

1894

Tobacco

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Sup.
SECOND SERIES,

No. 25.

BULLETIN

OF THE

NORTH LOUISIANA EXPERIMENT STATION,

CALHOUN, LA.,

WM. C. STUBBS, Ph. D., Director.

TOBACCO,

BY

J. G. LEE, ASSISTANT DIRECTOR,

W. C. STUBBS, DIRECTOR.

ISSUED BY THE BUREAU OF AGRICULTURE.

H. C. NEWSOM, Commissioner.

BATON ROUGE, LA.

PRINTED AT THE TRUTH BOOK AND JOB OFFICE.

1894.

LOUISIANA STATE UNIVERSITY AND A. & M. COLLEGE.

BUREAU OF AGRICULTURE.

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The Bulletins and Reports will be sent free of charge to all farmers, by applying to Commissioner of Agriculture, Baton Rouge, La.

LOUISIANA STATE UNIVERSITY AND A. AND M. COLLEGE, }
OFFICE STATE EXPERIMENT STATION, }
Baton Rouge, Louisiana. }

Hon. H. C. Newsom, Commissioner of Agriculture, Baton Rouge, La.:

DEAR SIR: I hand you herewith a report on Tobacco by Maj. J. G. Lee, assistant director, covering experiments made by him in North Louisiana. There is also appended short accounts of experiments made at State Experiment Station, Baton Rouge, and Hammond, Tangipahoa parish. I respectfully ask that you publish the within as Bulletin No. 25,

Respectfully submitted,

WM. C. STUBBS, Director.

NORTH LOUISIANA EXPERIMENT STATION No. 3, }
Calhoun, La. December 31, 1893. }

To W. C. Stubbs, Ph. D., Director :

DEAR SIR: I hand you herewith report of results of experiments in Tobacco, conducted by this Station, during the year. Notwithstanding most unfavorable seasons, the results are gratifying, and it is no longer a question that Tobacco can be profitably grown. I may say to you that interest among farmers is growing rapidly and surely. On demand, the Station is sending out packages of seed daily, accompanied with instructions in the planting and management of the crop. A few tobacco barns will be built in this section the coming year, and there is every indication that the crop will be a part of our farming henceforth.

Respectfully,

J. G. LEE, B. S.,
Assistant Director.

REPORT ON TOBACCO.

Results of the present year having fallen below those of 1892, both in quantity and quality of tobacco produced, it is but fair and proper to state the causes for the difference. The seasons of 1892 were most favorable for tobacco growing, while those of 1893 were most unfavorable. In common with Virginia, North Carolina and other tobacco growing sections, this section suffered from a cold, wet spring, followed by excessive rains and high winds, rains continuing until June here, when an unprecedented drought set in, lasting until November. The result was low yields and inferior quality of tobacco, not only here, but throughout the tobacco growing sections.

SELECTION AND PREPARATION OF SEED BEDS.

In the latter part of January a gently sloping hillside, exposure to the southeast, was selected for the seed beds. The land was new and fairly rich. On the plats selected, brush, poles and logs were piled and burned for several hours, until the entire space was well burned to a depth of one-half inch, thus destroying all obnoxious grass and weed seeds, which otherwise would prevent the successful growth of young tobacco plants. After the soil had cooled all trash and coals were removed, the ashes remaining as a fertilizer. Grubbing hoes and rakes were then employed to completely mulch and pulverize the soil to a depth of two inches, thoroughly cleaning the ground of roots, etc., having care not to invert the sub-soil.

In the meantime a good application of well composted manure, in which the grass seeds had been killed, was thoroughly incorporated with the soil.

SOWING THE SEED.

For every ten feet square, one tablespoonful of seed was united with three or four times as much ashes, to prevent too thick sowing, and sown once regularly over the bed, reserving enough seed to "cross sow." A light roller passed over the bed several times, covering and packing soil about the seed. The beds were then trenched around to prevent washing and ward off surface water.

PROTECTION BY CANVAS.

Twelve inch plank were then placed around and "staked down," strips nailed across two feet apart, and cheap canvas or cheese cloth, made to fit the frame work, was tacked tightly on over the bed.

This covering is necessary and, therefore, commended. It keeps the bed warmer and hastens the growth of young plants. It protects from heavy rains, and frosts and against the destructive little flea bugs.

However, several days before the plants are to be transplanted the canvas may be removed in order that the plants may toughen and become accustomed to exposure. Again, it is best to make beds no wider than six feet so that plants may be drawn from either side without getting on bed with the feet.

Liquid manuring hastens the growing of the young plants. Leach well rotted fowl-house manure, dilute the leach, and sprinkle the beds at sundown.

EXPERIMENTS IN THE FIELD,

Were of two kinds, viz: 1. Variety tests of both bright leaf or chewing tobaccos, and cigar leaf or smoking tobaccos. 2. Fertilizer tests.

Plat No. 1 was a loose, gray, sandy soil, with red, sandy clay subsoil. It was an old pine field cleared of its saplings two years ago, and cultivated in tobacco the past year. Bright or yellow leaf tobaccos were tested here.

Plat No. 2 was the red, sandy soil, a little heavy and tena-

cious, with good, red sandy, clay subsoil, and in cultivation for eighty years. Its previous crop was corn and peas.

Cigar leaf or smoking tobaccos were tested here. Besides these two acres in experiments, one acre was planted for general crop of bright leaf tobacco on land adjoining and identical with plat 1.

PREPARATION OF LAND AND TRANSPLANTING PLANTS.

"A good preparation is half cultivation." In January the tobacco lands were deeply and thoroughly broken with turning plows. In April it was cross plowed with "bull tongues," harrowed, and rows marked off three and one-half feet apart, fertilizer uniformly distributed in drill, and two furrows thrown on same with turning plow. Harrows passed over the bed to smooth and flatten, and a "hoe pat" made two and one-half feet apart, indicated where the plant was to be dropped.

The first rain after this preparation, which occurred on April 1st, vigorous plants of three or four leaves were carefully drawn from the bed, placed in flat, open baskets, and carried to the field. Here they were carefully handled and dropped at the previously marked places along the row. A man follows with a suitable peg, and pushing it two or three inches in the soil, withdraws it, inserts the plant, and with dextrous movement of peg and knuckles of the left hand, presses the dirt gently, but compactly about the roots.

CULTIVATION.

Early, rapid and thorough cultivation is necessary for a good tobacco crop, frequent stirring and mulching of the soil. Every ten or twelve days after transplanting, shallow plowing, with scooters and heel scrapers, followed by hoes, was given. The plows were so regulated as to mulch the soil two or three inches deep, while the hoes followed, working close about the stalks, removing grass and more completely mulching the soil, making slight hills about the plant. Two or three plowings and as many hoeings will generally lay by the crop, as tobacco grows rapidly and should not be plowed after the leaves touch in the middle.

TOPPING, WORMING AND SUCKERING.

When many plants had buttoned for seed topping began, leaving, according to vigor of plant, from nine to twenty leaves to the stalk. The suckers appearing in the axils of the leaves, after topping, were carefully pulled off every week thereafter until the crop was finished. By persistently killing the hock moth that makes the green horned worm the past year the Station was not much troubled with worms the present year. However, Jamestown weeds were planted about in the tobacco, and when blooming the flower was poisoned with a syrup of cobalt, and the fly, sucking the nectar, received the poison and was no more. Cotton fly lamps were also used to good effect, and Paris green, in very light applications (one-half pound per acre), was employed to kill the worms on the tobacco. If these agents be used the worms can be exterminated, otherwise hand picking must be resorted to. But when it is considered that every moth is capable of laying about 200 eggs, and that at least two broods are certain during the season, and that 40,000 worms are possible to every moth of May, it is no wonder that the second brood sometimes appears in such countless hordes as to defy all efforts at destruction before the crop is ruined. Hence the great importance of destroying the first crop of moth and worms.

Suckering and worming should be persistently pushed. Suckers permitted to grow too long will abstract much that would otherwise go to perfect a rich, silky leaf, while worms, unhindered, will not only spoil but destroy a handsome crop already made.

RIPENING.

When the lower leaves showed signs of ripening, assuming a "pea green" color and the clammy mass of little hairs had disappeared, the first leaves, or primings, were stripped from the stalk, carried to the curing barns, where the process of curing began July 1st and continued, with two barns in operation, until the crops were cured.

For detailed instruction in managing a crop of tobacco, in curing the leaf and description of the Modern Barn in use for

curing, etc., the reader is referred to Bulletin No. 20, Second Series, on Tobacco, published January, 1893.

ANOTHER TOBACCO BARN ERECTED.

When the Station determined on tobacco experiments it spared neither time nor money to procure the most approved and best curing barn to be had. The "Modern Barn," of which a full description has been given in Bulletin No. 20, Second Series, was erected at a cost of nearly \$500.00. For the mass of farmers of this section this cost was too great. Therefore, the Station, appreciating this fact, had erected a cheap log barn, to do competitive work with the Modern. The principle of curing is the same as that of the Modern barn; flue curing and wired sticks are used. The barn is 18 x 20 feet, 18 feet high, built of pine poles, the cracks well "dabbed" with mud, and will cure about ten acres of tobacco. Parallel tiers of small pine poles three and one-half feet apart are placed across the barn, on which rest the sticks of tobacco. The building material is all gathered from the woods. The log barn did competitive work during the season with the Modern barn, and according to expert judgment did equally as good work.

Below is an itemized statement of the total expense of building and equipment:

Wired sticks and baskets.....	\$30 00
Flues and connections.....	25 00
Brick and brick mason for making furnaces.....	15 00
Total cash outlay for equipment.....	\$70 00

Labor for getting boards, cutting and skinning poles, hauling, and building the barn, etc., \$35, freights \$12, making total cost \$117.50.

Farmers by clubbing together to build, or by using the labor upon their places, and by using rock for making furnaces, can build the barn at a cash outlay of not exceeding \$60 or \$70.

All experiments have again been under the direct charge and supervision of Mr. W. F. Clarke, tobacconist.

PLAT NO. 1.

The questions sought of this plat are: 1. Variety test, with and without fertilizers? 2. Fertilizer test?

There were twelve different varieties tested, all bright or yellow leaf tobaccos, used for cigarettes, smoking and chewing; the bottom leaves, known as cutters and smokers, for cigarettes and pipe, the top leaves as fillers for plugs, and the middle leaves for long and short bright wrappers for plugs. The last command good prices always and constitute about one-third of the crop. The fertilizer used on varieties was the same throughout, consisting of a mixture of nitrate soda, sulphate ammonia, dried blood, cotton seed meal, acid phosphate and sulphate potash at rate of 400 pounds per acre. Cultivation, etc., the same. Below are the results:

PLAT NO. 1—VARIETY TEST—FERTILIZED—BRIGHT TOBACCO.

No. of Experiment.	Name of Variety.	Pounds green tobacco pulled per acre.	Pounds cured tobacco per acre.	Percentage of loss in curing.
1	Ragsland's Improved.....	4080	600	85.29
2	Conquerer.....	4440	690	84.45
3	Long Leaf Gooch.....	4350	690	84.13
4	Hester.....	4410	540	87.75
5	White Burley.....	5430	750	86.18
6	Premium.....	4440	660	85.13
7	Flanagan.....	4050	750	81.48
8	Sweet Orinoco.....	3810	615	83.75
9	Famous.....	4560	600	86.84
10	Climax.....	4580	910	80.13
11	Yellow Orinoco.....	4170	690	83.45
12	Hycos.....	3600	570	84.16

Climax has given the best yield, followed by White Burley, Conquerer, Long Leaf Gooch, Yellow Orinoco, Premium and Ragsland's Improved. Mr. Clarke observed that Conquerer, Long Leaf Gooch, Hester, Orinoco and Ragsland's Improved cured brighter than other varieties.

It is also noted that the percentage of loss in curing is uniformly much greater than last year.

PLAT NO 1—VARIETY TEST—UNFERTILIZED—BRIGHT TOBACCO.

No. of Experiment.	Name of Variety.	Pounds green tobacco pulled per acre.	Pounds cured tobacco per acre.	Percentage of loss in curing.
1	Ragsland's Improved.....	990	210	78.78
2	Conquerer.....	2850	360	87.36
3	Long Leaf Gooch.....	2850	510	82.10
4	Hester.....	3600	510	85.83
5	White Bu ley.....	3420	390	88.63
6	Premium.....	2610	600	77.01
7	Flanagan.....	2520	270	89.20
8	Sweet Orinoco.....	2790	400	83.87
9	Famous.....	2940	480	83.67
10	Climax.....	3120	510	83.65
11	Yellow Orinoco.....	3510	600	82.90
12	Hyco.....	2730	420	84.61

Fertilizers improved very largely both quantity and quality. The varieties here did not cure brightly. Yellow Orinoco and Premium give best yields.

PLAT NO. 1—FERTILIZER TEST.

No. of Experiment.	KIND AND QUANTITY OF FERTILIZER USED PER ACRE.		Pounds Green Tobacco Pulled Per Acre.	Pounds Cured Tobacco Per Acre.	Percentage of Loss in Curing.
1	160 pounds Nitrate Soda.....		2210	660	70.30
2	160 pounds Nitrate Soda.....		3320	793	75.81
	160 " Acid Phosphate.....				
3	160 pounds Nitrate Soda.....		4930	850	82.75
	160 " Acid Phosphate.....				
	60 " Muriate Potash.....				
4	160 pounds Nitrate Soda.....		4890	740	84.86
	160 " Acid Phosphate.....				
	240 " Kainite.....				
5	160 pounds Nitrate Soda.....		4880	742	84.79
	160 " Acid Phosphate.....				
	140 " Ashes Cotton Seed Hulls.....				
6	No manure.....		1850	360	80.54
7	160 pounds Nitrate Soda.....		3300	770	76.66
	160 " Acid Phosphate.....				
	60 " Sulphate Potash.....				
8	120 pounds Sulphate Ammonia.....		3290	750	77.20
	160 " Acid Phosphate.....				
	60 " Sulphate Potash.....				
9	190 pounds Dried Blood.....		2205	620	71.87
	160 " Acid Phosphate.....				
	60 " Sulphate Potash.....				
10	340 pounds Cotton Seed Meal.....		2200	610	72.27
	160 " Acid Phosphate.....				
	60 " Sulphate Potash.....				

In the fertilizer test, Long Leaf Gooch was used. It will be observed that experiment No. 2 gave best results: That there is not much difference in the yields of the different fertilizers, that a complete fertilizer is desired, that nitrogen is needed most, phosphate second, and potash third; that appropriate fertilizer has more than doubled no fertilizer.

PLAT NO. 2

Was devoted to a general crop of tobacco of one acre, fertilized with 400 pounds of a mixture of nitrate soda, cotton seed meal, dried blood, sulphate ammonia, sulphate potash and acid phosphate. The Hester variety was planted—bright

leaf. The acre gave, green tobacco, 2,671 pounds, and cured, 592 pounds.

The two plats above, occupied loose, grey, sandy soil, on a slight hillside, where leaching was certainly very great during the excessive rainy season of April, May and June, which reduced expected yields materially.

PLAT NO 3,

In cigar tobacco, was located in red, sandy soil, somewhat tenacious, and was level. Leaching was not facilitated here and we have better yields.

PLAT NO. 4—CIGAR TOBACCO—RED SANDY SOIL.

No. of Experiment.	Name of Variety	Pounds green tobacco	Pounds cured tobacco	Percentage of loss in
		pulled per acre.	per acre.	curing.
1	Connecticut Seed Leaf.....	6720	1875	72.09
2	Havana Seed Leaf.....	5280	1095	79.92
3	Pennsylvania Seed Leaf.....	8250	1080	80.69
4	Vuelta de Abajo.....	4110	780	81.02
5	Persian Rose.....	3795	720	81.02
6	Imported Havana.....	4110	750	81.51
7	East Hartford.....	6390	900	85.91
8	Choice Havana.....	5910	1140	80.71
9	Comstock Spanish.....	6900	1160	83.18
10	Pumpelley.....	5640	1275	77.39
11	Little Dutch.....	5460	780	85.71

The above were fertilized the same as the bright leaf varieties, viz: 400 pounds of a mixture of nitrate of soda, sulphate ammonia, dried blood, cotton seed meal, acid phosphate and sulphate potash.

Connecticut Seed Leaf leads in yield, followed by Pumpelley, Comstock Spanish and Choice Havana, Vuelta de Abajo, the Havanas and Little Dutch and Pumpelley were of finer texture and more silky leaf, and seemed to us more desirable stock than others. However, samples of each variety have been sent to Hershheim Bros. Cigar Co., New Orleans, La., who, after the

process of treatment common to cigar tobacco before manufacture will make report on merits of each, etc.

The general practice in curing cigar tobacco is to "air cure." The departure of flue curing is, therefore, new, and certain it is that more experience is necessary before an ideal cigar colored leaf can be turned out. The product this season cured too brightly at first and it was soon evident that the process for curing bright tobacco would not do for cigar tobacco, nor can cigar leaf be cured as quickly as the bright—the former requiring a longer sweating period and a lower and more gradual heat. These things determined, the later curings were better and a nearer approach was made to the cigar color. Mr. Clarke is now of the opinion that what he has learned from experience and study, he can hereafter make an ideal cigar color having hitherto had experience only in bright leaf curing, at which he is expert. The yields in the above plat are very satisfactory, and the quality seemed good. The way seems clear, therefore, that the hill soils may grow profitably, not only bright leaf tobacco, but also cigar leaf on heavier soils.

The following condensed account of sales of the crop of tobacco last year, and other information is given for the benefit of the public. Three lots of tobacco were shipped to different markets. One lot of 364 pounds was shipped to E. J. Parrish of Durham, N. C.

The prices on grades range from 20 cents for best grade of bright wrappers to $5\frac{1}{2}$ cents for scrap or refuse tobacco. The average price paid was 10.8 cents per pound. The gross proceeds was \$39.52, or net, deducting freight and warehouse charges and commissions, etc., \$27.74.

Another lot of 405 pounds was shipped to Carr & Dickinson, Richmond, Va., with prices ranging from 27 cents for best, and 5.8 cents for poorest grade. The average price was 12.8 cents per pound. The gross proceeds was \$51.83, or net, deducting freights, etc., \$39.69 for lot of 405 pounds.

Another lot, and main crop of 1675 pounds, was shipped to P. Lorillard & Co., Jersey City, N. J. Prices ranged from 45 cents for best to 5 cents for poorest grade. The average price

paid per pound was 14.8. The gross proceeds was \$248.20, or net, \$211.52. To recapitulate, the gross proceeds of total crop of 2444 pounds tobacco was \$339.55—the product of not more than 2½ acres land—or net, \$278.95. A gross average price per acre of \$135.80, or net, \$111.58.

It will be observed that it has cost \$60.60 in freights, etc., to sell 2444 pounds tobacco, or nearly 3 cents per pound. It costs nearly that much to bring the manufactured product back here. The means of preventing this loss is in home manufacturies and home markets, The station indulges the hope that, before another year goes by, home manufacturing will begin, a home market opened and the industry established. Opportunity is present, will it be grasped by the forelock?

OTHER EXPERIMENTS CONDUCTED BY THE STATION.

Theoretically, cigar tobacco must be grown on alluvial soil to attain best development. In order to test this question the Station secured three acres of alluvial land, embracing the typical soils of Red, Ouachita and Mississippi rivers. One acre each was kindly donated by Hons. C. J. Foster, Shreveport; F. P. Stubbs, Monroe, and F. L. Maxwell, Mound.

The questions propounded were: Will the alluvial soils of North Louisiana grow successfully cigar tobacco, and incidently, how is their adaptability to bright leaf tobaccos?

Each acre was fertilized with 300 pounds cotton seed meal and 100 pounds acid phosphate, mixed well and applied in the usual way. The rows were four feet apart and the plants two feet in the drill. The plants were grown at the Station and shipped per express to their destination and there transplanted by the owners of the land. When ripe the leaves were pulled and shipped back to the Station to be cured in the Modern barn. Mr. Clarke made frequent visits to give instructions in the cultivation, worming, suckering of the crop, etc. The cultivation, with hoe and plow, was as frequent as the very wet season would permit. The experiments were not as successful as was hoped for.

There were too many unfavorable conditions and circumstances attending. In the first place, the plants having to be shipped, were or more or less injured in transit. Again, by having the seed bed here, advantage could not be taken of favorable times for transplanting them, consequently a great loss of plants, after transplanting, was unavoidable, and only about one-half to three-quarters of a stand was possible.

In the second place, the seasons were most unfavorable. The excessive rains and cold, backward spring, retarded an early and vigorous growth and prevented necessary culture from which the plants never recovered fully.

In the third place, in shipping this tobacco here to be cured, a great loss was experienced from heating. The leaves were pulled and placed in boxes and baskets and shipped, both by freight and express. The delay in getting the tobacco here, especially by freight, brought about great heat with the green tobacco, and in some instances ruined the leaves completely. A great deal of the tobacco was burnt black and rendered worthless and thrown away, while the other was more or less injured. This not only prevented good curing, but also prevented anything like accurate knowledge of the yield per acre. From the acre donated by Mr. Foster, the approximate yield was about 1400 to 1600 pounds cigar tobacco and 1600 to 1800 pounds of bright leaf. The cigar tobacco, not injured in shipping cured a fair cigar color. The leaves were fine and large and of good, silky texture.

While the bright varieties, Ragsland's Improved and White Burley, contrary to theory, cured very bright, handsome, yellow wrappers, indicating very strongly that the lands are adapted to this type of tobacco. Mr. Clarke is of the opinion that White Burley will excel there.

Experiments here certainly prove, 1st, that large quantities per acre can be grown of both bright and cigar leaf ranging all the way from 1200 to 3000 pounds, according to conditions of season, fertilizing, etc. 2d. That the quality of cigar product, according to our judgment, is *good*, and that of bright leaf *very good*.

3d. That the experiment is highly worthy of further trial, under more favorable circumstances.

From the acre donated by Mr. Stubbs results were not so good. The same disadvantages were operating as above stated. The seasons were really more disastrous in its effects, producing what is commonly known among old tobacco raisers as "frog eye," or rust. The effect is upon the leaf, shown by innumerable "freckles," or small round, yellow spots, which attack and destroys the chlorophyl of the leaf. Many theories are advanced for the cause of this affection, but certainly the most rational one is that the cause is *insufficient drainage*, which produces the fungous disease. (The Station hopes to thoroughly identify the disease the coming season, and to find a successful treatment for it.)

It was this disease that so nearly ruined Mr. Stubbs' tobacco that no definite knowledge was obtained as to its quality. However, where leaves were free from attack, both bright and cigar types showed a very desirable quality.

The quantity per acre produced was approximately even better than Mr Foster's.

The continued high water and overflow, and seepage, prevented all but a very small planting upon Mr. Maxwell's acre, and that very late in the season. Only a very small amount of tobacco was cured, but that was very good. The tobacco must have produced at the rate of 2000 pounds per acre. The leaves were fine and very large, and in both quantity and quality indicate the adaptability of the Mississippi river soils for cigar tobacco.

In every case the experiments are full of promise and are well worthy of further experiment.

The Station desires here to make mention of another acre of tobacco, grown by a neighbor, Mr. F. L. Parker. Mr. Parker conducted the crop under the supervision of the Station.

The land was old and pretty well run down and worn out, but it was nearly level and had good clay foundation, a light, sandy soil. His preparation and cultivation, etc., was the same as that of the Station. He used 300 pounds cotton seed mea

and 100 pounds acid phosphate, well mixed and applied in the drill before transplanting.

The tobacco grew well, in spite of unfavorable seasons—did not leach much—and was the admiration of passersby. And finally, when the total crop was cured and weighed, Mr. Parker found himself rewarded for his careful work and energy with 1225 pounds of bright leaf tobacco, the prettiest lot cured at the Station this year.

CONCLUSIONS

are that North Louisiana can produce large paying crops of the bright or yellow leaf type of tobacco on her loose sandy soils. That her worn out old pine fields can be reclaimed in profitable tobacco production of this type with fertilizers. That her alluvial soils will produce very large crops of both cigar and bright leaf or White Burley types, and that the quality will make it profitable farming. That appropriate fertilizing on the hill lands more than doubles the yield. That potash in no form has greatly increased yields. That nitrogen increases the yield largely, and that acid phosphate increases moderately.

That about 300 pounds cotton seed meal mixed with 100 or 150 pounds acid phosphate is the best and most economical fertilizer. That Hester, Ragsland's Improved, Long Leaf Gooch, Conquerer and Orinoco are the varieties and types to grow on these soils. That home manufacturing and home markets are indispensable and are necessary to establish tobacco farming.

EXPERIMENTS IN OTHER PARTS OF THE STATE.

STATE EXPERIMENT STATION, BATON ROUGE, LA.

In the spring plants of the varieties named in the foregoing pages were sent, by express, to Mr. D. N. Barrow, assistant director of the State Experiment Station at Baton Rouge. They were carefully planted and cultivated. Having no tobacco barn, experiments in air curing were made. To this end the plants were carefully harvested and strung upon poles and suspended

in the barn of the Station. The cigar types cured well, and gave decided testimony that this class of tobacco can be successfully grown on the "bluff lands" of this State. The yellow types, in the absence of heat, could not be converted into the desirable color and quality. Whether this type of tobacco can be grown and properly cured here cannot be positively determined in the absence of a tobacco barn, and, therefore, this question must, for the present, remain unanswered. With proper care in growing and curing the cigar type can be made a success.

EXPERIMENTS AT HAMMOND, LA.

After the successful attempt at growing and curing the yellow leaf in the hills of North Louisiana the citizens of East Louisiana, along the line of the Illinois Central railroad, invoked our assistance in repeating similar experiments in their midst. The Eastern part of the State, including nearly all of the parishes known politically as the "Florida Parishes" is similar, geologically and agriculturally, to North Louisiana, and hence it was inferred that the same types of tobacco could be successfully grown on both. After visiting several places, a proposition was made by citizens of Hammond to grow the tobacco and build the barn if the Station would furnish the plants and send its expert, Mr. Clarke, to give them the necessary instructions on cultivation and curing. This proposition was accepted. The Illinois Central railroad greatly aided us by furnishing free transportation.

In the spring the plants were shipped from Calhoun to Hammond. On account of distance many of them were injured "in transit." They were planted by six of the enterprising farmers and cultivated according to instructions. Mr. Clarke made several visits, during the season, and gave instructions as to the cultivation of the plants, erection of barn, curing of the leaves and assorting and preparing the latter for market. A personal inspection of the results leaves no doubt of the adaptability of the yellow types to this section of the State. The success of the cigar types was not so pronounced, and future experiments are

needed to decide upon the feasibility of growing this class upon these soils.

This year seed have been furnished the growers, beds have been planted and larger areas will be cultivated, and it is hoped that, with increased experience, success will crown their efforts, both in growing and curing. The Station again emphasizes the necessity of establishing home manufactories of chewing and smoking tobacco, ere the cultivation of tobacco will become general. The citizens of Calhoun have already taken the preliminary steps towards establishing such a factory in their midst and propose beginning active operations next fall.

Several of the enterprising citizens of Hammond are agitating a similar movement in their midst. Could a successful factory be established in North and East Louisiana, and buy the said material, at prices profitable to the grower, it would stimulate increased production far more than any experiments which a Station could conduct, and ultimately lead to general cultivation, numerous factories and increased prosperity.

It is firmly believed that these two sections can grow the finest quality of the yellow type of tobacco, and in paying quantities, and the towns or villages which will be the first to inaugurate factories and thereby encourage production must ultimately become the busy centres of a thriving tobacco trade.

The reports of Messrs. O. B. Irish and L. I. Way, who were prominent in the conduct of these experiments are herewith given. Also a letter from Capt. J. F. Merry, the enterprising assistant general passenger agent of Illinois Central Road.

HAMMOND, LA., October 9, 1893.

Dr. W. C. Stubbs, Director :

DEAR SIR—Enclosed I hand report of Mr. L. I. Way, who has been our right hand man in the experiments this year.

He has cultivated a portion of the crop, has had charge of building the barn and the principal actor in curing, and assumed a large share of the expense in erecting the barn and in curing the crop. In all he is very much interested.

My own views coincide with his in the improvements, especially in distributing heat. Our locality is very much interested in the experiments, and the prospects are that two or three barns will be needed to cure the crop next year.

Much will depend on the outcome of the sales. We shall hope to have the assistance and instruction of Mr. Clarke in sorting, as you suggested. At any time convenient to him it will suit us.

Hope you will have seed enough of the several varieties, as we shall depend on you for it.

I enclose also a letter from Capt. J. F. Merry.

Yours truly,

O. B. IRISH.

REPORT OF MR. L. I. WAY.

HAMMOND, LA., October 5th, 1893.

Dr. W. C. Stubbs, Director :

DEAR SIR—In regard to the tobacco experiment made here this season, I desire to report that, owing to the lateness of the receipt of plants (some being received as late as June), and the further fact that very many of the plants were heated in transit, a poor stand was obtained. Several plats were planted with different varieties, and therefore actual yields per acre for each variety cannot be given. Yet the main part of the experiment, the proper curing of tobacco by the Snow barn, has I think been fully demonstrated. The barn was built according to plans and specifications as furnished by the Snow Company.

Mr. W. F. Clarke performed the first curing. During the filling of the barn the first time it was struck by lightning, damaging the chimney and giving considerable superfluous ventilation, which was a disadvantage in the proper working of the barn. Mr. Clarke, myself and others were in the barn and were uninjured.

In working the barn as built I find several things which I think can be improved. First, the stoves were set as per cut in

circular. Mr. Clark objected to this setting on the ground, that it would give too much heat at one side of the building, curing one side faster than the other. His objection was found by trial to be correct. Next year an entire new brick jacket will be built around each stove, and an eight inch pipe taken out at the rear on top and carried back to distribute the heat of the stove at the back, or part of the barn opposite the stove. Will also make a ventilator to furnish fresh air at the front and below the stove. This will equalize the heat so the result will be more even in quality. One more change in the plan as furnished is desirable. There is an open space between the stanchions and the scaffolds for another stanchion and the hot air in rising from the pipes through the floor is inclined to sag to that open space instead of going through the hanging tobacco. I shall swing the door outward and place one more row of stanchions in that vacant place and thus fill the entire barn, from scaffold to scaffold, with tobacco and force the heat through the same, giving equal temperature to all parts of the barn, and thus secure an even quality of product.

I send to-day samples of Havana and Sumatra as grown and cured this season at this place. I have also forwarded some samples to J. F. Merry, of the Illinois Central, and enclose his reply.

In conclusion, from the experiments conducted here this year, although lacking the exact data of weights and measures, it would seem that the varieties of bright tobacco to be grown on this soil are, 1st, Hester; 2d, Hyco, weight and *quality* to govern. Of the cigar, Havana and Sumatra are about equal in yield, and the selling price must decide between them.

From present appearance, a large increase in planting may be expected for next year, especially if the tariff is not molested.

Yours respectfully,

L. I. WAY.

LETTER OF CAPT. J. F. MERRY.

ILLINOIS CENTRAL RAILROAD COMPANY, }
Office of Assistant General Passenger Agent, }
Manchester, Ia., Sept. 1, 1893. }

L. I. Way, Esq., Hammond, La. :

DEAR SIR—Your two favors of the 28th ult., received this a. m. I want to thank you for this report concerning your tobacco experiment. You certainly have demonstrated that this tobacco can be properly cured at Hammond. We demonstrated last year that the soil was especially adapted to its growth, and I think your people can with safety engage in this industry, expecting profitable results.

Yours truly,

J. F. MERRY,

Assistant General Passenger Agent.