advisory Groups (UAES)
- ☒ Central Federal Administration (CAES,TVS)
- ☐ University Administration (UAES)
- ☐ Autonomous Public Sector Program Body (CDPS)
- ☐ Donor-Assisted Project Organization (IADS)
- ☐ Autonomous Economic and Social Development Organization (IRDS)
- ☐ Other: _____

2. Objectives should be defined as: Analysis Factors - AS 11,14,15

- ☒ Providing &/or Maintaining Low Consumer Food Prices (UAES,CDPS)
- ☐ Providing Economic Incentives for Increased Agricultural Production (CDPS,IADS,IRDS)
- ☐ Increasing Agricultural Production for Export to Reduce Balance of Trade Deficit (CAES,CDPS)
- ☐ Increasing Agricultural Production to Increase Real Income of Farmers (ALL)
- ☐ Improving the Lot of Large-Scale Farmers (IADS)
- ☒ Improving the Quality of Life for the Entire Rural Population (ALL)
- ☒ Providing for Broad-Based Agricultural Development (CAES,TVS,UAES,FSRD)
- ☐ Strengthening the Family and Home (UAES)
- ☐ Enhancing the Environment and the Use of Natural Resources (UAES,FSRD)
- ☐ Supporting Communities Toward the Goal of Community Improvement (UAES)
- ☐ Improving Local Leadership and Initiative (UAES,IRDS)
- ☐ Increasing the Availability of Social Programs in Health, Nutrition, and Basic Education (IRDS)
- ☐ Other: _____

MODEL CLIENTELE:

1. Scope of Clientele should be: Analysis Factors - DS 1-4; AS 4-5,
17-19

- ___ Entire Population (UAES)
- ___ Entire Farm Population (TVS)
- ___ Large-Scale Farmers (CAES, IADS)
- ___ Small-Scale Farmers (IRDS, FSRD)
- ___ All Farmers within an Identified Project Area (IADS)
- X Other Target Groups within the Farm Population: pork, poultry,
cereal grain, and egg production units (CAES, CDPS)
- ___ Other: _____

MODEL ORGANIZATION:

1. Should be Administered by: Analysis Factors - PS 1-9; AS 9;
DCS 1A, 2A

- X Agricultural Branch of the Federal Government (CAES, TVS)
- Ministry of Agriculture through the National Agro-Technology
Extension Center
- ___ Educational Branch of the Federal Government
- ___ Another Branch of Federal Government:
- _____
- ___ Agricultural College or University (UAES)
- ___ Another Public Body: (CDPS)
- _____
- ___ Independent Company or Organization (IADS, IRDS)
- ___ Autonomous, Self-Directed Extension System
- ___ Other: _____
- ___ Other: _____

MODEL ORGANIZATION: (con'd.)**2. Should be Responsible for: Analysis Factors - PS 5,7; AS 9,11-13; DCS 1B,2B**

_____ Regulation and Enforcement (CAES)

_____ Administration and Direction (CAES)

_____ Policy Formulation

_____ Promotion and Marketing (CDPS, IADS)

_____ Financing and Credit (CDPS, IADS)

 X Input Supply (CAES, CDPS, IADS)

 X Education (ALL)

 X Research (FSRD)

_____ Other: _____

3. Should be Organized with Staff and Offices on a: Analysis Factors - GS 1-11; CS 1-5; DS 1-4; AS 1-8,16; IS 1-6; DCS 1C,2C

 X National Level (CAES, TVS, UAES)

 X Sub-Unit Level (CAES, TVS, UAES, CDPS, FSRD); if so,
number of Sub-Unit Facilities should be: 22 Provincial

 X Local Level (ALL); if so,
number of Local Facilities should be: 191 Prefectures
339 Counties
2,171 Townships
479,446 Villages

_____ Other: _____

4. Should be Funded by: Analysis Factors - DS 3-4; ES 1-11; AS 16-17; DCS 1D,2D

 X Federal Government (CAES, TVS, UAES)

_____ Sub-Unit Governments (CAES, UAES)

_____ Local Governments (UAES)

 X Self-Supported: Project Profits, User Fees (CDPS)

_____ Private Foundations

_____ Development Assistance Funds (IADS, ISRD)

_____ Combination of the Above (FSRD)

_____ Other: _____

MODEL ORGANIZATION: (con'd.)**5. Should be Staffed by: Analysis Factors - DS 3-4; PS 1-3,8-9; AS 5, 10,17-18; DCS 1E,2E**

- ☐ University Graduates at all Levels (UAES,FSRD)
- ☒ University Graduates at Administrative Levels & Technical School Graduates at Local Levels (CAES,CDPS,IADS,IRDS)
- ☐ University Graduates at Administrative Levels & Specially Trained Individuals at Local Levels (TVS)
- ☐ Technical School Graduates at all Levels
- ☒ Nationals at all Levels (CAES,TVS,UAES,CDPS)
- ☐ A Mixture of Nationals and Non-Nationals at all Levels (FSRD)
- ☐ Nationals at _____ Levels & Non-Nationals at _____ Levels (IADS,IRDS)
- ☐ Men at all Levels
- ☒ A Mixture of Men and Women at all Levels (CAES,UAES)
- ☐ Men at _____ Levels and Women at _____ Levels (TVS,CDPS,IADS,IRDS,FSRD)
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

6. Should be Staffed with: Analysis Factors - PS 1-9; AS 9,12-13; DCS 1G

	<u>Federal Level</u>	<u>Sub-Unit Level</u>	<u>Local Level</u>
Administrators	☒ (CAES,TVS,UAES)	☒ (ALL)	☒ (CAES,TVS,FSRD)
Subject Specialists	☐ (CAES,TVS,UAES)	☒ (ALL)	☐
Extension Educators	☐ (CAES,TVS,UAES)	☐ (CAES,TVS,UAES CDPS,FSRD)	☒ (ALL)
Other:	_____	_____	_____

MODEL ORGANIZATION: (con'd.)**7. Should be Linked with Research Centers through: Analysis Factors - PS 1-8; AS 12-13; DCS 1H**

- ☒ Dual-Assigned Personnel (CAES,UAES,FSRD)
- ☐ Locally Administered Research Plots and Programs (FSRD)
- ☒ Joint Determination of Research Priorities (CAES,TVS,UAES,CDPS,FSRD)
- ☐ Co-Authored Research Publications (UAES)
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

8. Should be Associated with: Analysis Factors - PS 1-8; ES 6-11; AS 1,4-8,16-18,19; IS 1-6; DCS 1I,2G

	<u>Formal</u> <u>Basis</u>	<u>Informal</u> <u>Basis</u>
Farm Credit System	☐ (CDPS, IADS, IRDS)	☐ (CAES, TVS, UAES, FSRD)
Farm Supply Organizations	☐ (CDPS, IADS, IRDS)	☒ (CAES, TVS, UAES, FSRD)
Marketing Organizations	☐ (CDPS, IADS, IRDS)	☒ (CAES, TVS, UAES)
Promotional Groups	☐ (CDPS, IADS, FSRD)	☐ (CAES, TVS, UAES)
Other: _____	_____	_____
Other: _____	_____	_____
No Other Association	_____	_____

MODEL APPROACH:**1. Educational Approach should be: Analysis Factors - GS 1,2,10-11, DS 1-4; AS 4-8,16-18; IS 1-6; DCS 1C-1I,2C-2G**

- ☐ One-on-One Contact by Local Extension Workers through Irregular Home & Farm Visits & Office Calls (CAES,UAES)
- ☒ Agricultural Information Units for Production of Bulletins, Teaching Aids, Radio Programs, & Mass Media Materials (CAES)
- ☒ Local Extension Workers Contact Local Farmers on a Fixed Schedule (TVS)
- ☐ Local Extension Workers Receive Training on a Fixed Schedule (TVS)
- ☐ Local Advisory Councils Provide Guidance & Assistance in Financial, Operational, Programming, & Evaluation Processes of Extension Program (UAES,IRDS)
- ☐ Local Extension Personnel Use Research-Based Information to Help Local People Identify & Establish Need Priorities & then Request Instructional Assistance from Subject-Matter Specialists on Selected Topics (UAES)
- ☐ Local Farmers Contract to Produce an Identified Commodity Using Recommended Practices & the Commodity Organization Contracts to Provide Commodity Research, Credit, Input Supply, Technical Assistance, & Marketing Services (CDPS)
- ☐ Pilot Project Established in which the Organization Provides Previously Limited Inputs Assumes the Responsibility for Coordinating All Facets of Agricultural Production, Including Credit, Supply, Technical Assistance, & Marketing Services (IADS,IRDS)
- ☐ Establishment of an Interdisciplinary Team which Conducts On-Farm Research to Evaluate the Interplay of the Production Components under Farmer's Control & the Physical, Biological & Socio-Economic Environments; Identifies & Generates New Technology; Adapts & Tests Technologies in Project Area Possessing Reasonably Uniform Characteristics (FSRD)
- ☐ Other: _____
- ☐ Other: _____

MODEL ROLE OF EXTENSION PERSONNEL:**1. Role of Local Extension Personnel should be: Analysis Factors - PS 4-7; AS 11-12,15,19; DCS 1B,1D,1H,2B,2D**

- ☒ Consultant; identify farmer problems/needs & production constraints (CAES,TVS,CDPS,IADS)
- ☐ Advisor; work with local people to identify & prioritize problems/needs & possible solutions (UAES,IRDS,FSRD)
- ☒ Communicator; communicate farmer problems/needs & production constraints to subject-matter specialists & research workers (CAES,TVS,UAES,FSRD)
- ☒ Educator; disseminate research-based information about new technology & demonstrate its practical application to farmers (ALL)
- ☐ Motivator; encourage application of improved methods or identified solutions to problems (TVS,UAES,IRDS,FSRD)
- ☒ Evaluator; work with local people to evaluate the effectiveness of new techniques & extension programs (UAES,IRDS,FSRD)
- ☒ Researcher; conduct on-farm research to determine the practicality & effectiveness of new technology (FSRD)
- ☐ Government Administrator; administer government programs & policies on the local level (CAES)
- ☒ Supplier; provide farmers with required inputs (CDPS,IADS)
- ☐ Marketer; coordinate product marketing (CDPS,IADS,IRDS)
- ☐ Other: _____
- _____
- ☐ Other: _____
- _____

IDENTIFIED DESIGN PARAMETERS:**I. Objectives to be Established by:**

Central Federal Government/Ministry of Agriculture through
National Agro-Technology Extension Center

II. Objectives to be Defined as:

- A. providing for broad-based agricultural development;
- B. improving the quality of life for the entire rural population; &
- C. increasing food availability while maintaining low food prices.

III. Scope of Clientele to be:

Target groups within the farm population, specifically units of
production of the primary commodities of pork, poultry and eggs,
and cereal grains.

**IV. Organization to be: (Sub-Unit and Local Levels should be repeated
and staffed as required.)****A. National Level**

<u>Function:</u>	<u>Number of Personnel Required:</u>
<u> X </u> Administration	10,000
<u> X </u> Research	2,000
<u> </u> Education	<u> </u>
<u> </u> Other: <u> </u>	<u> </u>
<u> </u> Other: <u> </u>	<u> </u>

1. Sub-Unit Level - Province

<u>Function:</u>	<u>Number of Personnel Required:</u>
<u> X </u> Administration	33,000
<u> X </u> Research	11,000
<u> </u> Education	<u> </u>
<u> </u> Other: <u> </u>	<u> </u>
<u> </u> Other: <u> </u>	<u> </u>

IV. Organisation to be: (con'd.)

(Sub-Unit and Local Levels should be repeated and staffed as required.)

a. Local Level - Prefecture

<u>Function:</u>	<u>Number of Personnel Required:</u>
<u> X </u> Administration	3,820
<u> </u> Research	<u> </u>
<u> X </u> Education	19,100
<u> </u> Other: <u> </u>	<u> </u>
<u> </u> Other: <u> </u>	<u> </u>

b. Local Level - County

<u>Function:</u>	<u>Number of Personnel Required:</u>
<u> X </u> Administration	1,695
<u> </u> Research	<u> </u>
<u> X </u> Education	33,900
<u> </u> Other: <u> </u>	<u> </u>
<u> </u> Other: <u> </u>	<u> </u>

c. Local Level - Township

<u>Function:</u>	<u>Number of Personnel Required:</u>
<u> X </u> Administration	2,175
<u> </u> Research	<u> </u>
<u> X </u> Education	108,550
<u> </u> Other: <u> </u>	<u> </u>
<u> </u> Other: <u> </u>	<u> </u>

V. Educational Approach to be:

- A. agricultural information units for production of bulletins and teaching aids; and
- B. local extension workers contacting local production unit farmers on a fixed schedule.

VI. Role of Extension Personnel to be:

- A. consultant - identify farmer problems/needs and production constraints;
- B. communicator - communicate farmer problems/needs and production constraints to subject-matter specialists and researchers;
- C. educator - disseminate research-based information about new technology and demonstrate its practical application to farmers;
- D. evaluator - work with local people to evaluate the effectiveness of new techniques and extension programs;
- E. researcher - conduct on-farm research to determine practicality and effectiveness of new technology; and
- F. supplier - provide farmers with required inputs.

APPENDIX N.

Design Parameter Instruments - Cambodia

Agricultural Extension Education Design Parameter Instruments

The attached instruments are intended for use by a project analyst or consultant team charged with the task of assisting with the design or evaluation of agricultural extension education systems in developing countries. The first, the **"Country Analysis Instrument"**, is an evaluation tool which serves to identify and quantify the various existing or desired characteristics which impact the development of an agricultural extension education system within a developing country. The second, the **"Model Correlation Instrument"**, is a key which allows those identified impactors to be correlated with particular components of existing extension education models. When used in order, these instruments afford the opportunity to "custom" design an appropriate, effective agricultural extension education system for the country in question.

The **"Country Analysis Instrument"** should be completed in-country by referencing current available statistical data, interviewing educators and policy makers, and conducting focus sessions of policy maker and clientele groups. Care should be taken to insure accuracy in areas of objective evaluation and to reflect priority attitudes, goals, and opinions in those of subjective evaluation.

Based upon an analysis of the information gathered through implementation of the first instrument, the **"Model Correlation Instrument"** can be employed by project personnel to correlate identified impactors with particular components of existing extension education models. This task should be completed in cooperation with national decision-makers and through careful consideration of the existing conditions within the country in question; the desired characteristics of an extension education system as perceived by educators, policy makers, and clientele; and the identified model component alternatives. A summary of selected component alternatives provides design parameters for an agricultural extension education system in the country.

"Country Analysis Instrument"

Country: State of Cambodia

Analysis Period: From June, 1994 To July, 1994

Reference Notations:

Amarasinghe, D. (1994). Cambodia production report. Phnom Penh: ADB/UNDP Project.

Ministry of Agriculture. (1993). Bulletin of agricultural statistics and studies. Phnom Penh: Department of Planning Statistics.

Ministry of Commerce. (1994). Annual import and export report. Phnom Penh: Department of Exterior Commerce.

National Bank of Cambodia. (1994). Monetary and economic statistics review. Phnom Penh: Economic Research Department.

National Bank of Cambodia. (1994). Trimester report on economic indices. Phnom Penh: Economic Research Development.

United Nations Food and Agriculture Organization. (1994). Agricultural development options review. Phnom Penh: Author.

Interviews in the Ministry of Agriculture with Vice-Minister Ou Heng and Department Directors Chea Seamlay, Som Sophol, Sok Leang, Vuon Vuthy, and Srey Leang Cheang.

Interviews in the Ministry of Education with Department Directors Tan Meng, Ly Hua, Hun Ratanak, Tang Hua, Srey Leang Cheang, and Yu Vayaran.

Geographic Situation: (GS)

1. Size of Country (km ²)	181,035 sq.km.
2. Number of Sub-Units (districts, provinces, states, etc.)	19 Provinces with 3 Municipalities, 172 Districts, 1,400 Communes, & 11,700 Villages
3. Percentage of Total Land Area Covered by Mountains	26.2%
4. Percentage of Total Land Area Covered by Highlands/Hills	0.00%
5. Percentage of Total Land Area covered by Plains	68.08%
6. Percentage of Total Land Area covered by Lowlands	5.70%
7. Percentage of Total Land Area Covered by Desert	0.00%
8. Percentage of Total Land Area Covered by Jungle	64.79%

9. Total Length of Coastline(s) (km)

302 km.

10. List the country sub-units and identify specific characteristics of each by filling-in blanks with specific areas, percentages, or simply checking all that apply. Combination situations may be accommodated by completing more than one blank per sub-unit as applicable.

Sub-Unit	km ²	Mounts	Hills	Plains	Lows	Coast	Desert	Jungle
Banteay Meanchey	7839	<u> X </u>	<u> X </u>	<u> X </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>
Battambang	11214	<u> X </u>	<u> X </u>	<u> X </u>	<u> </u>	<u> </u>	<u> </u>	<u> X </u>
Kompong Cham	8766	<u> X </u>	<u> </u>	<u> </u>	<u> X </u>	<u> </u>	<u> </u>	<u> </u>
Kompong Chhnang	6212	<u> </u>	<u> </u>	<u> </u>	<u> X </u>	<u> </u>	<u> </u>	<u> </u>
Kompong Speu	7099	<u> </u>	<u> </u>	<u> </u>	<u> X </u>	<u> </u>	<u> </u>	<u> </u>
Kompong Thom	13481	<u> </u>	<u> </u>	<u> X </u>	<u> X </u>	<u> </u>	<u> </u>	<u> </u>
Kampot	7446	<u> </u>	<u> </u>	<u> X </u>	<u> X </u>	<u> X </u>	<u> </u>	<u> </u>
Kandal	2879	<u> </u>	<u> </u>	<u> X </u>	<u> X </u>	<u> </u>	<u> </u>	<u> </u>
Koh Kong	11173	<u> X </u>	<u> X </u>	<u> X </u>	<u> X </u>	<u> X </u>	<u> </u>	<u> X </u>
Kratie	10042	<u> X </u>	<u> X </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> X </u>
Mondulkiri	13254	<u> X </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> X </u>
Phnom Penh	401	<u> </u>	<u> </u>	<u> </u>	<u> X </u>	<u> </u>	<u> </u>	<u> </u>
Preah Vihear	14612	<u> X </u>	<u> X </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> X </u>
Prey Veng	4161	<u> </u>	<u> </u>	<u> X </u>	<u> X </u>	<u> </u>	<u> </u>	<u> </u>
Pursat	12473	<u> X </u>	<u> X </u>	<u> X </u>	<u> </u>	<u> </u>	<u> </u>	<u> X </u>
Ratanakiri	14011	<u> X </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> X </u>
Siem Reap	16417	<u> X </u>	<u> X </u>	<u> X </u>	<u> </u>	<u> </u>	<u> </u>	<u> X </u>
Sihanouk Ville	1577	<u> </u>	<u> </u>	<u> </u>	<u> X </u>	<u> X </u>	<u> </u>	<u> </u>
Stung Treng	10118	<u> X </u>	<u> X </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> X </u>
Svay Rieng	3844	<u> </u>	<u> </u>	<u> X </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>
Takeo	4016	<u> </u>	<u> </u>	<u> X </u>	<u> X </u>	<u> </u>	<u> </u>	<u> </u>

11. Identify specific geographic barriers (ie. jungle area, mountainous region, major river or lake) in sub-units which potentially impede the development and/or success of an agricultural extension system.

<u>Sub-Unit</u>	<u>Potential Geographic Barrier</u>
Battambang	Chuor Phnum Kravanh Mountains & jungle to SW
Pursat	Chuor Phnum Kravanh Mountains & jungle to West
Koh Kong	Chuor Phnum Kravanh Mountains & jungle to SW
Siem Reap	Chuor Phnum Dangrek Mountains & jungle to North
Preah Vihear	Chuor Phnum Dangrek Mountains & jungle
Stung Treng	Chuor Phnum Dangrek Mountains & jungle
Ratanakiri	Chuor Phnum Dangrek Mountains & jungle
Mondulkiri	Chuor Phnum Dangrek Mountains & jungle
Kampong Thom	Chuor Phnum Dangrek Mountains & jungle to NE
Kratie	Chuor Phnum Dangrek Mountains & jungle to N&SE

Climatic Situation: (CS)

1. Primary Climate of Country (tropical, sub-tropical, arid, temperate) Tropical
2. Average Annual Rainfall of Country (cm) 1400mm in plains
3800mm in mountains
3. Seasonal Variation: X Yes No
4. If so, Identify Seasons and Associated Months:

<u>Seasons</u>	<u>Months</u>	
	<u>From</u>	<u>Through</u>
Rainy	Mid-April	Mid-October
Dry	Mid-October	Mid-April

5. List the country sub-units and identify specific characteristics of each by filling-in blanks with specific information.

<u>Sub-Unit</u>	Average Annual	Temperature		Average Days
	<u>Rainfall</u>	<u>Normal High</u>	<u>Normal Low</u>	<u>in Growing Season</u>
Banteay Meanchey	1153.4mm	21C	35C	365
Battambang	1159.4mm	22C	35C	365
Kompong Cham	1536.7mm	22C	36C	365
Kompong Chhnang	2240.4mm	23C	36C	365
Kompong Speu	1068.7mm	21C	34C	365
Kompong Thom	1304.5mm	21C	34C	365
Kampot	1736.0mm	22C	35C	365
Kandal	1023.9mm	23C	36C	365
Koh Kong	1268.9mm	20C	32C	365
Kratie	1365.7mm	21C	34C	365
Mondulkiri	1791.6mm	20C	32C	365
Phnom Penh	1031.9mm	23C	36C	365
Preah Vihear	1503.9mm	21C	33C	365
Prey Veng	916.1mm	23C	36C	365
Pursat	1096.7mm	21C	34C	365
Ratanakiri	1939.4mm	20C	31C	365
Siem Reap	1137.9mm	21C	34C	365
Sihanouk Ville	3457.7mm	20C	32C	365
Stung Treng	1778.6mm	20C	32C	365
Svay Rieng	1391.6mm	23C	36C	365
Takeo	1087.3mm	23C	36C	365

Demographic Situation: (DS)

1. Total Population	9,447,000
2. Percent Annual Growth Rate	2.65%

3. Identify the Percent Population by:

A. Sex:

56.00% Female

44.00% Male

B. Age:

52.40% 0-18 years

43.28% 19-64 years

4.32% 65+ years

C. Education:

68.55% Primary

1.31% Trade/Technical

29.42% Secondary

1.68% University

4.89% Post Secondary

.34% Professional

D. Employment: By Source

34.28% Unpaid Family Labor

65.72% Employed Labor:

93.35% Private Business

2.42% Government

4.23% Other

Employment: By Industry

83.96% Farming

5.26% Retail

.94% Fishing

1.37% Service

8.12% Manufacturing

.35% Other

E. Cultural Heritage by Primary Racial Groups, Tribes,
Religions, Cultural Minorities, etc.

<u>Heritage</u>	<u>%</u>	<u>War Created Vulnerable Groups</u>	
Chinese	1.27%	Returning Refugees	4.07%
Vietnamese	1.44%	Internally Displaced	2.01%
Thai	1.13%	Handicapped	.42%
Cham-Malays	2.68%		
Buddhists	90.00%		
Animists	2.50%		
Khmer	4.26%		

3. Sub-Unit Administrative Organization:

A. Executive Branch

Provincial administration is headed by an elected Governor assisted by two or three Deputy Governors. Central Federal Ministries also have staff at the Provincial level who report to the Governor and the Ministry in Phnom Penh. Local governments are funded by the federal government as they have no authority to collect taxes independently.

B. Representative Branch

No local representative branch.

4. Branch of Government Responsible for Education:

Ministry of Education

5. Primary Responsibilities of Government Branch Responsible for Education include: (Check all that apply.)

☒ Policy Formulation	☒ Education
☒ Regulation & Enforcement	☐ Research
☐ Promotion	☐ Other: _____

6. Branch of Government Responsible for Agriculture:

Ministry of Agriculture, Forests, and Fisheries

7. Primary Responsibilities of Government Branch Responsible for Agriculture include: (Check all that apply.)

☒ Policy Formulation	☒ Other: Land & Irrigation Development
☒ Regulation & Enforcement	☒ Other: Veterinary Services & Supply
☒ Promotion & Marketing	☒ Other: Rural Infrastructure Development
☒ Financing & Credit	
☒ Input Supply	
☒ Education	
☒ Research	

8. Administrative Organization of Governmental Branches:

Minister with Vice-Ministers and Departmental Directors

9. Established Method of Government Policy Formation: (Check all that apply.)

- ☐ Independent Administrative Determination
- ☐ Representative Determination
- ☒ Combination of Administrative & Representative Determination
- ☐ Other: _____

Economic Situation: (ES)

1. Form of National Currency	Riels
2. Current Exchange Rate with US Dollar (\$)	R2,200/\$1
3. GNP in US Dollars (\$)	\$1.89 billion
Per Capita GNP in US Dollars (\$)	\$200.00
Per Capita Income in US Dollars (\$)	\$90.00
4. Average Annual Percentage Growth in GNP (past 5 years)	24.05%
5. GDP in US Dollars (\$)	\$1.78 billion
Per Capita GDP in US Dollars (\$)	\$188.84
6. Percent Distribution of GDP:	
<u>% By Source</u>	<u>% By Demand</u>
48.10% Agriculture	8.36% Public Consumption
7.30% Industry	14.15% Gross Domestic Investment
44.60% Services	67.06% Private Consumption
	7.63% Gross Domestic Saving
	2.80% Exports
7. Current Balance of Payments in U.S. Dollars	\$124.1 million
8. External Public Debt in U.S. Dollars (\$)	\$255.4 million
9. External Public Debt as a Percentage of GNP	13.51%
10. Annual Interest Payments on External Public Debt in U.S. Dollars (\$)	\$15.32 million

11. Debt Service on External Public Debt:
- a. as a Percentage of Exports of Goods & Services 30.64%
 - b. as a Percentage of GNP 8.11%

Agricultural Situation: (AS)

- 1. Total Cultivated Land Area (hectares) 3.85 million hectares
- 2. Total Number of Farms 1.27 million
- 3. Average Farm Size (hectares) 3.03 hectares
- 4. Percent Farmland by Ownership:

<u>%</u>	<u>Entity</u>	<u>%</u>	<u>Entity</u>
27.55%	Individual Farm Families	72.45%	Government
0.00%	Absentee/Investor Landlord	_____	Other: _____
0.00%	Corporation	_____	Other: _____

5. Percent Farm Families by Farming System:

<u>%</u>	<u>System</u>	<u>%</u>	<u>System</u>
N/A	Nomadic	1.5%	Confinement Livestock
N/A	Slash & Burn	N/A	Communal/Enterprise
82.5%	Permanent Cropland/Pasture	_____	Other: _____
16.0%	Kampong/Scavenging Livestock	_____	Other: _____

6. Total Production of Primary Agricultural Crops:

<u>Major Crops</u>	<u>Production</u>	<u>Major Crops</u>	<u>Production</u>
Rice	2.12 million tons	Corn	54 thousand tons
Cassava	66 thousand tons	Sweet Potatoes	55 thousand tons
Vegetables	200 thousand tons	Groundnuts	4 thousand tons
Soybeans	40 thousand tons	Mungbeans	12 thousand tons
Sesame	5 thousand tons	Sugar Cane	140 thousand tons
Tobacco	10 thousand tons	Jute	1.6 thousand tons
Cotton	.1 thousand tons	Black Pepper	.37 thousand tons
Rubber	28.4 thousand tons		

7. Total Number of Head Each of Primary Livestock Species:

<u>Livestock Species</u>	<u>Total Head</u>
Cows	2.54 million
Buffalo	824 thousand
Pigs	2.12 million
Draught Oxen	1.18 million
Draught Buffalo	520 thousand
Poultry	10.69 million

8. If Fishing or Fish Culture is Important to Rural Life or Economy, Identify Total Area and Output of Marine Fishing and Freshwater Fish Culture:

Marine Fishing Area	7,850 sq.km.
Marine Fishing Output (Tons)	34,000 tons
Freshwater Fish Culture Area	3,600 sq.km.
Freshwater Fish Culture Output (Tons)	113,500 tons

9. Government Branch Responsible for Agricultural Education:

Ministry of Agriculture

10. Percent Agricultural Education by Source:

% Source

15.6% On-Farm Experience/Training

6.4% Vocational Agriculture Training in Primary/Secondary Schools

21.2% Technical School Training

43.1% College/University Training

13.7% Extension Programs

_____ Other: _____

11. The Current Goals of Agricultural Education may be Ranked in Order of Significance as follows:

- 1 Increasing Food Production
- 3 Increasing Farm Incomes
- 2 Improving the Efficiency of Production
- Providing Financial Counseling
- Providing Farm Inputs
- Providing Farm Markets
- Organizing Farm Commodity Groups & Organizations

12. Government/Organizational Body Responsible for Ag Research:

Ministry of Agriculture, Department of Technology and Exploitation

13. Linkage between Agricultural Research and Education:

- Dual-Assigned Personnel
- Locally Administered Research Plots and Programs
- Joint Determination of Research Priorities
- Co-Authored Research Publications
- X Other: very little ag research due to scarce financial and human resources

14. Current National Agricultural Policy may be Characterized as:
(Check all that apply.)

- X Supporting Low Consumer Food Prices
- Providing Economic Incentives for Increased Production
- X Emphasizing Increased Production for Export to Reduce Balance of Trade Deficit
- X Emphasizing Increased Production to Increase Farm Incomes
- Supporting Large-Scale Farmers
- X Supporting All Farmers
- Supporting Broad-Based Agricultural Development
- X Other: to expand rubber production for increased foreign exchange

15. The Primary Goals for Agricultural Development are: (Check all that apply.)

- ☒ Increase Agricultural Production for Export to Reduce Balance of Trade Deficit
- ☒ Increase Agricultural Production to Increase Real Income of Farmers
- ☐ Increase Agricultural Production to Improve or Stabilize Food Supplies at Reasonable Prices for Urban Populations
- ☒ Improve the Quality of Life for the Entire Rural Population
- ☐ Enhance the Environment and the Use of Natural Resources
- ☐ Support Communities Toward the Goal of Community Improvement
- ☐ Improve the Availability of Social Programs in Health, Nutrition, and Basic Education
- ☐ Strengthen the Family and Home
- ☐ Improve Local Leadership and Initiative
- ☐ Other: _____

16. Value of Agricultural Output in U.S. Dollars (\$) by Sub-Unit:

<u>Sub-Unit</u>	<u>Value</u>	<u>Sub-Unit</u>	<u>Value</u>
Banteay Meanchey	\$65.3 million	Phnom Penh	\$ 4.4 million
Battambang	\$86.4 million	Preah Vihear	\$24.0 million
Kompong Cham	\$64.1 million	Prey Veng	\$49.1 million
Kompong Chhnang	\$45.6 million	Pursat	\$38.9 million
Kompong Speu	\$46.2 million	Ratanakiri	\$27.2 million
Kompong Thom	\$54.7 million	Siem Reap	\$74.8 million
Kampot	\$29.2 million	Sihanouk Ville	\$15.0 million
Kandal	\$50.9 million	Stung Treng	\$39.4 million
Koh Kong	\$20.5 million	Svay Rieng	\$26.6 million
Kratie	\$39.5 million	Takeo	\$41.5 million
Mondulkiri	\$12.9 million		

17. Percent of Family Farm

A. Production:

56.80% Consumed at Home

43.20% Marketed

B. Financing Obtained through:

10.40% Family Income/Savings

89.60% Government Financing

_____ % Private Investor

_____ % Private Bank

_____ % Farm Credit Service

_____ % Other: _____

C. Income by Source:

5.50% Husband & Wife Both Working on Farm Full-time

1.20% Wife Working on Farm Full-time & Husband Employed
Elsewhere Full-time2.10% Husband Working on Farm Full-time & Wife Employed
Elsewhere Full-time10.60% Both Partners Working on Farm with Husband Employed
Elsewhere Part-time4.20% Both Partners Working on Farm with Wife Employed
Elsewhere Part-time76.40% Both Partners Working on Farm & Working Elsewhere
Part-time

18. Family Farm Management Decisions Made by:

☒ Male Head of Household☒ Female Head of Household (in families with female head of
household due to war loss)

_____ Jointly

19. Ag Marketing System may be Described as: (Check all that apply.)

☒ Local Family/Roadside Market☒ Local Community Market/Bazaar☐ Regional Commodity Marketing Organization☐ Privately-Owned Commodity Market☒ Government Marketing Program; Domestic and/or Export☐ Privately-Owned Export Company☐ Other: _____**Infrastructure Situation: (IS)**

1. Percent Urban Households with the Following Services:

<u>Service</u>	<u><10%</u>	<u>10-30%</u>	<u>30-50%</u>	<u>50-70%</u>	<u>70-90%</u>	<u>>90%</u>
Telephone	_____	_____	<u>X</u>	_____	_____	_____
Daily Mail Delivery	_____	_____	<u>X</u>	_____	_____	_____
Daily Newspaper	<u>X</u>	_____	_____	_____	_____	_____
Electricity	_____	_____	_____	<u>X</u>	_____	_____
Indoor Plumbing	_____	_____	_____	<u>X</u>	_____	_____
Television	_____	<u>X</u>	_____	_____	_____	_____
Radio	_____	_____	<u>X</u>	_____	_____	_____

2. Percent Rural Households with the Following Services:

<u>Service</u>	<u><10%</u>	<u>10-30%</u>	<u>30-50%</u>	<u>50-70%</u>	<u>70-90%</u>	<u>>90%</u>
Telephone	<u>X</u>	_____	_____	_____	_____	_____
Daily Mail Delivery	<u>X</u>	_____	_____	_____	_____	_____
Daily Newspaper	<u>X</u>	_____	_____	_____	_____	_____
Electricity	_____	<u>X</u>	_____	_____	_____	_____
Indoor Plumbing	<u>X</u>	_____	_____	_____	_____	_____
Television	<u>X</u>	_____	_____	_____	_____	_____
Radio	_____	<u>X</u>	_____	_____	_____	_____

3. General Road Conditions may be Described as:

	<u>Excellent</u>	<u>Good</u>	<u>Fair</u>	<u>Poor</u>
Town/City Streets	—	<u>X</u>	—	—
Major Roads/Highways	—	—	<u>X</u>	—
Rural Roads	—	—	—	<u>X</u>

4. General Observations Regarding Roadways:

The road network consists of 3,000 km of national roads, 3,00 km of provincial roads, and 28,000 km of tertiary roads. At least half of the primary roads are in need of repair or improvement. Provincial and local roads are generally in poor condition and many are flooded and impassable during the rainy season. Most bridges, steel and concrete, were destroyed during the war and have been replaced with single-lane wooden bridges. Major investment in road repair and restructuring is essential.

5. Percent Transportation Provided by:

	<u>Urban Areas</u>	<u>Rural Areas</u>
Foot/Walking	14.3%	32.4%
Animal/Animal Cart	1.7%	12.7%
Manpowered Transport (Bicycle/Rickshaw)	41.6%	52.2%
Public Transportation (Bus, Tram)	24.8%	2.6%
Taxi/Limo/Jeepny	15.1%	0.0%
Family-owned Automobile	2.5%	0.1%
Other: _____	_____ %	_____ %

6. General Observations Regarding Air & Rail Transportation:

Railway system connects Phnom Penh to Battambang in the northwest and Sihanouk Ville in the southwest. Low ridership due to lack of security created by Khmer Rouge attacks.

International airport located in Phnom Penh with three additional civil airfields in Siem Reap, Battambang, and Stung Treng. Considerable investment required to bring these airports to minimum international safety standards.

General or Desired Characteristics Impacting an Agricultural Extension Education System: (DCS)

1. From Policy Makers' Perspective, It is Considered Most Desirable for Agricultural Extension Education System to be:

A. Administered by:

☒ The Agricultural Branch of the Federal Government

☐ The Educational Branch of the Federal Government

☐ Another Branch of the Federal Government:

☐ An Agricultural College or University

☐ Another Public Body:

☐ An Independent Company or Organization

☐ An Autonomous, Self-Directed Extension System

☐ Other: _____

B. Responsible for: (Check all that apply.)

☐ Regulation & Enforcement

☐ Input Supply

☐ Administration/Direction

☒ Education

☐ Policy Formulation

☐ Research

☐ Promotion & Marketing

☐ Other: _____

☐ Financing & Credit

☐ Other: _____

C. Organized with Staff & Offices on a: (Check all that apply.)

☒ National Level

☒ Local Level

☒ Sub-Unit Level: Provincial

☐ Other: _____

1. From Policy Makers' Perspective, It is Considered Most Desirable for Agricultural Extension Education System to be: (con'd.)

D. Funded by:

☒ Federal Government	☐ Private Foundation
☐ Sub-Unit Governments	☒ Development Assistance Funds
☐ Local Governments	☒ Combination of Above:
☐ Self-Supported/Project	Federal Government & Development Assistance Funds
☐ Profits/User Fees	

E. Staffed by: (Check all that apply.)

☐ University Graduates at All Levels

☒ University Graduates at Administrative Levels and Technical School Graduates at Local Levels

☐ University Graduates at Administrative Levels & Specially Trained Individuals at Local Levels

☐ Technical School Graduates at All Levels

☒ Nationals at All Levels

☐ A Mixture of Nationals & Non-nationals at All Levels

☐ Nationals at _____ & Non-Nationals at _____ Levels

☐ Men at All Levels

☒ A Mixture of Men & Women at All Levels

☐ Men at _____ Levels & Women at _____ Levels

☒ Other: controllers should be employed at Provincial & District levels and Specialist Extension Officers and Farmer Technicians at the Village level

☐ Other: _____

F. Directed in Terms of Program Priorities by:

☒ Clientele Advisory Groups	☐ Donor-Assisted Project Organization
☒ Central Federal Administration	
☐ University Administration	☐ Autonomous Economic & Social Development Body
☐ Autonomous Public Sector Body	☐ Other: _____

1. From Policy Makers' Perspective, It is Considered Most Desirable for Agricultural Extension Education System to be: (con'd.)

G. Staffed with/at:

	<u>Federal Level</u>	<u>Sub-Unit Level</u>	<u>Local Level</u>
Administrators	<u> X </u>	<u> X </u>	<u> </u>
Subject Matter Specialists	<u> X </u>	<u> X </u>	<u> X </u>
Extension Educators	<u> </u>	<u> </u>	<u> X </u>
Other: _____	<u> </u>	<u> </u>	<u> </u>
Other: _____	<u> </u>	<u> </u>	<u> </u>

H. Linked with Research Centers through: (Check all that apply.)

 Dual-Assigned Personnel

 X Locally Administered Research Plots & Programs

 Joint Determination of Research Priorities

 Co-Authored Research Publications

 Other: _____

I. Associated with/on: (Check all that apply.)

	<u>Formal Basis</u>	<u>Informal Basis</u>
Farm Credit System	<u> </u>	<u> </u>
Farm Supply Organizations	<u> </u>	<u> </u>
Marketing Organizations	<u> </u>	<u> </u>
Promotional Groups	<u> </u>	<u> </u>
Other: _____	<u> </u>	<u> </u>
Other: _____	<u> </u>	<u> </u>
No Other Association	<u> X </u>	<u> X </u>

2. From Users'/Clientele Perspective, It is Considered Most Desirable for Agricultural Extension Education System to be:

A. Administered by:

☒ The Agricultural Branch of the Federal Government

☐ The Educational Branch of the Federal Government

☐ Another Branch of the Federal Government:

☐ An Agricultural College or University

☐ Another Public Body:

☐ An Independent Company or Organization

☐ An Autonomous, Self-Directed Extension System

☐ Other: _____

B. Responsible for: (Check all that apply.)

☐ Regulation & Enforcement

☐ Input Supply

☐ Administration/Direction

☒ Education

☐ Policy Formulation

☐ Research

☐ Promotion & Marketing

☐ Other: _____

☐ Financing & Credit

☐ Other: _____

C. Organized with Staff & Offices on the following Levels:

☒ National; ☒ Sub-Unit; ☒ Local; ☐ Other: _____

D. Funded by:

☒ Federal Government

☐ Private Foundation

☐ Sub-Unit Governments

☒ Development Assistance Funds

☐ Local Governments

☒ Combination of Above:

☐ Self-Supported/Project

Federal Government & Development Assistance Funds

☐ Profits/User Fees

2. From Users'/Clientele Perspective, It is Considered Most Desirable for Agricultural Extension Education System to be: (con'd.)

E. Staffed by: (Check all that apply.)

- ☐ University Graduates at All Levels
- ☒ University Graduates at Administrative Levels and Technical School Graduates at Local Levels
- ☐ University Graduates at Administrative Levels & Specially Trained Individuals at Local Levels
- ☐ Technical School Graduates at All Levels
- ☒ Nationals at All Levels
- ☐ A Mixture of Nationals & Non-nationals at All Levels
- ☐ Nationals at _____ & Non-Nationals at _____ Levels
- ☐ Men at All Levels
- ☒ A Mixture of Men & Women at All Levels
- ☐ Men at _____ Levels & Women at _____ Levels
- ☐ Other: _____

F. Directed in Terms of Program Priorities by:

☒ Clientele Advisory Groups	☐ Donor-Assisted Project Organization
☒ Central Federal Administration	
☐ University Administration	☐ Autonomous Economic & Social Development Body
☐ Autonomous Public Sector Body	☐ Other: _____

G. Associated with/on: (Check all that apply.)

	Formal Basis	Informal Basis
Farm Credit System	☒	☐
Farm Supply Organizations	☐	☐
Marketing Organizations	☒	☐
Promotional Groups	☐	☐
Other: _____	☐	☐

Other Pertinent Observations:

1. Current extension system lacks a well-defined policy and direction.
2. Agricultural research, although assigned to a separate, distinct Department of Technology and Exploitation, is essentially non-existent.
3. Current system over-staffed with under-trained individuals.
4. Need to distinctly separate the enforcement and regulation function from the educational function in the extension system.
5. Need to achieve a complete change in attitude among extension workers since primary management technique under controlled economy was control and discipline. In a market economy, emphasis should be on initiative and management and the interrelation of demand, supply, and price.
6. Extension programming priorities should be cooperatively established between local advisory groups and local representatives of Central Federal Administration.
7. Local extension workers should assist farmers with identifying farmer needs/problems and production constraints, communicate those needs to researchers, disseminate new technology education to local farms, evaluate effectiveness of new technology, and encourage application of improved methods or identified production solutions.
8. Due to government concern for national security, 28% of all government domestic expenditure is going to the Ministry of Defense.

"Model Correlation Instrument"

for

Country: State of Cambodia

Note:

1. This instrument should be used after completion of the **"Country Analysis Instrument"** and requires information and data derived from its application for completion.
2. When selecting appropriate model components, refer to the indicated **"Analysis Factors"** found in the **"Country Analysis Instrument"** and the associated **"Agricultural Extension Education Models"**.
3. For purposes of abbreviation, the following initials are used when referring to **"Analysis Factors"** included in the **"Country Analysis Instrument"**:

GS	Geographic Situation	ES	Economic Situation
CS	Climatic Situation	AS	Agricultural Situation
DS	Demographic Situation	IS	Infrastructure Situation
PS	Political Situation	DCS	Desired Characteristics
4. For purposes of abbreviation, the following initials are used to identify the **"Agricultural Extension Education Models"** from which various components are derived:

CAES	Conventional Agricultural Extension System
TVS	Training and Visit System
UAES	University Agricultural Extension System
CDPS	Commodity Development and Production System
IADS	Integrated Agricultural Development System
IRDS	Integrated Rural Development System
FSRDS	Farming Systems Research and Development System
ALL	All of the Above Listed Systems

MODEL OBJECTIVES:**1. Objectives should be set by: Analysis Factors - PS 4-7,9; AS 9; DCS 1A,1B,1F,2A,2B,2F**

- ☒ Clientele Advisory Groups (UAES)
- ☒ Central Federal Administration (CAES,TVS)
- ☐ University Administration (UAES)
- ☐ Autonomous Public Sector Program Body (CDPS)
- ☐ Donor-Assisted Project Organization (IADS)
- ☐ Autonomous Economic and Social Development Organization (IRDS)
- ☐ Other: _____

2. Objectives should be defined as: Analysis Factors - AS 11,14,15

- ☐ Providing &/or Maintaining Low Consumer Food Prices (UAES,CDPS)
- ☐ Providing Economic Incentives for Increased Agricultural Production (CDPS,IADS,IRDS)
- ☒ Increasing Agricultural Production for Export to Reduce Balance of Trade Deficit (CAES,CDPS)
- ☒ Increasing Agricultural Production to Increase Real Income of Farmers (ALL)
- ☐ Improving the Lot of Large-Scale Farmers (IADS)
- ☒ Improving the Quality of Life for the Entire Rural Population (ALL)
- ☐ Providing for Broad-Based Agricultural Development (CAES,TVS,UAES,FSRD)
- ☐ Strengthening the Family and Home (UAES)
- ☐ Enhancing the Environment and the Use of Natural Resources (UAES,FSRD)
- ☐ Supporting Communities Toward the Goal of Community Improvement (UAES)
- ☐ Improving Local Leadership and Initiative (UAES,IRDS)
- ☐ Increasing the Availability of Social Programs in Health, Nutrition, and Basic Education (IRDS)
- ☐ Other: _____

MODEL CLIENTELE:

1. Scope of Clientele should be: Analysis Factors - DS 1-4; AS 4-5,
17-19

- ☐ Entire Population (UAES)
- ☒ Entire Farm Population (TVS)
- ☐ Large-Scale Farmers (CAES, IADS)
- ☐ Small-Scale Farmers (IRDS, FSRD)
- ☐ All Farmers within an Identified Project Area (IADS)
- ☐ Other Target Groups within the Farm Population, ie. producers of specific commodities, women, etc. (CAES, CDPS)
- ☐ Other: _____

MODEL ORGANIZATION:

1. Should be Administered by: Analysis Factors - PS 1-9; AS 9;
DCS 1A, 2A

- ☒ Agricultural Branch of the Federal Government (CAES, TVS)
Ministry of Agriculture, Department of Technical Extension
- ☐ Educational Branch of the Federal Government
- ☐ Another Branch of Federal Government: _____
- ☐ Agricultural College or University (UAES)
- ☐ Another Public Body: (CDPS) _____
- ☐ Independent Company or Organization (IADS, IRDS)
- ☐ Autonomous, Self-Directed Extension System
- ☐ Other: _____
- ☐ Other: _____

MODEL ORGANIZATION: (con'd.)**2. Should be Responsible for: Analysis Factors - PS 5,7; AS 9,11-13; DCS 1B,2B**

- ☐ Regulation and Enforcement (CAES)
- ☐ Administration and Direction (CAES)
- ☐ Policy Formulation
- ☐ Promotion and Marketing (CDPS, IADS)
- ☐ Financing and Credit (CDPS, IADS)
- ☐ Input Supply (CAES, CDPS, IADS)
- ☒ Education (ALL)
- ☐ Research (FSRD)
- ☐ Other: _____

3. Should be Organized with Staff and Offices on a: Analysis Factors - GS 1-11; CS 1-5; DS 1-4; AS 1-8,16; IS 1-6; DCS 1C,2C

- ☒ National Level (CAES, TVS, UAES)
- ☒ Sub-Unit Level (CAES, TVS, UAES, CDPS, FSRD); if so,
number of Sub-Unit Facilities should be: 19 Provinces
- ☒ Local Level (ALL); if so,
number of Local Facilities should be: 172 Districts
1,400 Communes
11,700 Villages

4. Should be Funded by: Analysis Factors - DS 3-4; ES 1-11; AS 16-17; DCS 1D,2D

- ☒ Federal Government (CAES, TVS, UAES)
- ☐ Sub-Unit Governments (CAES, UAES)
- ☐ Local Governments (UAES)
- ☐ Self-Supported: Project Profits, User Fees (CDPS)
- ☐ Private Foundations
- ☒ Development Assistance Funds (IADS, ISRD)
- ☒ Combination of the Above (FSRD)
- ☐ Other: _____

MODEL ORGANIZATION: (con'd.)**5. Should be Staffed by: Analysis Factors - DS 3-4; PS 1-3,8-9; AS 5, 10,17-18; DCS 1E,2E**

- ___ University Graduates at all Levels (UAES,FSRD)
- X University Graduates at Administrative Levels & Technical School Graduates at Local Levels (CAES,CDPS,IADS,IRDS)
- ___ University Graduates at Administrative Levels & Specially Trained Individuals at Local Levels (TVS)
- ___ Technical School Graduates at all Levels
- X Nationals at all Levels (CAES,TVS,UAES,CDPS)
- ___ A Mixture of Nationals and Non-Nationals at all Levels (FSRD)
- ___ Nationals at _____ Levels & Non-Nationals at _____ Levels (IADS,IRDS)
- ___ Men at all Levels
- X A Mixture of Men and Women at all Levels (CAES,UAES)
- ___ Men at _____ Levels and Women at _____ Levels (TVS,CDPS,IADS,IRDS,FSRD)
- X Other: controllers should be employed at Provincial & District levels and Specialist Extension Officers and Farmer Technicians at the Village level
- ___ Other: _____

6. Should be Staffed with: Analysis Factors - PS 1-9; AS 9,12-13; DCS 1G

	<u>Federal Level</u>	<u>Sub-Unit Level</u>	<u>Local Level</u>
Administrators	<u>X</u> (CAES,TVS,UAES)	<u>X</u> (ALL)	_____ (CAES,TVS,FSRD)
Subject Specialists	<u>X</u> (CAES,TVS,UAES)	<u>X</u> (ALL)	_____
Extension Educators	_____ (CAES,TVS,UAES)	<u>X</u> (CAES,TVS,UAES CDPS,FSRD)	<u>X</u> (ALL)
Other:	_____	_____	_____

MODEL ORGANIZATION: (con'd.)**7. Should be Linked with Research Centers through: Analysis Factors - PS 1-8; AS 12-13; DCS 1H**

- _____ Dual-Assigned Personnel (CAES,UAES,FSRD)
- X Locally Administered Research Plots and Programs (FSRD)
- _____ Joint Determination of Research Priorities (CAES,TVS,UAES,CDPS,FSRD)
- _____ Co-Authored Research Publications (UAES)
- _____ Other: _____
- _____ Other: _____
- _____ Other: _____

8. Should be Associated with: Analysis Factors - PS 1-8; ES 6-11; AS 1,4-8,16-18,19; IS 1-6; DCS 1I,2G

	<u>Formal</u> <u>Basis</u>	<u>Informal</u> <u>Basis</u>
Farm Credit System	(CDPS, <u> </u> IADS, IRDS)	(CAES, <u> </u> TVS, UAES, FSRD)
Farm Supply Organizations	(CDPS, <u> </u> IADS, IRDS)	(CAES, <u> </u> TVS, UAES, FSRD)
Marketing Organizations	(CDPS, <u> </u> IADS, IRDS)	(CAES, <u> </u> TVS, UAES)
Promotional Groups	(CDPS, <u> </u> IADS, FSRD)	(CAES, <u> </u> TVS, UAES)
Other: _____	_____	_____
Other: _____	_____	_____
No Other Association	<u> X </u>	<u> X </u>

MODEL APPROACH:**1. Educational Approach should be: Analysis Factors - GS 1,2,10-11, DS 1-4; AS 4-8,16-18; IS 1-6; DCS 1C-1I,2C-2G**

- _____ One-on-One Contact by Local Extension Workers through Irregular Home & Farm Visits & Office Calls (CAES,UAES)
- _____ Agricultural Information Units for Production of Bulletins, Teaching Aids, Radio Programs, & Mass Media Materials (CAES)
- _____ Local Extension Workers Contact Local Farmers on a Fixed Schedule (TVS)
- _____ Local Extension Workers Receive Training on a Fixed Schedule (TVS)
- _____ Local Advisory Councils Provide Guidance & Assistance in Financial, Operational, Programming, & Evaluation Processes of Extension Program (UAES,IRDS)
- X Local Extension Personnel Use Research-Based Information to Help Local People Identify & Establish Need Priorities & then Request Instructional Assistance from Subject-Matter Specialists on Selected Topics (UAES)
- _____ Local Farmers Contract to Produce an Identified Commodity Using Recommended Practices & the Commodity Organization Contracts to Provide Commodity Research, Credit, Input Supply, Technical Assistance, & Marketing Services (CDPS)
- _____ Pilot Project Established in which the Organization Provides Previously Limited Inputs Assumes the Responsibility for Coordinating All Facets of Agricultural Production, Including Credit, Supply, Technical Assistance, & Marketing Services (IADS,IRDS)
- _____ Establishment of an Interdisciplinary Team which Conducts On-Farm Research to Evaluate the Interplay of the Production Components under Farmer's Control & the Physical, Biological & Socio-Economic Environments; Identifies & Generates New Technology; Adapts & Tests Technologies in Project Area Possessing Reasonably Uniform Characteristics (FSRD)
- X Other: National and Provincial support of NGO Extension Development Project Funded through Donor-Assisted Development Funds
- _____ Other: _____

MODEL ROLE OF EXTENSION PERSONNEL:**1. Role of Local Extension Personnel should be: Analysis Factors - PS 4-7; AS 11-12,15,19; DCS 1B,1D,1H,2B,2D**

- ☒ Consultant; identify farmer problems/needs & production constraints (CAES,TVS,CDPS,IADS)
- ☐ Advisor; work with local people to identify & prioritize problems/needs & possible solutions (UAES,IRDS,FSRD)
- ☒ Communicator; communicate farmer problems/needs & production constraints to subject-matter specialists & research workers (CAES,TVS,UAES,FSRD)
- ☒ Educator; disseminate research-based information about new technology & demonstrate its practical application to farmers (ALL)
- ☒ Motivator; encourage application of improved methods or identified solutions to problems (TVS,UAES,IRDS,FSRD)
- ☒ Evaluator; work with local people to evaluate the effectiveness of new techniques & extension programs (UAES,IRDS,FSRD)
- ☐ Researcher; conduct on-farm research to determine the practicality & effectiveness of new technology (FSRD)
- ☐ Government Administrator; administer government programs & policies on the local level (CAES)
- ☐ Supplier; provide farmers with required inputs (CDPS,IADS)
- ☐ Marketer; coordinate product marketing (CDPS,IADS,IRDS)
- ☐ Other: _____
- _____
- ☐ Other: _____
- _____

IDENTIFIED DESIGN PARAMETERS:**I. Objectives to be Established by:**

Central Federal Government/Ministry of Agriculture through Department of Technology and Exploitation

II. Objectives to be Defined as:

- A. increasing agricultural production for export to reduce balance of trade deficit;
- B. increasing agricultural production to increase real income of farmers; and
- C. improving the quality of life for the entire rural population.

III. Scope of Clientele to be:

The entire farm population.

IV. Organization to be: (Sub-Unit and Local Levels should be repeated and staffed as required.)**A. National Level**

<u>Function:</u>	<u>Number of Personnel Required:</u>
<u> X </u> Administration	250
<u> X </u> Research	100
<u> </u> Education	<u> </u>
<u> </u> Other: <u> </u>	<u> </u>
<u> </u> Other: <u> </u>	<u> </u>

1. Sub-Unit Level - Province

<u>Function:</u>	<u>Number of Personnel Required:</u>
<u> X </u> Administration	190
<u> X </u> Research	380
<u> X </u> Education	950
<u> </u> Other: <u> </u>	<u> </u>
<u> </u> Other: <u> </u>	<u> </u>

a. Local Level - District

<u>Function:</u>	<u>Number of Personnel Required:</u>
___ Administration	___
___ Research	___
<u>X</u> Education	860
___ Other: _____	___
___ Other: _____	___

b. Local Level - Communes & Villages

<u>Function:</u>	<u>Number of Personnel Required:</u>
___ Administration	___
___ Research	___
<u>X</u> Education	7,250
___ Other: _____	___
___ Other: _____	___

V. Educational Approach to be:

- A. local extension personnel using research-based information to help local people identify and establish need priorities and then request instructional assistance from subject-matter specialists on selected topics; and
- B. national and provincial support of extension development project sponsored by non-governmental organization through donor-assisted development funds.

VI. Role of Extension Personnel to be:

- A. consultant - identify farmer problems/needs and production constraints;
- B. communicator - communicate farmer problems/needs and production constraints to subject-matter specialists and researchers;
- C. educator - disseminate research-based information about new technology and demonstrate its practical application to farmers;

- D. evaluator - work with local people to evaluate the effectiveness of new techniques and extension programs; and
- E. motivator - encourage application of improved methods or identified solutions to problems.

APPENDIX O.

Design Parameter Instruments - Turkmenistan

Agricultural Extension Education Design Parameter Instruments

The attached instruments are intended for use by a project analyst or consultant team charged with the task of assisting with the design or evaluation of agricultural extension education systems in developing countries. The first, the **"Country Analysis Instrument"**, is an evaluation tool which serves to identify and quantify the various existing or desired characteristics which impact the development of an agricultural extension education system within a developing country. The second, the **"Model Correlation Instrument"**, is a key which allows those identified impactors to be correlated with particular components of existing extension education models. When used in order, these instruments afford the opportunity to "custom" design an appropriate, effective agricultural extension education system for the country in question.

The **"Country Analysis Instrument"** should be completed in-country by referencing current available statistical data, interviewing educators and policy makers, and conducting focus sessions of policy maker and clientele groups. Care should be taken to insure accuracy in areas of objective evaluation and to reflect priority attitudes, goals, and opinions in those of subjective evaluation.

Based upon an analysis of the information gathered through implementation of the first instrument, the **"Model Correlation Instrument"** can be employed by project personnel to correlate identified impactors with particular components of existing extension education models. This task should be completed in cooperation with national decision-makers and through careful consideration of the existing conditions within the country in question; the desired characteristics of an extension education system as perceived by educators, policy makers, and clientele; and the identified model component alternatives. A summary of selected component alternatives provides design parameters for an agricultural extension education system in the country.

"Country Analysis Instrument"

Country: Turkmenistan

Analysis Period: From May, 1995 **To** June, 1995

Reference Notations:

Ministry of Agriculture. (1995). Annual production report. Ashgabat: Author.

State Agricultural University, Chardjow. (1993). Enrollment/graduation report. Chardzhou: Author.

United States Bureau of the Census. (1993). Central Asia: Statistical profile. Washington D.C.: Center for International Research.

United States Department of State. (1995). Fact sheet: Turkmenistan. Washington D.C.: Bureau of Public Affairs.

United States Department of State. (1995). Project scope of work: Turkmenistan. Washington D.C.: USAID.

United States Embassy, Turkmenistan. (1995). Update report: Turkmenistan. Ashgabat: Author.

World Turkmen Humanitarian Association. (1995). Turkmen sesi. Ashgabat: Author.

Interviews with Directors and Vice-Directors of the Ministry of Agriculture including Yagmur Oovezov, Lilia Popovitch, and Matkarim Rajapov.

Interviews with faculty of the State Agricultural University in Chardzhou including Boris Shikhmuradov, Shamurat Jumaev, and Vadim Kourban.

Interviews with representatives of the Chardzhou Oblast and Danow District including the Governor of Chardzhou, Orazgeldi Atdogdyev, the Governor of Danow, Jourakuli Naizayev, and the President of the Danow Business Association, Charie Aldashov.

Interview with United States Ambassador-designate, Joseph Hulings III.

Interviews with farmers of the Danow District and Ashgabat area.

Geographic Situation: (GS)

1. Size of Country (km ²)	488,100 sq.km.
2. Number of Sub-Units (districts, provinces, states, etc.)	4 Oblastey &
1 Republic Jurisdiction

3. Percentage of Total Land Area Covered by Mountains 1.80%
4. Percentage of Total Land Area Covered by Highlands or Hills 0.00%
5. Percentage of Total Land Area covered by Plains 97.15%
6. Percentage of Total Land Area covered by Lowlands 1.05%
7. Percentage of Total Land Area Covered by Desert 92.50%
8. Percentage of Total Land Area Covered by Jungle 0.00%
9. Total Length of Coastline(s) (km) 1,768 km

10. List the country sub-units and identify specific characteristics of each by filling-in blanks with specific areas, percentages, or simply checking all that apply. Combination situations may be accommodated by completing more than one blank per sub-unit as applicable.

<u>Sub-Unit</u>	<u>km²</u>	<u>Mounts</u>	<u>Hills</u>	<u>Plains</u>	<u>Lows</u>	<u>Coast</u>	<u>Desert</u>	<u>Jungle</u>
Ashgabat	85,520	<u> X </u>	<u> </u>	<u> X </u>	<u> </u>	<u> </u>	<u> X </u>	<u> </u>
Balkan	118,990	<u> X </u>	<u> </u>	<u> X </u>	<u> </u>	<u> X </u>	<u> X </u>	<u> </u>
Chardzhou	113,465	<u> </u>	<u> </u>	<u> X </u>	<u> X </u>	<u> </u>	<u> X </u>	<u> </u>
Mary	87,250	<u> X </u>	<u> </u>	<u> X </u>	<u> </u>	<u> </u>	<u> X </u>	<u> </u>
Tashauz	82,875	<u> </u>	<u> </u>	<u> X </u>	<u> </u>	<u> </u>	<u> X </u>	<u> </u>

11. Identify specific geographic barriers (ie. jungle area, mountainous region, major river or lake) in sub-units which potentially impede the development and/or success of an agricultural extension system.

<u>Sub-Unit</u>	<u>Potential Geographic Barrier</u>
All Oblastey	Kara Kum Desert

Climatic Situation: (CS)

1. Primary Climate of Country (tropical, sub-tropical, arid, temperate) Subtropical Desert
2. Average Annual Rainfall of Country (mm) 162mm
3. Seasonal Variation: X Yes No
4. If so, Identify Seasons and Associated Months:

<u>Seasons</u>	<u>Months</u>	
	<u>From</u>	<u>Through</u>
Winter	December	Mid-April
Summer	Mid-April	November

5. List the country sub-units and identify specific characteristics of each by filling-in blanks with specific information.

<u>Sub-Unit</u>	<u>Average Annual Rainfall</u>	<u>Temperature</u>		<u>Average Days in Growing Season</u>
		<u>Normal High</u>	<u>Normal Low</u>	
Ashgabat	196mm	4C	31C	198
Balkan	312mm	0C	28C	198
Chardzhou	88mm	-2C	32C	198
Mary	183mm	5C	31C	198
Tashauz	117mm	-1C	30C	198

Demographic Situation: (DS)

1. Total Population 3,971,000
2. Percent Annual Growth Rate 2.70%
3. Identify the Percent Population by:
 - A. Sex:

48.50% Female	51.50% Male
---------------	-------------
 - B. Age:

40.60% 0-14 years	
55.70% 15-64 years	
3.70% 65+ years	

3. Identify the Percent Population by: (con'd.)

C. Education:

88.40% Primary	2.30% Trade/Technical
17.50% Secondary	1.25% University
4.50% Post Secondary	.70% Professional

D. Employment: By Source

38.20% Unpaid Family Labor	
61.80% Employed Labor:	26.95% Private Business
	70.55% Government
	2.50% Other: Joint-Ventures

E. Cultural Heritage by Primary Racial Groups, Tribes, Religions, Cultural Minorities, etc.

<u>Heritage</u>	<u>%</u>	<u>Heritage</u>	<u>%</u>
Turkmen	72.6%	Sunni Muslim	85.3%
Russians	9.8%	Eastern Orthodox	9.9%
Uzbeks	9.1%		
Kazakhs	2.4%		
Tatars	2.3%		
Ukrainians	1.8%		
Azeris	1.5%		
Armenians	.5%		

4. Sub-Unit Location of Major Cultural Heritage Groups:

<u>Sub-Unit</u>	<u>Major Cultural Heritage Groups</u>
Ashgabat	Russians, Eastern Orthodox
Balkan	Russians, Azeris, Armenians
Chardzhou	Uzbeks, Kazakhs
Tashauz	Kazakhs

Political Situation: (PS)

1. Form of National Government:

☐ Monarchy	☐ Benevolent Dictatorship
☐ Socialism	☐ Military
☐ Democracy	☒ Other: Republic
☐ Social Democracy	

2. National Administrative Organization:

A. Executive Branch

Elected President who serves as the head of state, head of government, and supreme commander of the armed forces with the advice of the Council of Ministers. The current President, Saparmurad Niyazov, was elected in 1992 with 99.5% of the vote and, through a 1994 referendum which endorsed his presidency with a 99.9% vote, allowed him to extend his term until 2002. The Saparmurad Turkmenbassy (head of the Turkmen Tribe) has appointed himself Chairperson of the Council of Ministers and for all practical purposes, has absolute power with authority to disband the Majlis, the legislative body, and appoint and dismiss all judges. Due to his near deification, his breadth of authority, and his intense desire to improve the social and economic standards of Turkmenistan, the political situation in Turkmenistan is frequently considered a benevolent dictatorship.

B. Representative Branch

50 member Majlis elected by majority vote for five-year terms and serving at the will of the President.

3. Sub-Unit Administrative Organization:

A. Executive Branch

Governors appointed by the Turkmenbassy with extensive discretionary authority within the Oblast.

B. Representative Branch

No representative branch within the Oblasts.

4. Branch of Government Responsible for Education:

Ministry of Education

5. Primary Responsibilities of Government Branch Responsible for Education include: (Check all that apply.)

☒ Policy Formulation	☒ Education
☒ Regulation & Enforcement	☐ Research
☐ Promotion	☐ Other: _____

6. Branch of Government Responsible for Agriculture:

Ministry of Agriculture

7. Primary Responsibilities of Government Branch Responsible for Agriculture include: (Check all that apply.)

☒ Policy Formulation	☒ Input Supply
☒ Regulation & Enforcement	☐ Education
☒ Promotion & Marketing	☐ Research
☒ Financing & Credit	☐ Other: _____

8. Administrative Organization of Governmental Branches:

Ministers, Vice-Ministers and Directors appointed by the Turkmenbassy.

9. Established Method of Government Policy Formation: (Check all that apply.)

☒ Independent Administrative Determination
☐ Representative Determination
☐ Combination of Administrative & Representative Determination
☐ Other: _____

Economic Situation: (ES)

1. Form of National Currency	Manat
2. Current Exchange Rate with US Dollar (\$)	M195.3/\$1
3. Net Material Product (NMP) in US Dollars (\$)	\$16.5 billion
4. Average Annual Percentage Growth in GNP (past 2 years)	-9.03%
5. Per Capita NMP in US Dollars (\$)	\$4,150.00
6. Percent Distribution of NMP:	
% <u>By Source</u>	% <u>By Demand</u>
40.00% Agriculture	___*___ Public Consumption
20.00% Industry	___*___ Gross Domestic Investment
40.00% Services	___*___ Private Consumption
	___*___ Gross Domestic Saving
	1.45% Exports
	* Unavailable
7. Current Balance of Payments in U.S. Dollars	\$731.0 million
8. External Public Debt in U.S. Dollars (\$)	\$650.0 million
9. External Public Debt as a Percentage of NMP	3.94%
10. Annual Interest Payments on External Public Debt in U.S. Dollars (\$)	\$62.7 million
11. Debt Service on External Public Debt:	
a. as a Percentage of Exports of Goods & Services	26.23%
b. as a Percentage of NMP	3.80%

Agricultural Situation: (AS)

1. Total Cultivated Land Area (hectares)	2.9 million hectares
2. Total Number of Farms	630.4 thousand
3. Average Farm Size (hectares)	4.60 hectares

4. Percent Farmland by Ownership:

<u>%</u>	<u>Entity</u>	<u>%</u>	<u>Entity</u>
10.0%	Individual Farm Families	90.0%	Government
0.0%	Absentee/Investor Landlord	_____	Other: _____
0.0%	Corporation	_____	Other: _____

5. Percent Farm Families by Farming System:

<u>%</u>	<u>System</u>	<u>%</u>	<u>System</u>
2.0%	Nomadic	15.0%	Confinement Livestock
N/A	Slash & Burn	54.5%	Communal/Enterprise
29.5%	Permanent Cropland/Pasture*	_____	Other: _____
23.0%	Kampong/Scavenging Livestock	_____	Other: _____

* a portion of which is enterprise

6. Total Production of Primary Agricultural Crops:

<u>Major Crops</u>	<u>Total Production</u>	<u>Major Crops</u>	<u>Total Production</u>
Barley	160.0 thousand tons	Corn	160.0 thousand tons
Oats	1.25 millions tons	Potatoes	32.0 thousand tons
Rice	60.0 thousand tons	Vegetables	360.0 thousand tons
Wheat	400.0 thousand tons	Cotton	395.0 thousand tons
Tobacco	2.0 thousand tons		

7. Total Number of Head Each of Primary Livestock Species:

<u>Livestock Species</u>	<u>Total Head</u>	<u>Livestock Species</u>	<u>Total Head</u>
Cattle	900.0 thousand	Pigs	300.0 thousand
Goats	220.0 thousand	Sheep	5.38 million
Horses	20.0 thousand	Chickens	8.00 million

8. If Fishing or Fish Culture is Important to Rural Life or Economy, Identify Total Area and Output of Marine Fishing and Freshwater Fish Culture:

Marine Fishing Area	<u>N/A</u>
Marine Fishing Output (Tons)	<u>N/A</u>
Freshwater Fish Culture Area	3,536 sq.km.
Freshwater Fish Culture Output (Tons)	98,400 tons

9. Government Branch Responsible for Agricultural Education:

Ministry of Agriculture

10. Percent Agricultural Education by Source:

% Source

40.0% On-Farm Experience/Training

0.0% Vocational Agriculture Training in Primary/Secondary Schools

15.0% Technical School Training

45.0% College/University Training

0.0% Extension Programs

Other: _____

11. The Current Goals of Agricultural Education may be Ranked in Order of Significance as follows:

3 Increasing Food Production

2 Increasing Farm Incomes

1 Improving the Efficiency of Production

_____ Providing Financial Counseling

_____ Providing Farm Inputs

_____ Providing Farm Markets

4 Organizing Farm Commodity Groups & Organizations

Other: _____

12. Government/Organizational Body Responsible for Ag Research:

Ministry of Agriculture

13. Linkage between Agricultural Research and Education:

☐ Dual-Assigned Personnel☐ Locally Administered Research Plots and Programs☐ Joint Determination of Research Priorities☐ Co-Authored Research Publications☒ Other: No Formal Linkage14. Current National Agricultural Policy may be Characterized as:
(Check all that apply.)☒ Supporting Low Consumer Food Prices☐ Providing Economic Incentives for Increased Production☐ Emphasizing Increased Production for Export to Reduce
Balance of Trade Deficit☒ Emphasizing Increased Production to Increase Farm Incomes☐ Supporting Large-Scale Farmers☐ Supporting All Farmers☒ Supporting Broad-Based Agricultural Development☐ Other: _____

15. The Primary Goals for Agricultural Development are: (Check all that apply.)

☐ Increase Agricultural Production for Export to Reduce Balance
of Trade Deficit☒ Increase Agricultural Production to Increase Real Income of
Farmers☒ Increase Agricultural Production to Improve or Stabilize Food
Supplies at Reasonable Prices for Urban Populations☒ Improve the Quality of Life for the Entire Rural Population☐ Enhance the Environment and the Use of Natural Resources☒ Support Communities Toward the Goal of Community Improvement

15. The Primary Goals for Agricultural Development are: (con'd.)
(Check all that apply.)

_____ Improve the Availability of Social Programs in Health,
Nutrition, and Basic Education

_____ Strengthen the Family and Home

_____ Improve Local Leadership and Initiative

 X Other: Support Small Business Development

_____ Other: _____

16. Value of Agricultural Output in U.S. Dollars (\$) by Sub-Unit:

Sub-Unit

Value

(data unavailable)

17. Percent of Family Farm

A. Production:

58.20% Consumed at Home

41.80% Marketed

B. Financing Obtained through:

55.30% Family Income/Savings

30.50% Government Financing

0.00% Private Investor

0.00% Private Bank

0.00% Farm Credit Service

14.20% Other: National Credit Bank

17. Percent of Family Farm (con'd.)

C. Income by Source:

- 38.10% Husband & Wife Both Working on Farm Full-time
- 25.80% Wife Working on Farm Full-time & Husband Employed
Elsewhere Full-time
- 21.20% Husband Working on Farm Full-time & Wife Employed
Elsewhere Full-time
- 12.90% Both Partners Working on Farm with Husband Employed
Elsewhere Part-time
- 1.50% Both Partners Working on Farm with Wife Employed
Elsewhere Part-time
- 0.50% Both Partners Working on Farm & Working Elsewhere
Part-time

18. Family Farm Management Decisions Made by:

- ☒ Male Head of Household
- ☒ Female Head of Household (if female granted farm rights)
- ☐ Jointly

19. Ag Marketing System may be Described as: (Check all that apply.)

- ☒ Local Family/Roadside Market
- ☒ Local Community Market/Bazaar
- ☒ Regional Commodity Marketing Organization
- ☐ Privately-Owned Commodity Market
- ☒ Government Marketing Program; Domestic and/or Export
- ☐ Privately-Owned Export Company
- ☐ Other: _____

Infrastructure Situation: (IS)**1. Percent Urban Households with the Following Services:**

<u>Service</u>	<u>≤10%</u>	<u>10-30%</u>	<u>30-50%</u>	<u>50-70%</u>	<u>70-90%</u>	<u>>90%</u>
Telephone	___	<u> X </u>	___	___	___	___
Daily Mail Delivery	___	___	<u> X </u>	___	___	___
Daily Newspaper	<u> X </u>	___	___	___	___	___
Electricity	___	___	___	___	<u> X </u>	___
Indoor Plumbing	___	<u> X </u>	___	___	___	___
Television	___	___	<u> X </u>	___	___	___
Radio	___	___	___	___	<u> X </u>	___

2. Percent Rural Households with the Following Services:

<u>Service</u>	<u>≤10%</u>	<u>10-30%</u>	<u>30-50%</u>	<u>50-70%</u>	<u>70-90%</u>	<u>>90%</u>
Telephone	<u> X </u>	___	___	___	___	___
Daily Mail Delivery	<u> X </u>	___	___	___	___	___
Daily Newspaper	<u> X </u>	___	___	___	___	___
Electricity	___	___	___	<u> X </u>	___	___
Indoor Plumbing	<u> X </u>	___	___	___	___	___
Television	___	<u> X </u>	___	___	___	___
Radio	___	___	___	___	<u> X </u>	___

3. General Road Conditions may be Described as:

	<u>Excellent</u>	<u>Good</u>	<u>Fair</u>	<u>Poor</u>
Town/City Streets	___	<u> X </u>	___	___
Major Roads/Highways	___	<u> X </u>	___	___
Rural Roads	___	___	<u> X </u>	___

4. General Observations Regarding Roadways:

Road system consists of 23,000 km of roadways, 18,300 km hard surfaced and 4,700 km of hard packed roads.

5. Percent Transportation Provided by:

	<u>Urban Areas</u>	<u>Rural Areas</u>
Foot/Walking	20.00%	35.00%
Animal/Animal Cart	10.00%	25.00%
Manpowered Transport (Bicycle/Rickshaw)	20.00%	19.00%
Public Transportation (Bus, Tram)	30.00%	15.00%
Taxi/Limo/Jeepny	5.00%	1.00%
Family-owned Automobile	15.00%	5.00%

6. General Observations Regarding Air & Rail Transportation:

2,120 km of railroads and seven airports. Four airports have permanent surfaced runways, including the international airport at Ashgabat.

General or Desired Characteristics Impacting an Agricultural Extension Education System: (DCS)

1. From Policy Makers' Perspective, It is Considered Most Desirable for Agricultural Extension Education System to be:

A. Administered by:

 X The Agricultural Branch of the Federal Government

 The Educational Branch of the Federal Government

 Another Branch of the Federal Government:

 An Agricultural College or University

 Another Public Body:

 An Independent Company or Organization

 An Autonomous, Self-Directed Extension System

 Other: _____

B. Responsible for: (Check all that apply.)

☐ Regulation & Enforcement	☐ Input Supply
☐ Administration/Direction	☒ Education
☐ Policy Formulation	☒ Research
☐ Promotion & Marketing	☐ Other: _____
☐ Financing & Credit	☐ Other: _____

C. Organized with Staff & Offices on a: (Check all that apply.)

☒ National Level	☒ Local Level
☒ Sub-Unit Level	☐ Other: _____

D. Funded by:

☒ Federal Government	☐ Private Foundation
☐ Sub-Unit Governments	☒ Development Assistance Funds
☐ Local Governments	☐ Combination of Above:
☒ Self-Supported/Project	_____
☐ Profits/User Fees	☐ Other: _____

E. Staffed by: (Check all that apply.)

☐ University Graduates at All Levels

☐ University Graduates at Administrative Levels and Technical School Graduates at Local Levels

☒ University Graduates at Administrative Levels & Specially Trained Individuals at Local Levels

☐ Technical School Graduates at All Levels

☒ Nationals at All Levels

☐ A Mixture of Nationals & Non-nationals at All Levels

☐ Nationals at _____ & Non-Nationals at _____ Levels

☐ Men at All Levels

☒ A Mixture of Men & Women at All Levels

☐ Men at _____ Levels & Women at _____ Levels

1. From Policy Makers' Perspective, It is Considered Most Desirable for Agricultural Extension Education System to be: (con'd.)

F. Directed in Terms of Program Priorities by:

☒ Clientele Advisory Groups	☐ Donor-Assisted Project Organization
☒ Central Federal Administration	☐ Autonomous Economic & Social Development Body
☐ University Administration	☐ Other: _____
☐ Autonomous Public Sector Body	

G. Staffed with/at:

	<u>Federal Level</u>	<u>Sub-Unit Level</u>	<u>Local Level</u>
Administrators	☒	☒	☐
Subject Matter Specialists	☐	☒	☐
Extension Educators	☐	☐	☒
Other: _____	☐	☐	☐

H. Linked with Research Centers through: (Check all that apply.)

☐ Dual-Assigned Personnel

☒ Locally Administered Research Plots & Programs

☒ Joint Determination of Research Priorities

☐ Co-Authored Research Publications

☒ Other: Research to be administered by State Agricultural University and development assistance organizations.

I. Associated with/on: (Check all that apply.)

	<u>Formal Basis</u>	<u>Informal Basis</u>
Farm Credit System	☒	☐
Farm Supply Organizations	☒	☐
Marketing Organizations	☒	☐
Promotional Groups	☐	☐
Other: _____	☐	☐
No Other Association	☐	☐

2. From Users'/Clientele Perspective, It is Considered Most Desirable for Agricultural Extension Education System to be:

A. Administered by:

☒ The Agricultural Branch of the Federal Government

☐ The Educational Branch of the Federal Government

☐ Another Branch of the Federal Government:

☐ An Agricultural College or University

☐ Another Public Body:

☐ An Independent Company or Organization

☐ An Autonomous, Self-Directed Extension System

☐ Other: _____

B. Responsible for: (Check all that apply.)

☐ Regulation & Enforcement

☐ Input Supply

☐ Administration/Direction

☒ Education

☐ Policy Formulation

☒ Research

☐ Promotion & Marketing

☐ Other: _____

☐ Financing & Credit

☐ Other: _____

C. Organised with Staff & Offices on the following Levels:

☒ National; ☒ Sub-Unit; ☒ Local; ☐ Other: _____

D. Funded by:

☒ Federal Government

☐ Private Foundation

☐ Sub-Unit Governments

☒ Development Assistance Funds

☐ Local Governments

☐ Combination of Above:

☒ Self-Supported/Project

☐ Profits/User Fees

☐ Other: _____

2. From Users'/Clientele Perspective, It is Considered Most Desirable for Agricultural Extension Education System to be: (con'd.)

E. Staffed by: (Check all that apply.)

- ☐ University Graduates at All Levels
- ☐ University Graduates at Administrative Levels and Technical School Graduates at Local Levels
- ☒ University Graduates at Administrative Levels & Specially Trained Individuals at Local Levels
- ☐ Technical School Graduates at All Levels
- ☒ Nationals at All Levels
- ☐ A Mixture of Nationals & Non-nationals at All Levels
- ☐ Nationals at _____ & Non-Nationals at _____ Levels
- ☐ Men at All Levels
- ☒ A Mixture of Men & Women at All Levels
- ☐ Men at _____ Levels & Women at _____ Levels
- ☐ Other: _____

F. Directed in Terms of Program Priorities by:

☒ Clientele Advisory Groups	☐ Donor-Assisted Project Organization
☒ Central Federal Administration	☐ Autonomous Economic & Social Development Body
☐ University Administration	☐ Other: _____
☐ Autonomous Public Sector Body	

G. Associated with/on: (Check all that apply.)

	Formal Basis	Informal Basis
Farm Credit System	☒	☐
Farm Supply Organizations	☒	☐
Marketing Organizations	☒	☐
Promotional Groups	☐	☐
Other: _____	☐	☐

Other Pertinent Observations:

1. There currently exists a distinct void of agricultural research. The State Agricultural University has attempted to assume leadership with limited authority from the federal government for this activity. Specific agreements, priorities, and organization must be accommodated. It is hoped that development assistance organizations can assist with both funding and organization of research priorities and linkages.
2. As the other 15 former Soviet republics, Turkmenistan faces enormous problems with economic adjustment created by the challenge of moving away from Moscow-based central planning to a system of privatized decision-making. The country must do so in the face of limited financial, technical, and trained personnel resources. Additionally, the Turkmen culture is rather fatalistic and this attitude in the face of challenging times makes decision-making and proactive planning difficult. Much needs to be done in planning and management education.
3. Major advances in agricultural production should be seen with the completion of the Kara Kum Canal over the next few years as government funds allow.
4. Although rather autocratic in approach, the current policy of slowly and methodically working toward a free market enterprise system seems to be well-received by the population of Turkmenistan. The motto of "ten years of stability through Hulk-Watan-Turkmenbassy" (ten years of stability through the cooperation and commitment of People-State-President) established by the Turkmenbassy has been widely-adopted and applauded.

"Model Correlation Instrument"

for

Country: Turkmenistan

Note:

1. This instrument should be used after completion of the "Country Analysis Instrument" and requires information and data derived from its application for completion.
2. When selecting appropriate model components, refer to the indicated "Analysis Factors" found in the "Country Analysis Instrument" and the associated "Agricultural Extension Education Models".
3. For purposes of abbreviation, the following initials are used when referring to "Analysis Factors" included in the "Country Analysis Instrument":

GS	Geographic Situation	ES	Economic Situation
CS	Climatic Situation	AS	Agricultural Situation
DS	Demographic Situation	IS	Infrastructure Situation
PS	Political Situation	DCS	Desired Characteristics

4. For purposes of abbreviation, the following initials are used to identify the "Agricultural Extension Education Models" from which various components are derived:

CAES	Conventional Agricultural Extension System
TVS	Training and Visit System
UAES	University Agricultural Extension System
CDPS	Commodity Development and Production System
IADS	Integrated Agricultural Development System
IRDS	Integrated Rural Development System
FSRDS	Farming Systems Research and Development System
ALL	All of the Above Listed Systems

MODEL OBJECTIVES:**1. Objectives should be set by: Analysis Factors - PS 4-7,9; AS 9; DCS
1A,1B,1F,2A,2B,2F**

- ☒ Clientele Advisory Groups (UAES)
- ☒ Central Federal Administration (CAES,TVS)
- ☐ University Administration (UAES)
- ☐ Autonomous Public Sector Program Body (CDPS)
- ☐ Donor-Assisted Project Organization (IADS)
- ☐ Autonomous Economic and Social Development Organization (IRDS)
- ☐ Other: _____

2. Objectives should be defined as: Analysis Factors - AS 11,14,15

- ☒ Providing &/or Maintaining Low Consumer Food Prices (UAES,CDPS)
- ☐ Providing Economic Incentives for Increased Agricultural Production (CDPS,IADS,IRDS)
- ☐ Increasing Agricultural Production for Export to Reduce Balance of Trade Deficit (CAES,CDPS)
- ☒ Increasing Agricultural Production to Increase Real Income of Farmers (ALL)
- ☐ Improving the Lot of Large-Scale Farmers (IADS)
- ☒ Improving the Quality of Life for the Entire Rural Population (ALL)
- ☒ Providing for Broad-Based Agricultural Development (CAES,TVS,UAES,FSRD)
- ☐ Strengthening the Family and Home (UAES)
- ☐ Enhancing the Environment and the Use of Natural Resources (UAES,FSRD)
- ☒ Supporting Communities Toward the Goal of Community Improvement (UAES)
- ☐ Improving Local Leadership and Initiative (UAES,IRDS)
- ☐ Increasing the Availability of Social Programs in Health, Nutrition, and Basic Education (IRDS)
- ☐ Other: _____

MODEL CLIENTELE:

1. Scope of Clientele should be: Analysis Factors - DS 1-4; AS 4-5,
17-19

- ☐ Entire Population (UAES)
- ☒ Entire Farm Population (TVS)
- ☐ Large-Scale Farmers (CAES, IADS)
- ☐ Small-Scale Farmers (IRDS, FSRD)
- ☐ All Farmers within an Identified Project Area (IADS)
- ☐ Other Target Groups within the Farm Population, ie. producers of specific commodities, women, etc. (CAES, CDPS)
- ☐ Other: _____

MODEL ORGANIZATION:

1. Should be Administered by: Analysis Factors - PS 1-9; AS 9;
DCS 1A, 2A

- ☒ Agricultural Branch of the Federal Government (CAES, TVS)
- ☐ Educational Branch of the Federal Government
- ☐ Another Branch of Federal Government: _____
- ☐ Agricultural College or University (UAES)
- ☐ Another Public Body: (CDPS) _____
- ☐ Independent Company or Organization (IADS, IRDS)
- ☐ Autonomous, Self-Directed Extension System
- ☐ Other: _____
- ☐ Other: _____

MODEL ORGANIZATION: (con'd.)**2. Should be Responsible for: Analysis Factors - PS 5,7; AS 9,11-13; DCS 1B,2B**

- ☐ Regulation and Enforcement (CAES)
- ☒ Administration and Direction (CAES)
- ☐ Policy Formulation
- ☐ Promotion and Marketing (CDPS, IADS)
- ☐ Financing and Credit (CDPS, IADS)
- ☐ Input Supply (CAES, CDPS, IADS)
- ☒ Education (ALL)
- ☒ Research (FSRD)
- ☒ Other: Small Business Development

3. Should be Organized with Staff and Offices on a: Analysis Factors - GS 1-11; CS 1-5; DS 1-4; AS 1-8,16; IS 1-6; DCS 1C,2C

- ☒ National Level (CAES, TVS, UAES)
- ☒ Sub-Unit Level (CAES, TVS, UAES, CDPS, FSRD); if so,
number of Sub-Unit Facilities should be: 4 Oblastey
- ☒ Local Level (ALL); if so,
number of Local Facilities should be: 25 Districts
- ☐ Other: _____

4. Should be Funded by: Analysis Factors - DS 3-4; ES 1-11; AS 16-17; DCS 1D,2D

- ☒ Federal Government (CAES, TVS, UAES)
- ☐ Sub-Unit Governments (CAES, UAES)
- ☐ Local Governments (UAES)
- ☒ Self-Supported: Project Profits, User Fees (CDPS)
- ☐ Private Foundations
- ☒ Development Assistance Funds (IADS, ISRD)
- ☐ Combination of the Above (FSRD)
- ☐ Other: _____

MODEL ORGANIZATION: (con'd.)**5. Should be Staffed by: Analysis Factors - DS 3-4; PS 1-3,8-9; AS 5, 10,17-18; DCS 1E,2E**

- ☐ University Graduates at all Levels (UAES,FSRD)
- ☐ University Graduates at Administrative Levels & Technical School Graduates at Local Levels (CAES,CDPS,IADS,IRDS)
- ☒ University Graduates at Administrative Levels & Specially Trained Individuals at Local Levels (TVS)
- ☐ Technical School Graduates at all Levels
- ☒ Nationals at all Levels (CAES,TVS,UAES,CDPS)
- ☐ A Mixture of Nationals and Non-Nationals at all Levels (FSRD)
- ☐ Nationals at _____ Levels & Non-Nationals at _____ Levels (IADS,IRDS)
- ☐ Men at all Levels
- ☒ A Mixture of Men and Women at all Levels (CAES,UAES)
- ☐ Men at _____ Levels and Women at _____ Levels (TVS,CDPS,IADS,IRDS,FSRD)
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

6. Should be Staffed with: Analysis Factors - PS 1-9; AS 9,12-13; DCS 1G

	<u>Federal Level</u>	<u>Sub-Unit Level</u>	<u>Local Level</u>
Administrators	☒ (CAES,TVS,UAES)	☒ (ALL)	☐ (CAES,TVS,FSRD)
Subject Specialists	☐ (CAES,TVS,UAES)	☒ (ALL)	☐
Extension Educators	☐ (CAES,TVS,UAES)	☐ (CAES,TVS,UAES CDPS,FSRD)	☒ (ALL)
Other: _____	_____	_____	_____
Other: _____	_____	_____	_____

MODEL ORGANIZATION: (con'd.)**7. Should be Linked with Research Centers through: Analysis Factors - PS 1-8; AS 12-13; DCS 1H**

- _____ Dual-Assigned Personnel (CAES,UAES,FSRD)
- X Locally Administered Research Plots and Programs (FSRD)
- X Joint Determination of Research Priorities (CAES,TVS,UAES,CDPS,FSRD)
- _____ Co-Authored Research Publications (UAES)
- X Other: Research should be administered by the State Agricultural University and development assistance organizations.
- _____ Other: _____

8. Should be Associated with: Analysis Factors - PS 1-8; ES 6-11; AS 1,4-8,16-18,19; IS 1-6; DCS 1I,2G

	Formal Basis	Informal Basis
Farm Credit System	<u> X </u> (CDPS, IADS, IRDS)	<u> </u> (CAES, TVS, UAES, FSRD)
Farm Supply Organizations	<u> X </u> (CDPS, IADS, IRDS)	<u> </u> (CAES, TVS, UAES, FSRD)
Marketing Organizations	<u> X </u> (CDPS, IADS, IRDS)	<u> </u> (CAES, TVS, UAES)
Promotional Groups	<u> </u> (CDPS, IADS, FSRD)	<u> </u> (CAES, TVS, UAES)
Other: _____	<u> </u>	<u> </u>
Other: _____	<u> </u>	<u> </u>
No Other Association	<u> </u>	<u> </u>

MODEL APPROACH:**1. Educational Approach should be: Analysis Factors - GS 1,2,10-11, DS 1-4; AS 4-8,16-18; IS 1-6; DCS 1C-1I,2C-2G**

- ☐ One-on-One Contact by Local Extension Workers through Irregular Home & Farm Visits & Office Calls (CAES,UAES)
- ☒ Agricultural Information Units for Production of Bulletins, Teaching Aids, Radio Programs, & Mass Media Materials (CAES)
- ☒ Local Extension Workers Contact Local Farmers on a Fixed Schedule (TVS)
- ☒ Local Extension Workers Receive Training on a Fixed Schedule (TVS)
- ☐ Local Advisory Councils Provide Guidance & Assistance in Financial, Operational, Programming, & Evaluation Processes of Extension Program (UAES,IRDS)
- ☐ Local Extension Personnel Use Research-Based Information to Help Local People Identify & Establish Need Priorities & then Request Instructional Assistance from Subject-Matter Specialists on Selected Topics (UAES)
- ☐ Local Farmers Contract to Produce an Identified Commodity Using Recommended Practices & the Commodity Organization Contracts to Provide Commodity Research, Credit, Input Supply, Technical Assistance, & Marketing Services (CDPS)
- ☒ Pilot Project Established in which the Organization Provides Previously Limited Inputs Assumes the Responsibility for Coordinating All Facets of Agricultural Production, Including Credit, Supply, Technical Assistance, & Marketing Services (IADS,IRDS)
- ☐ Establishment of an Interdisciplinary Team which Conducts On-Farm Research to Evaluate the Interplay of the Production Components under Farmer's Control & the Physical, Biological & Socio-Economic Environments; Identifies & Generates New Technology; Adapts & Tests Technologies in Project Area Possessing Reasonably Uniform Characteristics (FSRD)
- ☐ Other: _____
- ☐ Other: _____

MODEL ROLE OF EXTENSION PERSONNEL:**1. Role of Local Extension Personnel should be: Analysis Factors - PS 4-7; AS 11-12,15,19; DCS 1B,1D,1H,2B,2D**

- ☒ Consultant; identify farmer problems/needs & production constraints (CAES,TVS,CDPS,IADS)
- ☒ Advisor; work with local people to identify & prioritize problems/needs & possible solutions (UAES,IRDS,FSRD)
- ☒ Communicator; communicate farmer problems/needs & production constraints to subject-matter specialists & research workers (CAES,TVS,UAES,FSRD)
- ☒ Educator; disseminate research-based information about new technology & demonstrate its practical application to farmers (ALL)
- ☒ Motivator; encourage application of improved methods or identified solutions to problems (TVS,UAES,IRDS,FSRD)
- ☒ Evaluator; work with local people to evaluate the effectiveness of new techniques & extension programs (UAES,IRDS,FSRD)
- ☒ Researcher; conduct on-farm research to determine the practicality & effectiveness of new technology (FSRD)
- ☒ Government Administrator; administer government programs & policies on the local level (CAES)
- ☒ Supplier; provide farmers with required inputs (CDPS,IADS)
- ☒ Marketer; coordinate product marketing (CDPS,IADS,IRDS)
- ☐ Other: _____
- ☐ Other: _____

IDENTIFIED DESIGN PARAMETERS:**I. Objectives to be Established by:**

Central Federal Government/Ministry of Agriculture and Development
Assistance Organizations

II. Objectives to be Defined as:

- A. providing and /or maintaining low consumer food prices;
- B. increasing agricultural production to increase real income of farmers;
- C. improving the quality of life for the rural population;
- D. providing for broad-based agricultural development; and
- E. supporting communities toward the goal of community development.

III. Scope of Clientele to be:

The entire farm population.

IV. Organization to be: (Sub-Unit and Local Levels should be repeated and staffed as required.)**A. National Level**

<u>Function:</u>	<u>Number of Personnel Required:</u>
<u> X </u> Administration	100
<u> </u> Research	<u> </u>
<u> </u> Education	<u> </u>
<u> </u> Other: <u> </u>	<u> </u>

1. Sub-Unit Level - Oblast

<u>Function:</u>	<u>Number of Personnel Required:</u>
<u> X </u> Administration	80
<u> X </u> Research	100
<u> </u> Education	<u> </u>
<u> </u> Other: <u> </u>	<u> </u>

a. Local Level - District

<u>Function:</u>	<u>Number of Personnel Required:</u>
___ Administration	___
___ Research	___
<u>X</u> Education	250
___ Other: _____	___
___ Other: _____	___

V. Educational Approach to be:

- A. agricultural information units for production of bulletins and teaching aids;
- B. local extension workers contact local farmers on a fixed schedule;
- C. local extension workers receive training on a fixed schedule;
- D. local extension personnel using research-based information to help local people identify and establish need priorities and then request instructional assistance from subject-matter specialists on selected topics; and
- E. development project established in which the organization provides previously limited inputs and assumes the responsibility for coordinating all facets of agricultural production, including credit, supply, technical assistance, and marketing services.

VI. Role of Extension Personnel to be:

- A. consultant - identify farmer problems/needs and production constraints;
- B. advisor - work with local people to identify and prioritize problems/needs and possible solutions;
- C. communicator - communicate farmer problems/needs and production constraints to subject-matter specialists and researchers;
- D. educator - disseminate research-based information about new technology and demonstrate its practical application to farmers;
- E. motivator - encourage application of improved methods or identified solutions to problems;

- F. evaluator - work with local people to evaluate the effectiveness of new techniques and extension programs;
- G. researcher - conduct on-farm research to determine the practicality and effectiveness of new technology;
- H. government administrator - administer government programs and policies on the local level;
- I. supplier - provide farmers with required inputs; and
- J. marketer - coordinate product marketing.

VITA

Brian Sager received a bachelor of science degree from the University of Illinois in Agricultural Sciences in 1975, majoring in Agricultural Economics and minoring in Zoology. In 1978, he received a master of science degree in Agricultural Economics from the University of Illinois, with an emphasis in International Economic Development.

While working on his masters' degree, he was employed for two years by the University of Illinois Cooperative Extension Service as the Assistant Agricultural Extension Adviser in Vermilion County, Illinois. He subsequently accepted an appointment as Far East Trade Representative for the Illinois Department of Agriculture in Hong Kong from 1977 through 1979 under Director of Agriculture, John Block, and Governor James R. Thompson. In this capacity, he conducted market research and promotional activities for Illinois agricultural products in the Orient, South Pacific, and Gulf States of the Middle East.

Upon returning to the United States, Mr. Sager accepted employment with the University of Illinois Cooperative Extension Service as the Agricultural Extension Adviser in McHenry County, Illinois. During the 1985-86 academic year, he was granted a study leave to pursue doctoral studies in Vocational Education with an emphasis in International Development at Louisiana State University, Baton Rouge.

He served as the McHenry County Agricultural Adviser from April, 1981 through August, 1990 at which time he accepted his present position of Instructor and Coordinator of Animal and Plant Sciences and Coordinator of the Horticulture Department at McHenry County College in Crystal Lake, Illinois.

Due to his interest and expertise in international development, Mr. Sager has had numerous opportunities to travel and work throughout the world. To date he has been in 78 countries and is continually in demand for overseas development projects as he speaks fluent Spanish and has studied and had practical work experience in French, German, Cantonese, and Mandarin.

As a continuation of his dissertation research project, Mr. Sager was awarded a 1994 Fulbright Grant to field test instruments designed as a part of his study in the Peoples' Republic of China and Cambodia. Additionally, he conducted a similar study in Turkmenistan under a 1995 USAID Project.

Mr. Sager maintains memberships in the American Agricultural Economics Association, Association for International Agricultural and Extension Education, National Association of Vocational Agriculture Teachers, Illinois Association of Vocational Agriculture Teachers, American Vocational Association, Illinois Vocational Association, and the Illinois Auctioneers' Association. He is also a member of the University of Illinois Chapter of Gamma Sigma Delta and a past

member of Epsilon Sigma Phi of the Cooperative Extension Service.

Mr. Sager's additional interests include local politics and theatre. He is currently in his second term as a member of the Woodstock City Council, for which he serves as Mayor Pro-Tem, and has served as the President and Executive Producer of the Woodstock Musical Theatre Company, a resident company of the historic Woodstock Opera House, for the past eleven years. A 30 year stage veteran, he is an accomplished performer and performs professional luncheon and dinner musical theatre in the Chicagoland area.

DOCTORAL EXAMINATION AND DISSERTATION REPORT

Candidate: M. Brian P. Sager

Major Field: Vocational Education

Title of Dissertation: Developing and Field Testing Design Parameters
for Customizing Agricultural Extension Education
Systems in Developing Countries

Approved:

John Verna

Major Professor and Chairman

John M. Parlin

Dean of the Graduate School

EXAMINING COMMITTEE:

Michael F. Burnett

Chairman

Edward W. Gassie

Quentin A. Jenkins

Date of Examination:

May 12, 1997