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Lespedeza or Japan clover

William Rufus Dodson

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LESPEDEZA
OR
JAPAN CLOVER

BY

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1911
INTRODUCTORY.

Some years ago the Experiment Stations issued a bulletin on forage crops, by the undersigned, in which considerable space was devoted to lespedeza. The many requests received for this bulletin exhausted the supply, and it has been the purpose of the Stations for some time to issue a new special bulletin on lespedeza. We have been delayed from time to time in carrying out this purpose. The attention devoted to this crop has greatly increased and the demand for literature has been urgent. When the programme of the annual meeting of the Louisiana Lespedeza Growers’ Association was arranged for Monroe, June 27-28, 1911, it was planned to have discussed all the important phases of the production and marketing of the lespedeza hay and seed crop. Prominent lespedeza growers have contributed such valuable records of their experiences and observations that I have requested them to allow the publication of their papers. The leading articles presented to the association are here published, preceded by some general comments and data that will be of interest from the viewpoint of general information. It is hoped that the dissemination of this information will result in the extension of the culture of lespedeza and the production of a larger quantity of high grade hay for the market. The strong presentation of the feeding value of lespedeza by Dr. Dalrymple should bring about an increased appreciation of and demand for this hay, and the adjustment of the market price in keeping with its real feeding value, when properly cured, as compared with other hays.

W. R. Dodson, Director Experiment Stations,
Louisiana State University.
LESPEDEZA.

W. R. DODSON,
Director Experiment Stations, Dean College of Agriculture, Louisiana State University.

Significance of the name. While the word lespedeza is used by the hay-grower to designate a particular plant, it is used by the botanist as a generic name for a group of some thirty-five or more species of plants, eight or nine of which are native to the Southern United States. The name was established by the botanist Michaux, who described two of the southern species, and is said to have given the name in honor of a Spanish Governor of Florida, Lespedez. Michaux died in 1802, and his work was published in 1803, so the name was established in literature from this time. Lespedeza capitata was one of the species named by Michaux, and since it grows to a height of five or more feet, and is more or less bush-like in character, it probably bore the name of "bush clover," which seems to have become associated with the generic name quite early. Several species now bear the name with qualifying words—Lespedeza repens is called "creeping bush clover," etc.

Lespedeza striata is an introduced species, as will be seen later, and is the only one that is of special interest to agriculture at the present time. This species is sometimes called Japan clover, from the belief that it was introduced from Japan into the Southern States. The name "bush clover" is not associated with this species by those who use it for grazing or hay production, so far as is known to the writer, and the use of this designation in literature may be misleading. There are only two common names for this important plant known in Louisiana and Mississippi; they are lespedeza and Japan clover. Lespedeza is by far the most common, being almost universally used by those who grow the crop commercially. We shall therefore comply with the popular use of the word lespedeza, meaning Lespedeza striata.

Introduction and Dissemination. There is probably no authentic record as to just when and how lespedeza was introduced into the United States. Some authorities say that it was first found in central Georgia in 1846, while a recent publication says it was first found in South Carolina in 1849.
THIS SHOWS HOW THE LESPEDEZA THRIVES ON THE CLAY BANKS, WHERE WEEDS AND GRASSES OFFER LITTLE COMPETITION.
The naming of the plant does not help us very much on this point. The botanical name given above was assigned by the English botanists Hooker and Arnott, in 1841, although the same plant had been described from Japan in 1784, under the name *Hedysarum striatum*. It is supposed to have been introduced into Japan from China. The writer has not been able to learn to what extent the plant is used in China and Japan, but the absence of reference to it in agricultural literature, and the absence of an earlier name, would indicate that it is a relatively new plant to agriculture.

It did not attract much attention as a grazing and hay plant until it reached Alabama, Mississippi and Louisiana, where it now attains its highest degree of development. In many localities it made its first appearance soon after the Civil War, and the belief is quite general that it was introduced into many localities during the war.

It grows freely along roadsides, and seeds are probably carried by animals and vehicles during the winter season, in adhering mud. It thrives on the banks of gullies and hillsides where much of the soil has been washed away, and the abundant crop of seeds from such places is washed to streams and widely disseminated.

When cattle and horses eat lespedeza hay, or graze the plants bearing mature seeds, many of these seeds pass out with the ordure of the animal, with unimpaired germinating power. These animals thus become an important agent of dissemination. From roads and streams, the seeds find their way into the open woodlands and uncultivated fields, becoming established in our pastures and meadows.

Hay and bedding material used by the railroads in stock cars has been, no doubt, an important means, in recent years, of carrying lespedeza seeds to new territories.

Col. J. B. McGehee, of Laurel Hill, La., was the first man in the Mississippi Valley to take up the cultivation of lespedeza as a farm crop on a large scale. About thirty years ago he realized its merits, and since that time his large farm has been devoted exclusively to the production of lespedeza, oats, cattle and horses. His writings and public addresses at agricultural meetings have been largely instrumental in inducing many farm-
THIS SHOWS HOW LESPEDEZA THRIVES ON BANKS BY THE ROAD SIDE, WHERE THE SOIL HAS BEEN WASHED AWAY.
ers to give the crop a trial. A very valuable pamphlet on lespedeza was published and widely distributed at his own expense as an agricultural missionary work.

**Present Distribution.** At the present time lespedeza grows wild over all that portion of the United States south of Pennsylvania and central Illinois and east of middle Texas and Oklahoma. It is of some value in all this territory as a grazing plant, but will probably be a profitable hay crop only in the cotton-producing states. It is not likely that its territory will be greatly extended, as it requires a long season to mature seed.

**Habit of Growth.** Lespedeza is an annual. Seed are matured in Louisiana from late August until frost. Some of these seed germinate as soon as moisture and temperature conditions are favorable after late frost. Some seeds germinate in December and through the winter, during warm spells, only to be killed by subsequent frost. Other seeds do not germinate until late spring. Growth is slow until about the middle of June, when the plant shoots forward rapidly when there is plenty of moisture and high temperature. The stems branch at most every joint, but when the plants are thick many of these side branches are shaded off. The stems are slender, but grow so matted together that they are prevented from falling over. A good crop of lespedeza should grow to a height of twelve to fifteen inches, and under the most favorable conditions to eighteen and twenty inches.

Where the plants are crowded they begin to bloom later in the summer than where they have plenty of light and air. The seeds are borne in the axils of the leaves, at each of the joints that have sufficient air and light. Frequently there is only one well-developed seed per joint, although a good crop frequently produces three seeds per joint, and occasionally a larger number are found. The seeds are more numerous toward the top of the plant late in the season. No very definite observations have been made regarding the time required for the seed to mature. In general the blooms begin to appear on plants that grow on ditch banks the latter part of July, and mature some seed in early September or late August. In the fields the blooms do not appear until two or three weeks later. However, as the season progresses it seems that the period from bloom to mature seed
LESPEDEZA: SINGLE PLANT FROM DENSE STAND, BROKEN AND FOLDED. REDUCED ABOUT ONE-THIRD IN SIZE.
becomes less. Unless frost comes quite early the plants mature seed almost to the top of the branches.

The fruit is a one-seeded pod, which readily becomes separated at the point of attachment to the stem. The seeds are not threshed from the pods. It is not necessary, and it would be a difficult matter to accomplish. Because of these adhering pods, the seed seem light. Well-cleaned seed weigh twenty-five pounds per bushel. They are small enough, however, that one bushel will give plenty of plants to make a good crop when properly sown.

Soils Suited to Lespedeza. The best crops are secured on good soils that have a considerable per cent of fine silt. However, the plant thrives on a great diversity of soils. It likes a soil that affords plenty of moisture, but with good surface drainage. In Louisiana the best lespedeza soils are the bluff lands of the Florida parishes, the alluvial lands of the Mississippi, and the bluff formations of the tier of parishes forming

LESPEDEZA ROOTS SHOWING TUBERCLES.
a line from Lafayette to West Carroll. The post-oak flats, mostly very light-colored soils, produce moderate crops of pure lespedeza for several years after seeding, as weeds and grasses do not quickly invade these soils. The alluvial lands of the Ouachita and outlying bayous, and the better type of soils adjacent thereto, including a large part of Morehouse parish, seem to be especially well suited to the production of lespedeza hay. In the stiff alluvial lands the plants seem to spread more closely to the ground, and it is not a very desirable crop. However, where the lespedeza does not grow well on the alluvial lands, alfalfa can be grown. The sandy soils in the uplands do not afford sufficient moisture to produce a paying crop of hay. The better type of upland clay soils, in the pine hills, and the creek bottoms, will generally produce a paying crop.

Soil inoculation by artificial means does not seem to be necessary anywhere. Possibly the crop would be improved by inoculation.

Soil Renovation. Lespedeza is a good soil-renovating crop. It belongs to the family of plants that take nitrogen from the air. Where it has been tried, there is universal testimony to its great value as a fertilizer. No direct experiments have been carried out to compare it with cowpeas or other standard renovating crops, but the following data will be suggestive:

Some years ago, the writer made an effort to make an estimate of the approximate amount of vegetable matter represented in the stubble and roots of a lespedeza crop. The records of these determinations have been misplaced. However, the results indicated that approximately one-fourth of the total plant remained on the ground. In August, 1911, with the assistance of Mr. J. E. Halligan, we have made the following determination: Lespedeza, thick stand, about twelve inches high, was carefully dug to a depth of approximately twelve inches; the soil was carefully washed away and the roots saved; allowing an inch and a half to two inches of the stem above ground to count as stubble, it was found that 76% of the dry weight of the entire plant would be gathered as hay, and 24% remain in the soil as stubble and roots. By this analysis, an acre yielding three tons of hay would leave more than a ton of stubble and roots, because some
of the leaves would be shattered during normal harvest, and some of the roots go below a depth of twelve inches. Again, some of the nodules had disintegrated before our specimens were gathered.

The following chemical analyses were made:

**Fertilizer Analysis.**

<table>
<thead>
<tr>
<th></th>
<th>Lespedeza Roots and Stubble</th>
<th>Lespedeza Stems and Leaves</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phosphoric Acid</td>
<td>0.333%</td>
<td>0.468%</td>
</tr>
<tr>
<td>Nitrogen</td>
<td>1.656%</td>
<td>2.286%</td>
</tr>
<tr>
<td>Potash</td>
<td>0.261%</td>
<td>0.432%</td>
</tr>
</tbody>
</table>

**Food Analysis.**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Protein</td>
<td>10.34%</td>
</tr>
<tr>
<td></td>
<td>14.28%</td>
</tr>
</tbody>
</table>
The figures are reduced to a 10% water content basis, sample gathered from lespedeza 12 to 15 inches high, very thick, no grass or other foreign growth; just beginning to bloom.

These samples were hand-selected and represent pure lespedeza. No absolutely pure lespedeza would be secured in field hay. If we should remove one and a half tons of hay per acre, we would leave one thousand pounds of roots and stubbles, containing nitrogen that would cost us $3.00 to $3.30, if purchased in the form of commercial fertilizer. Frequently double this yield is secured.

We do not know how much of this nitrogen comes from the air, but when we consider the amount of nitrogen removed by the hay, and yet find the land improved in growing the crop, we are led to believe that a large part of it was secured from this source. One and a half tons of hay would contain, according to the above analysis, 68.58 pounds of nitrogen, or as much nitrogen as one thousand pounds of good cotton seed meal. As noted above, however, grasses and weeds would make a part of the general tonnage and the analysis would not run quite as high in nitrogen, but it forcefully suggests the value of the plant.

Of course, a part of this nitrogen is lost in the decomposition of the stubble, a part is washed away, and a part leached out during the winter. With all this, enough remains to be a material factor as a fertilizer.

ANALYSIS OF LESPEDEZA LEAVES AND STEMS IN AUGUST.

On August 21 a plot was selected in a second year lespedeza field, where the stand was very thick, and quite free from grass and weeds, plants standing about fifteen inches high. The lespedeza was cut from an area about two feet square, by hand and all grass, weeds and foreign matter removed. The stems were cut about three inches from the ground.

RATIO OF STEMS TO LEAVES.

A good sample was weighed and the leaves stripped from the stems, with the following result:

54.6% of the total weight was leaves and buds;
45.4% of the total weight was stems.

A determination made in the field, less accurately weighted, showed that a pound of lespedeza plants gave nine ounces of
leaves and seven ounces of stems. Another determination ran about the same way. Later in the season, the relative weight of stems will certainly increase.

**RATIO OF WATER IN STEMS AND LEAVES IN ABOVE SAMPLES, SUN DRIED**

Green leaves contained 70.27% of water.

Green stems contained 70.59% of water.

Other determinations were made which showed a variation of 3% to 5%.

Chemical analysis of stems and leaves of above sample showed the following, reduced to 10% water basis:

<table>
<thead>
<tr>
<th></th>
<th>Leaves</th>
<th>Stems</th>
</tr>
</thead>
<tbody>
<tr>
<td>Protein</td>
<td>20.35</td>
<td>8.334</td>
</tr>
<tr>
<td>Fat</td>
<td>7.19</td>
<td>1.91</td>
</tr>
<tr>
<td>Carbohydrate</td>
<td>39.15</td>
<td>33.845</td>
</tr>
<tr>
<td>Fiber</td>
<td>17.32</td>
<td>42.16</td>
</tr>
<tr>
<td>Ash</td>
<td>5.99</td>
<td>3.73</td>
</tr>
</tbody>
</table>

These chemical determinations were made under the close personal attention of Mr. J. E. Halligan. The high per cent of protein in the leaves in part may indicate immaturity, but blossoms are beginning to appear, and the harvest frequently begins by the 20th of August. This forcefully emphasizes the importance of saving the leaves, and reducing the per cent of weeds and grasses. A hay of the quality of the above leaves and stems would analyze 16.45% protein.

**INFLUENCE OF RAIN AND DEW ON THE COMPOSITION OF LESPEDEZA.**

Color and aroma are two important factors in determining the price of hay. Lespedeza, like alfalfa, is readily discolored, and the best aroma is dissipated by exposure to dew or rain after the leaves have once wilted. When bright, hot sunshine follows heavy dew, all exposed leaves either turn brown or look bleached, and the price the market is willing to pay for the hay is considerably reduced. Rain browns the hay and destroys the aroma. The general impression prevails that the hay loses much of its substance, as well as its palatability and aroma. The market demands a bright green hay, even as a component of a mixed feed. However, to get some idea of the actual loss in composition of lespedeza from exposure to the weather, some observations on this subject were made at the experiment station.
at Baton Rouge. Samples were selected by W. R. Dodson and S. E. McClendon, and analyzed at the chemical laboratory under the supervision of J. E. Halligan.

On October 21, 1907, we were harvesting good lespedeza on the Experiment Station farm. An area of 40 or 50 feet square of pure lespedeza, of heavy tonnage, was selected, well away from the headlands, in an area of several acres. Late in the afternoon of the 21st,

Sample No. 1, sufficient to fill a clean oat sack, was secured from this hay and put under shelter, where the uneured portion could dry in good condition. It was, therefore, not exposed to rain or dew.

Sample No. 2 was taken in the same way on the afternoon of October 22. It was exposed two days and one night.

Sample No. 3 was collected on October 24, having been rained on both the 23rd and 24th. Total exposure was four days and three nights, with fairly heavy rains, with considerable sunshine each day it rained.

Sample No. 4 was collected October 25. Total exposure five days, four nights, two rains.

Sample No. 5 was collected October 26. Total exposure six days, five nights, two rains. All the samples were protected alike from exposure after they were taken from the field until well air-dried, and analyses then made, on the same basis.

The analyses showed the following compositions:

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Protein</td>
<td>12.58</td>
<td>12.00</td>
<td>10.80</td>
<td>13.60</td>
<td>13.41</td>
</tr>
<tr>
<td>Fat</td>
<td>2.73</td>
<td>2.50</td>
<td>2.19</td>
<td>2.38</td>
<td>2.24</td>
</tr>
<tr>
<td>Carbohydrates</td>
<td>43.45</td>
<td>44.13</td>
<td>41.94</td>
<td>40.93</td>
<td>41.14</td>
</tr>
<tr>
<td>Fiber</td>
<td>25.32</td>
<td>25.83</td>
<td>30.24</td>
<td>27.58</td>
<td>27.61</td>
</tr>
<tr>
<td>Water</td>
<td>11.59</td>
<td>11.27</td>
<td>11.17</td>
<td>11.37</td>
<td>11.33</td>
</tr>
<tr>
<td>Ash</td>
<td>4.33</td>
<td>4.27</td>
<td>3.66</td>
<td>4.14</td>
<td>4.27</td>
</tr>
</tbody>
</table>

A similar experiment was tried in 1908, though the hay was not of as good quality as that used the previous year, having considerable grass in it. The field was cut on October 5, and a sample taken on each succeeding day, except October 9, to October 14. No rain fell during this period. Each succeeding
sample, therefore, had one more night of dew and one more day of sunshine than the preceding one, with exception noted. All the samples were treated alike after they were taken from the field. Field cut afternoon of October 5.

<table>
<thead>
<tr>
<th>Sample</th>
<th>Date</th>
<th>Protein</th>
<th>Fat</th>
<th>Carbo</th>
<th>Fiber</th>
<th>Water</th>
<th>Ash</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. 1</td>
<td>Oct. 6th</td>
<td>8.38</td>
<td>1.57</td>
<td>42.92</td>
<td>35.22</td>
<td>8.45</td>
<td>3.46</td>
</tr>
<tr>
<td>No. 2</td>
<td>Oct. 7th</td>
<td>8.56</td>
<td>1.71</td>
<td>46.04</td>
<td>33.00</td>
<td>7.18</td>
<td>3.51</td>
</tr>
<tr>
<td>No. 3</td>
<td>Oct. 8th</td>
<td>9.63</td>
<td>1.83</td>
<td>42.41</td>
<td>34.20</td>
<td>8.25</td>
<td>3.68</td>
</tr>
<tr>
<td>No. 4</td>
<td>Oct. 10th</td>
<td>8.00</td>
<td>1.70</td>
<td>44.72</td>
<td>33.15</td>
<td>8.65</td>
<td>3.78</td>
</tr>
<tr>
<td>No. 5</td>
<td>Oct. 11th</td>
<td>8.31</td>
<td>1.42</td>
<td>43.16</td>
<td>35.14</td>
<td>8.21</td>
<td>3.76</td>
</tr>
<tr>
<td>No. 6</td>
<td>Oct. 12th</td>
<td>8.88</td>
<td>1.76</td>
<td>42.31</td>
<td>35.60</td>
<td>7.88</td>
<td>3.57</td>
</tr>
<tr>
<td>No. 7</td>
<td>Oct. 13th</td>
<td>9.69</td>
<td>1.47</td>
<td>42.69</td>
<td>33.47</td>
<td>8.55</td>
<td>4.13</td>
</tr>
<tr>
<td>No. 8</td>
<td>Oct. 14th</td>
<td>7.69</td>
<td>1.80</td>
<td>46.93</td>
<td>31.28</td>
<td>9.17</td>
<td>3.13</td>
</tr>
</tbody>
</table>

**OBSERVATIONS.**

It will be noted that there was very little difference in the analyses, no more than would be expected if different samples had been taken on the same day from any average field. This would seem to indicate that the damage to lespedeza hay from exposure is more in appearance and palatability than to its chemical composition, and that weather-damaged lespedeza hay has a much higher value than we generally ascribe to it, provided it is not mouldy or the leaves lost. If we cut it and mix with a small quantity of cane sugar molasses, the disadvantage of lack of palatability is largely overcome. This should not be an excuse, however, for unscrupulous feed mixers to utilize bad hay. It is suggestive that the farmer may often be able to dry lespedeza hay, caught in the rain, without allowing it to mould, and get good returns from feeding it at home. *Mouldy hay*, of any kind, is objectionable, and may be the cause of disease or even death to animals consuming it.

The following analyses with explanations will be of interest:

*Sample No. 1* is of fairly good lespedeza, harvested late in October, sample taken from baling press.

*Sample No. 2* is of mixed lespedeza and Bermuda grass.
Sample No. 3 is of dried lespedeza leaves, such as are scattered at the baling press.

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Protein</td>
<td>9.60</td>
<td>7.05</td>
<td>12.25</td>
</tr>
<tr>
<td>Ether extract</td>
<td>3.32</td>
<td>3.07</td>
<td>5.60</td>
</tr>
<tr>
<td>Nitrogen-free extract</td>
<td>40.15</td>
<td>41.10</td>
<td>39.65</td>
</tr>
<tr>
<td>Fiber</td>
<td>31.41</td>
<td>31.79</td>
<td>22.13</td>
</tr>
<tr>
<td>Water</td>
<td>11.45</td>
<td>11.74</td>
<td>12.37</td>
</tr>
<tr>
<td>Ash</td>
<td>4.07</td>
<td>5.25</td>
<td>8.00</td>
</tr>
<tr>
<td>Total</td>
<td>100.00</td>
<td>100.00</td>
<td>100.00</td>
</tr>
</tbody>
</table>

Fertilizers for Lespedeza.

Very little work has been done in the way of determining the value of fertilizers to the lespedeza crop. Three years, the experiment station at Baton Rouge put out some fertilizer experiments with lespedeza, but the results have not been such as to assure us of any positive information. It seems, however, that phosphoric acid helps to increase the yield, and a little nitrogen, early in the spring hastens growth. It is likely that poorly drained soils may be benefited by the addition of some lime.

Since lespedeza is not ordinarily used in a short rotation, and fertilizers should be worked into the soil, it is probable the rock phosphate will be a good fertilizer to be applied when oats are sown in the oat-lespedeza combination. Rock phosphate is very slowly available, and for that reason would probably be suited to the lespedeza when this crop is to occupy the land several years without other cultivation.

How Long Will Lespedeza Seed Live?

Probably no one can satisfactorily answer this question. Seed carried over one year seem to retain a high germinating power, according to general experience. Seedmen claim that they have no complaints when seed are sold that have been carried over, and those who have made germination tests before selling the seed got good results.
Some observant growers say that lespedeza seed turned under too deep to germinate will grow three years later when the land is again plowed, bringing the seed to the surface.

*Blot* in animals from grazing lespedeza is not known. The stems and leaves are not succulent like the clovers. Again, the growth comes on slowly in the spring and animals graze grass with it, but even when pure lespedeza is grazed no ill effects follow.

*Horses slobber* to some extent when grazed on lespedeza or fed on the hay, but not to an extent to be seriously objectionable. The plant is not as bad as the clovers in this respect. When the animal has access to plenty of salt, slobbering is not so pronounced. Some animals consume the hay and do not slobber at all except under hard driving. Also, when animals become accustomed to eating the hay, slobbering diminishes. New hay seems to have a little more effect than hay that is well seasoned. This property of lespedeza, though slightly objectionable, is abundantly outweighed by its many good qualities.

*Lespedeza is not a weed,* and, though it finds its way into our pastures and all uncultivated lands, it never interferes with a cultivated crop. As explained before, it is a plant of slow growth in early spring, requiring several months to become well established. A lespedeza field may be put in cultivation in early spring with assurance that no difficulty will be experienced in eradicating the plant.

*Enemies* to lespedeza are few. No serious injuries by *insects* have been reported. Sometimes the leaves show some evidence of damage by rust, but this is never serious. The *dodder* is sometimes found in lespedeza fields where the crop, in small areas, is destroyed. The dodder is a small parasitic vine, yellow in color, adhering closely to the stems of the lespedeza, from which it derives its nourishment. When allowed to run its course it forms a mass of matted yellow vines covering an area of two to three square yards from a single plant, completely destroying the lespedeza. A great number of small seeds are produced that may carry the plant over to the next season. Since the seeds are quite small, most of them are sifted out in the trash in cleaning lespedeza seed, and the plant is not disseminated in this way sufficiently to cause alarm. There is no difficulty in detecting it in the fields, as the large yellow spots are conspicuous.
This parasite has no roots in the ground, after the original plant comes in contact with its host, and if all the infected lespedeza is cut off close to the surface of the ground and destroyed, the pest may be eradicated.

Some advantages of the lespedeza crop need to be especially stressed, although they are mostly referred to in the appended articles by lespedeza growers and by Dr. Dalrymple.

1. It perpetuates itself on the land by the annual seed crop. If the crop is harvested quite early, a second growth makes a crop of seed. If harvested late, seed are matured before harvest and shattered on the land in harvesting.

2. No hay crop allows such a wide period of time in which harvesting may be done. The harvest period may extend from late August to late October, including hay and seed crop. In fact, new lespedeza hay begins to come to the Baton Rouge market in late July. Such early cutting, however, will not yield a large crop, although the quality is excellent, as there are no leafless stems. While, under favorable seasons, a second cutting may be secured, it will be short, either for seed or for hay, and should continued dry weather follow such early cutting, the stand may be seriously damaged. It is not improbable that with a better understanding of the plant we will make two cuttings per season, when the most favorable conditions of growth prevail.

3. Lespedeza matures for the harvest in September and October, when we generally have fine hay-making weather.

4. Lespedeza cures very quickly, since the stems are very small and contain a low percent of water. Probably no other hay plant is so easily and quickly cured.

5. It enriches the soil.

6. The hay is rich in protein, and is relished by all live stock, and there is no waste in feeding it, as all the stems are consumed.
LESPEDEZA OBSERVATIONS.

DR. L. E. MORGAN,
Secretary Louisiana Lespedeza Growers' Association.

Success with any crop in Louisiana, as in any other state, depends upon certain conditions. Enumerating the most important conditions in lespedeza-growing, we have:

1. Climate.
2. Adaptability of soils to lespedeza-growing.
3. Proper cultivation of the soil prior to sowing of seed.
4. Control of weeds.
5. Drainage.
6. Cutting and curing of the marketable hay.
7. Cutting and curing of hay for seed.
8. Threshing and gathering of seed for market.
9. The energy and business-like methods displayed by the farmer growing lespedeza.

1. The climate of Louisiana seems to specially favor the growing of lespedeza. When we sow our seed in February or March, nature usually supplies us with adequate moisture to insure germination. Being sown on oats as a nurse crop, the delicate plant is protected from the severe frosts that sometimes visit us in early spring. During spring and summer, the warm sun and occasional rains do much to hasten the growth, and then comes the fall, with pleasant, clear, dry weather in which to gather the crop.

2. The adaptability of our soils to lespedeza-growing is shown most beautifully by the vast amount of lespedeza that grows voluntarily from year to year. Anywhere, on the roadside, in the fence corner and even on the hardest, driest hills, there the little plant shows itself and often under adverse conditions makes a wonderful growth. Probably, however, our lighter soils are best adapted to its growth. In them there does not seem that tendency to excessive growth of strong grasses and obnoxious weeds that we see in the heavier black clayey soils and river bottom lands.

3. One thing is very essential to the prevention of weeds in lespedeza, and that is the proper cultivation of the land prior to the sowing of lespedeza seed. Land that has been in cotton,
HARVESTING LESPEDEZA. FARM OF J. B. McGEHEE, LAUREL HILL, LA. YIELD PROBABLY 2 1/2 TONS PER ACRE.
or corn, soy beans, or peas, where thorough cultivation and hoeing have been practiced, makes an ideal place in which to sow oats in the late fall and lespedeza in the early spring.

4. True, some weeds will come, but these are topped once, and sometimes twice; they die and leave your lespedeza pretty free of weeds.

5. Lespedeza, like other legumes, cannot stand too much water, and while your fields should be well leveled and smoothed for your binder and mower, the drainage of the land should be perfect, and no low places that will accumulate water should be in the fields.

6. The cutting and curing of what might be termed marketable hay begins usually about September 1 and extends to October 15, or, in a very favorable season, until a light frost.

7. After this date most of the seed on the lespedeza is ripe and should be gathered. Some farmers prefer to cut the hay and depend on gathering up what seed falls out during baling time, allowing what is lost out while mowing and raking to stay on the ground and re-seed the land for another year. Experience has demonstrated the fact that entirely too much seed is lost in this way and a great many lespedeza-growers are using what is known as the "seed pan" attached to the cutting bar of the mower. These pans are made of galvanized iron the full width of the cutting bar, and extending out behind about 31/2 to 4 feet. The rear end of the pan is deeper than the front by about six inches and the whole pan is covered by wires or galvanized iron in which 3/4 or 1 inch holes have been perforated at regular distances. These holes in the lid are preferable to the wire lid inasmuch as they prevent straws or pieces of hay from getting in the pan, while the holes allow only the seed and leaves to get through. This pan-gathered seed is, to my mind, the fullest, ripest and best-developed seed on the field, and should take first rank as to grade, quality and price on the market. When the hay is pretty ripe, the yield of pan seed is sometimes very good, and I have known frequently where as much as from four to five and one-half bushels per acre have been picked up by the pan alone.

8. Where no threshing machine is available, the pan seed may be passed through a fanning mill several times in preparing
it for market, but by far the quickest and most economical way is to pass everything through a regular grain separator in which the regular concaves have been removed and "dummies" or blanks put in their places and a small clover or lespedeza sieve put in, in place of the grain sieve. Some enterprising manufacturers have placed re-cleaning attachments on their separators and in this way the seed, when re-cleaned and sacked, is ready for planting or market.

For ordinary farm use, we find a separator with an 18" cylinder and a 36" rear amply large for taking care of all grain and lespedeza raised on the farm, and to this can be belted up an 8 to 10-horsepower gasoline engine or steam engine. Where fuel and labor are items to be reckoned with, I would much prefer the gasoline engine. Speed of separator is regulated by size of drive-wheel on engine and pulley on separator. Ordinarily from 900 to 1000 revolutions per minute for cylinder will accomplish excellent results. With a machine of this kind five or six men can thresh, bag the seed and bale the straw from seven to ten tons a day, and in that time can thresh out from fifty to seventy-five or more bushels of seed, depending, of course, on ripeness of hay and how much had been gathered up by the seed pan. The lespedeza straw has some feeding value and I would not advise its being piled up to rot or set on fire. During winter months if that hay is cut up in a hay-cutter and mixed up in large boxes with crushed cob meal and molasses, it forms a splendid roughage for young cattle. In fact, it is my opinion that it would pay any farmer to feed it through his cattle, thereby getting the benefits to his cattle, besides obtaining a large amount of manure with which to fertilize his coming crops.

9. Lastly, it requires energy, business ability, alertness and strict attention to accomplish results with lespedeza, and any farmer, who expects the weeds to cut themselves, the broken mower to cut the hay at the proper time, or the separator to thresh his seed with incompetent labor, while he goes out fishing or hunting, or drives to town, is laying the foundation for a failure which is sure to bring reproach upon a crop rich in possibilities, adapted to our soils and climate, and which, ere many years, will have reached the place among the commercial hays that it so richly deserves.
CURING HAY.
MR. E. L. GLADNEY, Bastrop, La.

I find that one of the principal things in curing lespedeza hay is to avoid dew. Dew on hay is worse than a good shower in the morning. If a shower falls after you cut the hay, you can dry that off and it does not do much damage.

Take the question of curing choice hay. The farmer should endeavor to get the very best results and get as much choice hay as possible. Of course, we have some fields that have more weeds and grasses than others. We have to select the fields to get our choice hay. For my choice hay I select a field that has very little foreign substance. Where there is not over 2 per cent of foreign substance I put it in the best grade. That with not more than 10 per cent I put in the next grade. I never start my mower until the dew is off in the morning. I then run my mower until 12 or 1 o’clock. We shock and cap all hay before night. After sunning two or three hours, we first windrow the hay, then we cross the windrow and rake it up into piles. I then shock these piles and put a cap on the shocks so as to keep off the dew. These caps are made of ducking and about two yards square. I hold them on the shock by tying a string on each corner and running a pole along two sides of the cap, tying them with these strings on the corner. I keep this hay in the shocks about two days and then haul to the barn. Before I haul it to the barn I have it scattered for a few minutes, but for only a few minutes. After it is hauled to the barn I keep it there three or four weeks before I bale it. This is the choice hay. The No. 1 and No. 2 grades I bale in the field. I can bale it in the field for $1.00 to $2.00 cheaper per ton. The choice hay is kept in a block to itself. When the choice hay is baled it should not be packed too close together, but air spaces should be left between each bale, so that it will not get too hot. I leave it with these air spaces between the bales for two or three weeks, or, if I have plenty of room, leave it that way until it is sold. I pile the hay with spaces of about three or four inches. I then cross-pile it. Then, if I need the room, after two or three weeks, I pack it closer together. If you attempt to grade your hay after it is stored in the barn, you are not successful, but it should be graded as soon as a bale drops from the press.
HARVESTING OATS, YIELDING 42 BUSHELS PER ACRE, WITH A CROP OF LESPEDEZA COMING ON THREE MONTHS LATER YIELDING MORE THAN ONE AND A HALF TONS OF HAY.
If you grade your hay carefully, you have no trouble in selling it. I find no trouble in selling my hay. I sold four hundred tons up to the first of April. I went out to look at some hay which my friends wanted me to sell for them. I found they did not have any commercial hay to sell; they had a lot of trashy stuff. It is that kind of stuff that ruins the sale of lespedeza.

In answer to questions by members of the association:

The difference in the price of choice lespedeza and the other grades is $5.00 and $6.00. When I take the shocks down, I leave them for fifteen or twenty minutes. I don’t use loaders. Put all of my hay in shocks. When I am cutting No. 2 hay, I may run my mower all day. Of course, you can cure that in the field. I have never tried tarpaulins on my choice grade of hay. On the other grades you could use them.

If you follow cotton with lespedeza you have very little grass. I really think if you have 25 per cent of crab grass with your lespedeza it makes a better hay than pure lespedeza. The crab grass balances the feed. I let my No. 1 and No. 2 grades stay in the shocks about a week and bale it in the field. I cut my choice hay about the last of September or first of October. The other grades are sometimes cut in August.

It has been my experience that in the first year’s crop you have some crab grass; the second year’s crop is nearly pure lespedeza, and the third year’s crop has broomsage in it. After the third year it should be plowed up.

There is a difference between tarpaulins and caps. Tarpaulins are made from 20 to 40 feet square and are used to cover large piles of unbaleed hay in the field, instead of hay barns. Caps are made from 8 to 12 feet square and are used to cover shocks of 200 to 400 pounds to keep off dew or rain preparatory to storing in barn or large piles before baling.

SUGGESTIONS FOR CURING LESPEDEZA OR JAPAN CLOVER HAY.

By K. T. Catlett, Rosa, La.

1. Cut when in bloom.
2. Cut after dew has disappeared in the morning.
3. After a few hours of sunshine, turn the swath over with a fork or hand-rake—do not use tedder—use
light hand-rake, wooden-peg teeth, with cross-head about two feet in length.

4. Shock in second afternoon, eliminating weeds when making shocks.

5. Put in barn the third day, if seemingly dry, but do not tramp in too close.

6. Do not press until at least two weeks after putting in barn.

7. Should not be allowed to sun-burn.

8. Canvas caps or sheets may be used to cover shocks or stacks in the field, in case of inability to haul in promptly, or of bad weather.

9. Shocks should be opened up or turned over in the morning after the dew has disappeared and before hauling to the barn.

The above suggestions as to time to turn over, shock or take into the barn is varied by conditions, controlled by common sense—for instance: weather conditions prevailing at the time, growth, maturity, etc. Thin stand and short growth may be sufficiently cured for the barn in less than two days, but a rank and heavy growth will require at least three days to cure before putting in the barn. I have seen hay taken in the second afternoon when a dry season had prevailed and the clover was not over fifteen inches in height.

In conclusion, I will say that the barn is absolutely essential to successful curing of Japan clover or Lespedeza hay.

Rain will penetrate any stack or rick of this clover and the sun will burn it much if left exposed, destroying material value and causing mould.

Those who are careless, putting up for market sunburned or mouldy hay—hay pressed in the field, without having been put in the barn, will mould in bale—are simple assassins of the industry. There are such assassins in both St. Landry and East Baton Rouge Parishes.

The result of such practice is that this greatest of all hay has no standing in the New Orleans market, when, if common sense and integrity were the aim and watchword of the producer, a satisfactory competence would be assured.

Let the producer sit up and take notice.
LESPEDEZA, WITH SOME BERMUDA GRASS, SEEN AT CLOSE RANGE, FOREGROUND CUT AWAY; YIELD PROBABLY TWO TONS PER ACRE.
COPY OF MR. KENNETH McKAY'S LETTER.

Dr. W. R. Dodson,
Baton Rouge, La.

DEAR SIR—

In cleaning lespedeza seed it should be perfectly cured and dried before putting it through the fanning mill.

The way to cure it is to spread it out in a house, not more than three feet deep, and it should be turned over two or three times a week to keep it from getting hot.

In cleaning the seed after it is cured, the fan should be perfectly close, with no draught on it at all, which will take all the leaves and trash out in front of the fan, and this can be thrown away, as there is no seed in it.

Use three sifters in the fan—No. 5 on top, No. 8 in the middle and 16/100's at the bottom. After it is put through the first time, use No. 5 on top, No. 8 in the middle (these being perforated zinc sifters) and use the same sifter in the bottom all of the time.

The blinds on the side of the fan should be opened about four or five inches in cleaning the second time, which will put about one-quarter of the seed out in front of the fan. This should be taken up and cleaned before mixing with other seed.

Most people think the seed is clean when it goes through the fan three times. My way is to keep putting it through until clean.

The cleaning of seed is regulated entirely by the draught on the fanning mill.

Yours truly,

K. McKAY.

TRANSFORMING A COTTON FARM INTO LESPEDEZA FIELDS.

A. L. SMITH, Sterlington, La.

MR. CHAIRMAN:

I have been given as a subject "Transforming a Cotton Farm Into Lespedeza Fields." I can only speak to this subject from a practical standpoint, as my information has been gained by experience on my own farm.
A SEED CROP OF LESPEDEZA IN PROCESS OF CURING. FARM OF J. B. McGEHEE, LAUREL HILL, LA.
In the fall of 1907 the weevil made its appearance in my parish. I think I would be safe in asserting that 80% of our lands were seeded to cotton that year. Cotton being the main crop, the planter of this section planted as much of his land in cotton as he could find labor to work.

I have frequently heard the boll weevil spoken of as a blessing in disguise, and, while I have never given my consent to compliment him to that extent, am sure that he has proved to be a developer and an educator here.

The advent of the weevil caused general demoralization extending from the banker to the laborer in the fields, especially to laborers, causing many of them to leave the plantations and seek other employment.

The planters soon learned that it was necessary to reduce the acreage tilled by each laborer to successfully cope with the weevil.

This reduction, added to that caused by the migrating of the labor, gave us a larger area of land, heretofore planted to cotton, to be utilized in some other way. The question arose as to what should be done with it. What crop could we put upon it that would pay? A crop, requiring but few laborers, to pay taxes on the land and get nothing from it, would not do; to allow it to be sapped of its fertility by growing weeds would not do. While investigating this subject and trying to learn all possible about the weevil I made a trip, going from Monroe to Natchitoches, by way of Shreveport. I passed through one of the finest farming sections of the South, and it made my head ache to see magnificent cotton plantations, thoroughly equipped, lying idle, all of its tenants gone, weeds and saplings growing on land as fertile as any in the South. I came back home discouraged and blue but determined to utilize my lands in some way. I finally decided that my best way out was by planting my surplus lands in oats, followed by lespedeza. This brings me squarely to my subject and I will endeavor to tell you how I changed a cotton farm to lespedeza fields. If my way of doing it is not the right way we are here to seek a better one.

I broke my lands flat with sixteen-inch steel plows, pulled by three heavy mules, in September and October. Where the land was rough or in sod I followed the plows with disc harrows, thoroughly cutting and pulverizing the sod. This was followed
A GOOD OAT CROP ON HILL LAND IN NORTH LOUISIANA, YIELDING 30 TO 35 BUSHELS PER ACRE.
with the smoothing-harrow. After getting the land in thorough tilth with the harrow, I passed a good drag over it, endeavoring to get it as smooth and level as possible. The drag was followed by a good drill, planting two bushels of *Louisiana Rust-Proof Oats* to the acre.

Kindly permit here a little digression.

For the past thirty years I have been planting in Ouachita Parish. During that time some oats have been planted in the parish every year, and it has been the custom of the planters to send to Texas, Georgia, Missouri and Kansas for seed oats. I personally bought mine in Texas and was frequently disappointed in results. It occurred to me that Louisiana, growing everything to perfection, ought to grow as good seed oats as any other state. I sent to a planter in the southern portion of the state and secured thirty bushels of rust-proof oats, and since then have grown on my plantation as good oats as I have ever seen anywhere. The point is to plant Louisiana Rust-Proof Oats.

Getting back to my subject, after putting in the oats in September and October, the oats, having come up and gotten well rooted, are ready to furnish the best grazing for six or eight head of hogs per acre that I know of. The hogs can be well taken care of during the winter and up to March, when they should be removed. During the season of 1910-11, I had one field of 250 acres of oats that took good care of 400 head of hogs. After grazing the latter until March, I planted one bushel of good, sound, well-cleaned lespedeza seed per acre. To get proper results it is absolutely essential to plant good seed, seed that are well matured, well cleaned and that have been taken from the clover without its being heated. Disappointment will surely follow if the seed are not good and I am sorry to say that some of the seed put upon the market is not fit to plant.

Now, gentlemen, the land having been put through the process I have outlined, you have two crops planted soon to be growing.

One acre of oats properly planted with good seed will yield at least thirty bushels of oats on the alluvial lands of Louisiana. Some of our planters claim to have harvested this year (1910-11 crop) fifty bushels. After cutting the oat crop in June, you should be able to cut at least two tons of fine lespedeza hay in September and October. Thirty bushels of oats, worth $15.00,
and two tons of hay, worth $20.00, per acre. Think of it! $35.00 per acre from about four months’ work. Compare this with cotton requiring work all the year. I assure you that my experience has been even better than this, and if we cannot become alive to these facts except through the boll weevil, I think we need more boll weevil.

Gentlemen, I have never had time to travel, but I am told that the lands of Kentucky, Tennessee and Missouri that are seeded to timothy cannot be bought for less than $150.00 per acre. The records here will show that good alluvial land has been sold in Ouachita Parish during the past year for $15.00 per acre. What is the matter with our people? Why should we sell lands at such prices—lands that will yield easily two good-paying crops in one year? Is timothy hay better than lespedeza? A careful investigation will show that lespedeza is not only a better hay than timothy, but, for general purpose feeding, is even better than alfalfa. I have heard it suggested here today that we would soon overstock the market and that there would soon be so much lespedeza offered that the price would be unremunerative. I expect, in the near future, to see heads of Short Horn, Hereford and other breeds of fine cattle upon our farms. These, with flocks of good sheep, will take care of our surplus hay and return to the soil fertility, thereby improving and keeping them up. As soon as lespedeza becomes generally known to the outside world by just such advertising as this association will give the demand for it will increase and it will be hard to supply the demand. Lespedeza, properly cured, will win its way wherever hay is wanted. Let us advertise by every known method. Two years ago my wagons were passing my store loaded with freshly cured lespedeza hay. A drummer, standing upon the store gallery, caught the aroma coming from the hay and asked that I stop one of the wagons. After examining the hay, he admitted that he had never heard of it before and that he was well pleased with it. Shortly after this I received a letter from a wholesale grocery store in Pensacola, Fla., asking me to ship them one car of this hay upon the recommendation given by the drummer. This firm soon sent another order for five more cars of the hay and claimed that they were delighted with it.

I feel very kindly indeed to this plant, and can assure you that I have the right to do so, as it has been my salvation. My
ledger will show that lespedeza for the past two years has kept me from becoming bankrupt. I have today 700 acres of it growing, furnishing the best of provisions for my live stock, and soon hope to commence harvesting a crop of clean, healthy hay, fit to go into any manger.

My candid advice to any planter who does not know its merit is to get busy and investigate and he will find that, while our country is ideal for the growing of cotton, we are not by any means dependent upon it alone. God has blessed us by giving us a soil and a climate that will grow to perfection many other paying crops besides cotton.

MARKETING HAY FROM THE MERCHANT’S VIEWPOINT.

J. S. McGehee, St. Louis, Mo.

The keynote is classification. The farmer, of course, must sell what he can raise, and all of it, or eventually is sure to go into bankruptcy. As an association, we must strive for average standards, instead of fancy parcels that are practically unattainable, and whose marketing gives the trade a disgusting case of distemper—beg pardon, la grippe!

But the farmer must keep this attainable average as high as possible and sensible classification will go farther in this direction than any other expedient.

Classify your hay as it grows, the clear from the mixed, the bottoms from the hills, and when cured, classify again, the golden from the dark, the sound from the moldy.

When you press, keep your discriminating spectacles free of dust, and when you load a car, watch both ends and the middle.

Of course, in practical life it is out of the question to split hair, and we must never lose sight of the fact that the most effective enemy of any business is the man who puts up small parcels away above the practical average, and tries to persuade buyers that those represent the average excellence attainable by himself and others. His small parcel is soon exhausted and unconsciously buyers consider anything else a swindle, and only harm is done to the entire trade. We must have our quality represent only the highest attainable on a scale large enough to
make farming profitable. Otherwise farming cannot endure. Let that be distinctly understood: we must make it pay or quit it.

And the very foundation of all hay business is proper classification. Secure uniformity: uniformity in quality, in color, in size and weight of bales, in quantity loaded in each car, as near as possible uniformity in everything. The greatest trouble the merchant meets arises from unevenness in shipments. It seems impossible to prevent farmers (or their hired men) putting a few wagonloads of dark hay, that has had a shower, into a barn of choice golden, from pressing into the last few bales out of the barn, the scrapings and sweepings, or from loading this off-grade stuff into a car for market. Results: a good sale, a rejection, re-examination, more samples, big prejudice to overcome, additional switching, trouble and expense for everybody, profit for none. Maybe an angry farmer jumps the train and comes to town. For this we are always thankful. When we take him around and bring it right under his own eyes, we are sure to have an everlasting convert to classification. And you may be sure he would never believe it if he did not see it. But it is not hard to understand. It is merely a matter of common sense. No man wants a glass of milk with a fly in it, or a pat of butter enshrining a gaudy bit of the dishrag.

Now, mind: I am not saying there is no swindling among commission men. They are human—just as human as the others of us—and must be watched just as closely, even as closely as we should guard ourselves. Such things are incidents wherever human nature is concerned.

But, undoubtedly, the most important step is the first. We must start right, and classification surely must follow the mower if it does not precede it.

Some things we must not forget. All grades of farm products contain more or less of other mixtures. We must ever bear in mind the prejudice in Southern markets against home-raised articles (except only that fascinating woman of Moab, Queen Cotton); also that all our transportation authorities are bound to prefer a long haul from the West to a short one from home. True, the latter now generally pays the highest tariff, but sensible persons know that such a state of affairs cannot long endure. In other words, we are met with many prejudices, and
quite a few interests that it is necessary for us to overcome, but we may be sure that they can be overcome and all by the use of common sense without animosity.

We should secure a law from the Legislature or from Congress confiscating any shipment of straw (and defining straw) sold, shipped or billed, as hay, or of second-year field or garden seeds.

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OBNOXIOUS WEEDS IN LESPEDEZA AND THEIR ERADICATION.


Perhaps most of the lespedeza growers have already realized that the presence of weeds and grasses in lespedeza hay detracts from the marketable qualities of that hay, and I think the time is ripe to consider seriously what can be done to abolish or minimize this nuisance. I am a firm believer in the future of lespedeza hay as a market hay, as well as for home use, but I am also certain that the presence of weeds and undesirable grasses in lespedeza hay, together with carelessness in curing it, are two serious evils which must be overcome before lespedeza can be a really popular market hay.

In making suggestions as to ways and means to eradicate weeds and undesirable grasses I desire to invite criticism from the practical lespedeza growers at this meeting and to bring about a free discussion of the whole question, for I know that the combined wisdom of many men is greater than the wisdom of any one man.

The principal weeds to be combatted in lespedeza fields are rag weed, cockle burrs and yankee weed, and the undesirable grasses to be combatted are broom sedge, large water grass (*Paspalum dilatatum*), tall paspalum and crab grass, although the last-named grass causes little inconvenience. There are occasionally some other weeds and grasses to be eradicated, but the worst ones have been named.

Certain of these weeds and grasses are the inevitable result of attempting to make lespedeza meadows permanent or to continue them beyond their legitimate life, and the worst of all weeds in these permanent meadows is broom sedge because of
its universal distribution. There is no generally practical method of eradicating broom sedge, tall paspalum and yankee weed except to plow up the field and start over again, and even one plowing up is not certain to eradicate them. It is desirable to plant this weedy land for one or two years to cultivated crops and then sow back to lespedeza or to winter grain to be followed by lespedeza. It is true that one can minimize the evil by clipping back the weeds, but this has to be done two or three times. One or two men in the vicinity of Monroe have used the grain binder to cut broom sedge from over the top of the lespedeza and have bound it into bundles and removed it from the fields, thus reducing the percentage of broom sedge in the hay to a low point. This is easily done because it is easy to cut high with a grain binder—high enough to miss the lespedeza entirely. But desirable as this practice may be under certain circumstances, it seems to me to be a make-shift—to be making the best of a bad bargain. It does not eradicate and the process has to be repeated another year. Further, the yield of lespedeza hay is not so good where broom sedge is allowed to grow.

Some growers, impressed with the undesirability of permanent meadows on account of encouraging weeds, have tried the oats-lespedeza combination and have attempted to alternate oats and lespedeza for a number of years, getting a crop of oats and a crop of lespedeza from the same land each year, but this practice has greatly encouraged the growth of rag weeds and large water grass (Paspalum dilatatum).

I believe that the proper method of eradicating broom sedge and yankee weed, on the one hand, and rag weed and the paspalums, on the other hand, is apt to adopt a rotation of crops in which from one-half to three-fifths of the land is in lespedeza. Let us consider first a four-year rotation arranged as follows: first year, cotton; second year, corn; third year, oats, followed by lespedeza; fourth year, lespedeza. This puts half the land in cultivated crops and half in lespedeza, with oats on one-half the lespedeza area or on one-quarter of the whole farm. This rotation is a sure cure for broom sedge and yankee weed and will reduce rag weed and the paspalums almost to the vanishing point, particularly if corn fields are kept clean. The only weeds likely to be left under this plan are cockle burrs and crab grass,
but it is easy to keep cockle burrs down by clipping, and, as far as crab grass is concerned, it will not be seen after the first year, and the mixture makes good hay, anyway, if cut when the crab grass is right. However, I would prefer to have pure lespedeza unmixed even with crab grass.

Another way by which the land becomes cleaner is to have cotton and corn change places in the foregoing rotation so that it will read as follows: first year, corn; second year, cotton; third year, oats, followed by lespedeza; fourth year, lespedeza. The only objection to arranging the crops this way is that on many fields the cotton is not picked out early enough to plant the land to oats, but wherever the cotton field can be planted to oats in season I would prefer to arrange the rotation this way, because it makes the cleanest of all crops—cotton—precede the oats and lespedeza. Mr. M. Gilmore, of Wakefield, La., did this, and, while I did not see his lespedeza, I am informed on the best authority that he had the cleanest lespedeza in the state.

There is such a thing as drilling oats between the cotton rows before all the cotton is picked out, but if these oats were sowed to lespedeza it would be necessary to have the ground between the cotton rows absolutely smooth and to cut the old cotton stalks flush with the ground so that there could be no stubs of cotton stalks for the mowing machine to run against. Whether to have corn or cotton precede oats and lespedeza must be left to each man to decide for himself. It is partly a matter of latitude and partly a matter of other circumstances.

There are some who would prefer a five-year rotation, in which the lespedeza is allowed to stand three years. This would read: cotton, corn, oats, and lespedeza, lespedeza, lespedeza, or the cotton and corn might change places as before suggested. Three years is not too long to keep lespedeza on the land, provided one starts with clean land, but if there is some broom sedge the first year, or if other weeds or undesirable grasses are numerous the first year, they would be too thick by the third year. It is rarely desirable to continue a lespedeza meadow longer than three years. There are, of course, years like the present one, when the spring sowing of lespedeza is poor and thin or absolutely destroyed, and if, under such circumstances, one is practicing the four-year rotation it gives him
A PAYING CROP OF LESPEDEZA ON THE FARM OF COL. J. B. McGEHEE, LAUREL HILL, LA.
virtually only one year of lespedeza out of the four because he has lost one year, whereas, with the five-year rotation, he would still have two years of lespedeza if he lost one year. If I were practicing the five-year rotation and if I lost the spring sowing of lespedeza on the oats I would follow that crop of oats with a crop of peas sowed at the rate of two bushels per acre to keep weeds down, and, after harvesting the peas, I would sow again to oats and then back to lespedeza. Indeed, the plan of eradicating weeds by planting land thickly to peas is not without merit, and I mention it in passing.

I have spoken to several of my lespedeza friends about keeping sheep on their farms and utilizing them to clean their farms of weeds, and Mr. James Clayton, of Baton Rouge, has already told us how successfully he keeps sheep, and they help him, to some extent at least, to keep down weeds. I certainly believe that if, in a five-year rotation, the lespedeza were pastured by sheep one year—that is, if one-fifth of the whole farm were pastured—that the sheep would be free, or comparatively free, of intestinal parasites and some millions of weeds would be destroyed. It is a habit on some northern farms to turn sheep or lambs into corn fields after the crop is laid by to prevent any weed from going to seed, and we could do the same if we had the sheep.

There ought to be some way to prevent so many weeds from going to seed in corn fields because it is these weeds that cause more or less trouble in the lespedeza fields. If such rotations are followed as I have suggested and if the cultivated crops in the rotation are kept clean there will be no trouble with weeds, provided clean seeds are planted, but right here is another source of trouble.

I secured a number of samples of lespedeza seed more than a year ago and submitted them to the U. S. Seed Laboratory. Their report I have on file in my office, and, while I will not give all the details of that report, I will say that weed seeds were rather abundant. Of one sample there were 2,520 rag weed seeds per pound of sample. In another, 4,032; in another, 1,395; in another, 22,900, while in another there were none, but in the sample which had no rag weed there were 53,760 seeds of tall paspalum per pound of sample. Probably the reason why there was no rag weed was because the tall paspalum grew so thick
that the rag weed had no show. There are still other figures which it is not necessary to quote in detail, and I have presented these only because I hope it will lead to strenuous efforts to produce cleaner seed.

The man who follows cotton with oats and lespedeza, as Mr. Gilmore, of Wakefield, did, is sure to have a clean quality of seed. I would be glad to have all the members criticise these suggestions to the end that we may find the best method of producing the cleanest hay and the cleanest seed.

THE ECONOMY OF LESPEDEZA (JAPAN CLOVER) AS A ROUGHAGE COMPARED WITH GRASS HAYS.

W. H. Dalrymple, M. R. C. V. S., Veterinarian, Louisiana Experiment Stations.

Mr. President and Members of the Association:

Before taking up the discussion of the topic assigned me, I believe it will be better to say a few words, assisted by these tables, or charts, I have here, regarding the primary steps in the principles and practice of feeding, so that when I come to my subject proper you may have a fuller grasp of it.

In a general way, I may say that food is that which, when taken into the body, builds up and repairs the different tissues and yields energy.

Stock feeds, as we recognize them, and as they are purchased, may be represented in oats, corn, cotton seed meal, hay, etc., but the only parts of these that are of value to the animal are the soluble, digestible nutrients they contain. The principal of these are known as protein, carbohydrates, fat, and mineral matter or ash.

The function of the protein or albuminoids in the body is to build up and repair muscles, tendons, internal organs, the blood, skin, etc., and to assist in the formation of milk in the female.

The sources of protein, or albuminoids, may be illustrated by the gluten of wheat, and other grains; the legumin of peas, beans, lespedeza, alfalfa, clover, etc.; the casein of milk, and the various oil meals which are rich in protein.
Carbohydrates (starches and sugars) are either changed into fat and stored up in the body, or are burned up in the body to produce heat and energy.

Carbohydrates are represented by starch and sugar, and the fiber or woody parts of plants.

The fat in a feed stuff goes to form fat in the body, or, like the carbohydrates, may be burned up to produce heat and energy.

The source of fat may be the vegetable fats or oils, such as are found in cotton seed oil, corn oil, linseed oil, etc.

The use of the mineral matter or ash in a feed is to assist in the formation of bone and teeth, and to aid in digestion.

The principal sources of mineral matter are the phosphates of lime, potash, soda, etc., found in the feed.

The meaning of the term ration is the amount of feed an animal requires in twenty-four hours. This does not necessarily mean, however, a balanced ration.

A balanced ration means that the digestible nutrients contained in it are so balanced as to meet the requirements of an animal under different conditions, such as work, the production of beef, mutton, pork, wool, fat, etc.

An unbalanced ration is one in which the nutrients are not properly balanced for the needs of the animal, and contains too much of one class of nutrients and too little of another, resulting in a waste of nutrients and poor results in feeding.

The nutritive ratio (of a ration) refers to the relation of the amount of digestible protein to the amount of total carbohydrates—the protein being represented by the unit 1. For example, the figures 1:6 would mean that for each pound of digestible protein in a ration there were 6 pounds of digestible total carbohydrates.

Where haphazard feeding is the rule, valuable nutrients may very easily be wasted, which, of course, means a loss to the feeder, and poor results in the feeding of the animal. I will try to illustrate this by the following tables. But, before doing so, let me state that in order to balance a ration we must have a standard, or guide, to go by. Standards of this kind have been carefully estimated for all kinds and classes of animals, and under varied conditions, but, for the sake of convenience, let us
take the feeding standard for a horse, or mule, weighing 1,000 pounds, per day, and doing hard work. This is as follows, in digestible nutrients:

<table>
<thead>
<tr>
<th>Dry Matter</th>
<th>Protein</th>
<th>Carbohydrates</th>
</tr>
</thead>
<tbody>
<tr>
<td>23.0</td>
<td>2.30</td>
<td>14.30</td>
</tr>
</tbody>
</table>

The dry matter refers to the crude feeding stuffs minus the water or moisture they contain, and total carbohydrates means that the fat has been reduced to its carbohydrate equivalent by multiplying it by 2 1/4 (fat when burned giving off 2 1/4 times more heat than starch or sugar) and adding the result to the carbohydrates already present in the ration.

In endeavoring to compound a ration that will approximate the above standard out of shelled corn and timothy hay we get the following:

<table>
<thead>
<tr>
<th>Dry Matter Pounds—</th>
<th>Protein Pounds—</th>
<th>Carbohydrates Pounds.</th>
</tr>
</thead>
<tbody>
<tr>
<td>15 shelled corn</td>
<td>13.35</td>
<td>1.185</td>
</tr>
<tr>
<td>36 timothy hay</td>
<td>31.32</td>
<td>1.008</td>
</tr>
<tr>
<td></td>
<td>44.67</td>
<td>2.193</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>28.33</td>
</tr>
</tbody>
</table>

By comparing this ration with the standard requirements it will be seen that, in order to obtain, approximately, the necessary amount of protein, alone, from 15 pounds of shelled corn combined with timothy (grass) hay, 36 pounds of the latter would have to be fed, which would not only give an excess of 21.67 pounds of dry matter to be digested by the animal, but would cause a waste of about 14 pounds of total carbohydrates—the starchy ingredients of the ration. This is not only an unbalanced ration, with an excessive waste of one of the nutrients, but more in quantity than a work animal could consume in a day with any sort of comfort; and yet, if it did not eat all of the ration, it would not receive the required amount of protein.

On the other hand, 15 pounds of shelled corn could be approximately balanced, without an excess of dry matter, and without waste of nutrients, by substituting, for the 36 pounds of timothy hay, about 13 pounds of lespedeza hay, which is a
leguminous forage, and much richer in protein (the most expensive element in a feed) than timothy, which is a grass hay. The following table will explain this point:

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>15 shelled corn ..........</td>
<td>13.35</td>
<td>1.185</td>
<td>11.46</td>
</tr>
<tr>
<td>13 lespedeza hay ........</td>
<td>11.57</td>
<td>1.040</td>
<td>6.04</td>
</tr>
<tr>
<td></td>
<td>24.92</td>
<td>2.225</td>
<td>17.50</td>
</tr>
</tbody>
</table>

Again, if we take oats as the grain, we have almost a similar condition of affairs:

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>15 oats (grain) ..........</td>
<td>13.35</td>
<td>1.38</td>
<td>8.52</td>
</tr>
<tr>
<td>30 timothy hay ..........</td>
<td>26.10</td>
<td>0.84</td>
<td>13.94</td>
</tr>
<tr>
<td></td>
<td>39.45</td>
<td>2.22</td>
<td>22.46</td>
</tr>
</tbody>
</table>

By referring to the standard requirements, it will be seen that to approximate the necessary amount of protein, alone, we would have to feed 30 pounds of timothy hay along with 15 pounds of oats, which would be an excess of dry matter by something over 16 pounds, and a waste of about 8 pounds of total carbohydrates.

But, if 12 pounds of lespedeza hay should be substituted for the 30 pounds of timothy, the ration would be approximately balanced without waste:

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>15 oats ..................</td>
<td>13.35</td>
<td>1.38</td>
<td>8.52</td>
</tr>
<tr>
<td>12 lespedeza hay ........</td>
<td>10.68</td>
<td>0.96</td>
<td>5.58</td>
</tr>
<tr>
<td></td>
<td>24.03</td>
<td>2.34</td>
<td>14.10</td>
</tr>
</tbody>
</table>

I would like to take advantage of the foregoing illustrations, at this point, to show that when the grain or concentrated part of the ration is more or less carbohydrate in character, the hay,
or roughage, should be of an opposite nature—viz., nitrogeneous—as a complement, in order to more closely balance the ration with as little waste of nutrients as possible. And, for a similar reason, when the concentrated part is nitrogeneous (rich in protein), the roughage should be carbohydrate in its composition.

When, however, the concentrates and roughage are both of a similar nature as to composition, the ration will be unbalanced, or one-sided, in one direction or the other, with waste of nutrients as a result.

A word or two regarding balancing rations economically.

Successful stock-feeding is not dependent, altogether, upon the use of any one variety of raw material. It is true that good oats is generally conceded to be an ideal grain feed for the horse or mule, because the digestible nutrients in that cereal happen to be about typically balanced. Yet oats may, at times, be an expensive feed stuff if they have to be purchased by the planter or farmer; and if he can, by mixing together other cheaper, palatable and digestible materials, obtain the same amount of nutritive substances, and in the same ratio, as they occur in oats, the animal will receive the same amount of nutriment, as from oats, and the owner make a considerable saving in his feeding operations. And the same may apply to other varieties of feeding stuffs.

The following rations, which are both approximately balanced, will serve to illustrate the point in economy which I wish to make:

<table>
<thead>
<tr>
<th>Dry Matter</th>
<th>Carbohy-</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pounds</td>
<td>Protein</td>
<td>drates</td>
</tr>
<tr>
<td>15 oats</td>
<td>.13.35</td>
<td>1.38</td>
</tr>
<tr>
<td>15 mixed grass and clover hay</td>
<td>.13.05</td>
<td>0.93</td>
</tr>
<tr>
<td></td>
<td></td>
<td>8.52 at 58c per bu...27c</td>
</tr>
<tr>
<td></td>
<td></td>
<td>6.90 at $15 per ton...11c</td>
</tr>
<tr>
<td>26.40</td>
<td>2.31</td>
<td>15.42</td>
</tr>
</tbody>
</table>

38c
It will be observed that both of these rations approximate the standard requirements for an animal weighing 1,000 pounds and doing hard work; yet the second one, on account of its digestible nutrients being obtained from cheaper raw materials than the first, brings about a saving of 15½ cents per day in the case of each animal. If we figure this for a plantation or farm using 100 work animals, it shows a saving of $15.50 per day. And if we carry it further and figure on 100 animals for 300 days, it shows a saving of no less than $4,650.00. And still the animals receive, approximately, the same amount of nutritive materials from the cheaper as from the more expensive ration. Now this is a practical illustration of the waste that may be seen, almost any day, on some of our plantations or large farms. Is it possible that any feeder of live stock can doubt the importance of a rational knowledge of the composition of his feed stuffs, and how to intelligently use them to the best advantage? I should think not!

Coming now to the comparative feeding value of lespedeza and grass hays as roughage, I will take timothy to represent the latter, and endeavor to show you that, for the price we have to pay for it, it is a most expensive hay.

The average percentage of crude protein, carbohydrates and fat in timothy and lespedeza is as follows:

<table>
<thead>
<tr>
<th></th>
<th>Protein</th>
<th>Carbohydrates</th>
<th>Fat</th>
</tr>
</thead>
<tbody>
<tr>
<td>Timothy</td>
<td>5.9</td>
<td>45.0</td>
<td>2.5</td>
</tr>
<tr>
<td>Lespedeza</td>
<td>11.7</td>
<td>43.8</td>
<td>3.6</td>
</tr>
</tbody>
</table>
Now let us reduce the nutrients in each to a carbohydrate or feeding-unit basis. The method which is almost universally adopted in such reduction is to consider each percent of carbohydrates as a unit; each percent of protein as worth $2^{1/2}$ carbohydrate units, and each percent of fat as worth $2^{1/4}$ carbohydrate units.

By this method of computation, it will be found that timothy, showing the above analysis, contains only, approximately, 66 feeding units, while lespedeza hay, with the above analysis, contains, approximately, 81 feeding units.

Now, if we figure on the above basis, which is identically the same for each hay, the man who purchases timothy for, say, $25.00 per ton, which contains only 66 feeding units, is paying, for each unit, approximately, 38 cents.

On the other hand, if he buys lespedeza hay at, says, $15.00 per ton, which contains 81 feeding units, each unit is costing him a little less than 19 cents. And even if he should pay $25.00 per ton, the unit would cost him only a fraction over 30 cents.

Or, if the calculation should be based upon the percent of the digestible nutrients in each of the hays, the figures would be about as follows:

<table>
<thead>
<tr>
<th>Digestible</th>
<th>Protein</th>
<th>Carbohydrates</th>
<th>Fat</th>
</tr>
</thead>
<tbody>
<tr>
<td>Timothy</td>
<td>2.8</td>
<td>28.3*</td>
<td>1.4</td>
</tr>
<tr>
<td>Lespedeza</td>
<td>7.6</td>
<td>31.0*</td>
<td>1.8</td>
</tr>
</tbody>
</table>

Estimating the digestible feeding units in timothy by using the same factors as for the crude nutrients, we find that they approximate 39.

Lespedeza, on the other hand, shows 54 digestible feeding units.

Now, if we estimate timothy hay at $25.00 per ton, each digestible feeding unit shows a cost of, approximately, 64 cents. While lespedeza, with its 54 digestible feeding units, and at $15.00 per ton, shows a little less than 28 cents per unit. Or, at $25.00, only about 46 cents.

I should like to state here that, outside of the aid to digestion which a certain amount of bulk in feed gives, the only really

*Per cent of digestible fiber not considered.
valuable part of a feed, and which the feeder who purchases his feed is actually paying his money for, is the soluble, digestible nutrients which the feeding stuff contains, as these have to pass into the blood-stream and be carried to different parts of the body for purposes of nutrition. The bulky indigestible part passes out of the body as manure, which, necessarily, however, has a certain manurial value.

With these facts before us, then, I would commend judgment and discrimination with regard to analyses and feeding value, when purchasing feeding materials.

Now we come to a discussion of what is, perhaps, the most important part of our topic—viz., the relative value of timothy and lespedeza hays, based upon the feeding units contained in each, and the price per ton each hay commands on the open market.

Calculating timothy at $25.00 per ton, which is below the present quotation in the New Orleans market, and $15.00 for lespedeza, which is somewhat above the average price paid for this hay, we make the following computation:

If timothy hay, with only 66 feeding units, is worth $25.00 per ton, then lespedeza hay, with its 81 feeding units, should be worth $30.68 per ton.

Or, conversely, if lespedeza hay, with 81 feeding units, is only worth $15.00 per ton, then timothy with only 66 feeding units, should only be worth, in feeding value, $12.22.

The figures, gentlemen, speak for themselves. The analysis used in each case is the average taken from published tables of average analyses of the two hays; we have employed the same factors in reducing to feeding units in each case, and the prices given are those current at the present time, although slightly favoring timothy in the computation—that is to say, timothy is quoted on the market at $26.00, or over, per ton; while $15.00 for lespedeza is more than an average price for that hay.

In conclusion, let me add a word or two concerning the judicious use of leguminous hays in general.

With some feeders, hay simply means hay, without any discrimination whatever as to its composition, which has led, in many cases, to adverse criticism of some of our most valuable varieties of leguminous hay.
As an illustration, if we refer back to the ration showing that it would take 36 pounds of timothy (a grass hay), fed along with 15 pounds of shelled corn, to approximate the protein requirement, alone, of the ration; and that the ration could be practically balanced, in all of its nutrients, by the use of only 13 pounds of lespedeza (a leguminous hay), it must be evident that the latter contains a larger percentage of protein, which is highly nitrogenous. Consequently, if as large an amount of a leguminous hay, such as lespedeza, alfalfa, clover, peavine, etc, is fed as of timothy, or other grass hay, there will not only be a waste of protein, but the excessive amount in the system of this highly nitrogenous principle is liable to act deleteriously on the kidneys of the animal; or, owing to its chemical composition, break up into the elements of fat and produce heat and excessive sweating, neither of which, however, should be blamed upon these valuable forages, but upon an injudicious and irrational manner in which they are fed.

It would be difficult to get a more forcible example of the necessity for having the nutrients in a ration approximately balanced for the needs of the animal in order, not only to save feed, but to prevent the injurious effect of an excess, in either direction, on the health of the animal.

Gentlemen, I hope in the short time, and in a rather hurried manner, I may have been able to make this important subject of rational feeding somewhat clearer to you than it previously had been.

I trust, also, that the figures I have given you on the comparative feeding value of timothy and lespedeza hays may have the effect of making you realize, much more fully, the greater value of the home product than you had, hitherto, set upon it.

The fact is, gentlemen, instead of our buying western timothy hay, at such an exorbitant price for the number of feeding units it contains, we should not only consume our more nutritious lespedeza at home, but we should introduce it into other sections of the country not yet familiar with it, and its price should be in keeping with its feeding value.
OAT AND LESPEDEZA FIELD, SHERWOOD FARM OF JAMES CLAYTON, BATON ROUGE.
Mr. President and Gentlemen of the Lespedeza Growers' Association:

If your committee in selecting men and giving them subjects for discussion at this meeting had told me to take any topic I liked I feel sure it would have been sheep—not necessarily sheep and lespedeza—but sheep on the farm, or sheep as an eradication of weeds, or sheep and Bermuda grass, or sheep for wool and mutton. All of these subjects are teeming with live issues for the man of today, and instead of saying: "Go West, young man," I would say: "Grow sheep, young man, and do so right here in Louisiana."

The possibilities of the Easter lamb market are very great and the supply has never been equal to the demand, and wool will always be used.

Sheep have their poetic side as well. Sacred history is full of interesting accounts of men who owned flocks and tended them. Who does not thrill with emotion when reading about the lad David as he tended his Father Jesse's flock on the beautiful hills of Palestine? Also when the prophet Samuel was sent by the sons of Jesse in place of the rejected Saul to be Israel's future King, ten of the sons of Jesse passed before Samuel and were rejected. "And Samuel said, are here all thy children, and Jesse said there remaineth the youngest and behold he keepeth the sheep, and he brought him in. Now he was ruddy and withal of beautiful countenance and goodly to look to. And the Lord said: Arise and anoint him for this is he." So in time the lad David, the shepherd boy from the hills, came to be Israel's King, Israel's poet and Israel's mighty warrior.

Our Blessed Lord himself tells us of his watchful care over his people and compares it to a shepherd watching his flock. It was to the shepherds watching their flocks by night that the first glad tidings of the Savior's birth were made known. Thoughts like these necessarily come to the man who works with sheep and tends his flocks.

A few years ago a young man from near Monroe prevailed on me to try sheep on my farm near Baton Rouge, and as an
MECHANICAL LOADER LOADING LESPEDEZA, WITH SOME GRASS. EXPERIMENT STATION, BATON ROUGE.
inducement sent me about thirty ewes. I added to this flock and bought a registered Southdown ram, and now have a flock of one hundred high-grade Southdowns, all in fine shape. I use oats for winter grazing, Bermuda grass and lespedeza for spring and summer pasture. In addition to these, I use my meadows for the sheep until about the first of June, and, while they prefer lespedeza to anything I have tried, they also are very fond of the weeds and keep the meadows free from them. So it is not necessary to top with the mower until July. In this way the food supply is abundant and cheap.

Ewes should net annually from four to six dollars. With good pastures, such as I have mentioned, and frequent use of tobacco and salt, stomach worms will be unknown. Dogs depredate some on my flock in winter, but I use my shotgun and strychnine freely.

In conclusion, I will repeat what I said a few moments ago—that the growing of sheep on the farm is full of interest and profit to the farmer. Sheep take their place on the farm without interfering with the other stock, and in my experience sheep-growing and the harvesting of good lespedeza hay form a happy combination from which all may derive much benefit and pleasure.

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DIFFICULTIES IN SECURING A GOOD FIRST YEAR STAND OF LESPEDEZA.

BY GEO. O. DENHAM, Baton Rouge, La.

The production of lespedeza hay has become such an important factor in eliminating the disastrous affects of the boll weevil that it behooves us to apply modern agricultural methods to this as well as other crops. We must do it to profitably meet competition. Our lespedeza hay is superior, and more saleable, when once introduced, than Western and Northern hay. However, we must apply modern methods or be shoved out of the market. Nothing but the most advanced methods, as advocated by our experiment stations, and the farm demonstration department of the national government, can place us in a position to compete with the alfalfa and timothy growers of the North and West—yea, even the lespedeza growers of the North, for we have been
THRESHING LESPEDEZA SEED. YIELD NEARLY SEVEN BUSHELS PER ACRE.
shipping thousands of bushels of seed to the Northern markets every year, where hay growers are awakening to a realization of the immense possibilities that lie in this plant; so much so that they have paid us very handsome prices for our seed.

When I say that this is one of the main reasons why our hay has been of such poor quality, and that we are putting means within their hands to put us out of business, you may doubt my statements, but these are facts, nevertheless, and the sooner we realize it the sooner we will be on the road to prosperity instead of ruin.

The difficulties that have to be overcome to secure a good first year stand involve the question of quality of hay and the seed question, and a good first year stand is essential to the attainment of a full degree of success. I shall therefore try to show you where our difficulties are and how we may cure them. I would enumerate three things that frequently prevent a good first year stand:

1. The improper preparation of the soil.
2. Improper methods of seeding.
3. Improper time of topping.

First—I have seen planters break their land once that had been in corn or cotton, and with a straight tooth harrow run up and down the rows once or twice, or maybe, if land pulverizes pretty well, not at all, leaving the clods in such shape that when the rains have melted them they cover the seed to such a depth that the young plant never gets through the crust.

The second, and the most important, difficulty that nearly every planter of lespedeza faces, is improper seeding; a man had just as well go into his crib and select all of his fine large ears of corn to sell, and plant the nubbins and expect to raise 50 or 60 bushels per acre, as to expect a first-class crop of hay when he ships all of his first-class seed, and plants nothing but nubbins or chaff.

The enormous price that has been realized for seed for the past few years has cost this country thousands upon thousands of dollars. Besides, the reputation of our hay has been damaged to such an extent that it will take several years for us to overcome it, because of the poor product that we have put on the market. My brother, don't plant nubbins; don't. Another
difficulty is in the quantity of seed planted. In the past, when seed was selling for $3.50 to $5.00 per bushel, a man considered himself somewhat excusable for planting one bushel per acre, even if he did have to wait for the second year to reap a crop; that was all right; "he got there," gentlemen, and raised a crop in two years, as he had to let the first year's crop stay there so late to seed that it was not fit for anything but bedding, and having cut it the second year in proper time (which is in the flower), of course there wasn't any seed for the following year, hence it reverts back to the original proposition—i. e., re-seeding and waiting another two years for a crop. This is where the up-to-date man is going to win out.

The third difficulty comes when you leave the hay too late to top. The native grasses and weeds get so far above that it stunts the lespedeza, or else makes it run up in single stalks, when you get little or no hay whatever.

There are none of these difficulties but what can be overcome with a little concentrated thought.

Follow out the plans and dictates of the late Dr. S. A. Knapp* on scientific and intensified farming. First, break your land flat about the middle of September; use a disc harrow, and disc until there are no clods left. Sow the best rust-proof oats that can be obtained and use these oats (as soon as they are well enough rooted that stock won't pull them up while grazing) for pasturage until the latter part of January or first of February, and then sow not less than two bushels of lespedeza per acre of the very best cleaned seed obtainable. At the present price of seed it would pay to put even more. For instance, since seed is now selling at $1.25 to $1.50 per bushel, we could better afford to put $3.50 worth of seed now and be assured a crop of first-class hay every year than we could to take chances on one bushel at $3.50 several years ago when lespedeza hay was almost an unknown quantity and sold exclusively on the local markets, and everything was lespedeza from broom straw to rag weeds. By studying dame nature's own methods we find that she (when let alone) makes better hay than we do. Why? Because she puts plenty of seed. How do I know it? Because the second year's stand proves my statement.
Now, to get the hay that our market demands we will have to cut the lespedeza in the bloom and it does not re-seed itself, so we will have to have a plot of our best hay set aside to get seed from, and seed alone, and we get this result. The man who raises hay for the market will have to plant every year, hence every year’s stand will be first year’s stand. Therefore, if you do not put enough seed, your time, money and land are thrown away for that year; results in your being very much discouraged naturally. On the other hand, you harvest practically three crops in one year against one in two years under the old plan. In an ordinary year the following is an average: From September to September, three months growing with hogs on oats $10.00 per acre, 25 bushels oats at present price $15.00 per acre, for feed, two tons hay at $12.00 = $24.00, or a total of $49.00 per acre.

I have averaged better yields than the above, but I am digressing from my first proposition, but this was done to show what it means to overcome the difficulties of first year’s hay, and that is why I emphasize intensive farming in hay as well as any other crop. We get these extra crops to offset the extra expense of breaking every year.

We have arrived at the place where the man who follows the old slipshod plans of cultivation is not in the race at all, but the farmer of today who practices scientific farming leaves this man so far behind that he is lost sight of in a few years, for he cannot get around practicing intensified farming, if he wishes to overcome the difficulties that the lespedeza grower is facing.

*Mr. Denham closed his article with a tribute to the late Dr. S. A. Knapp, for the good work he did in behalf of the Southern farmer, and commending the effort that is being made to raise a fund for a memorial to Dr. Knapp.

MARKETING HAY FROM FARMER’S VIEWPOINT.

Col. I. C. Terry, Monroe, La.

GENTLEMEN: I have been assigned as a subject “Marketing Hay from Farmer’s Viewpoint.” That involves so much that it seems to me that it is a matter of discussion on the part of the whole assembly as to the method of cutting, curing and pressing hay as much as anything else. The mere marketing of hay from a farmer’s standpoint is a very small thing. If he has good hay and has a good many friends, he may succeed very well, but he must remember one thing—he must have good hay to market.
If he hasn’t his friends will soon show him the door and he will find his customers about as few as hen’s teeth.

I don’t know how the farmers could devise any method of marketing hay which would be better than to form a home association, or hay exchange. You take in this vicinity; if the hay growers had sense enough to get together and form a home association they would succeed in marketing their hay much more satisfactorily than they do at the present time. As it is, they compete against one another. I go to John Smith and offer to sell him some hay. He tells me he can get the same hay from such a man for less than I think I can sell it to him for and, as a result, I come into competition with my neighbors. We are all in competition, and, therefore, it seems to me that it is absolutely necessary that we form a home association. We can get together. The farmers of Ouachita Parish can come here in two hours from any part of it. We could form an association and appoint our agent to look after it for us. We could report to the association, or to this agent, the quantity and quality of hay we would probably have on hand in the fall. We could fix our prices, make our reports to the agent and then he could get the orders and call upon us for the hay. The purchasers living around town or anywhere else could go to the agent. Let him have a central office. They could go to his office and leave their order for so many tons of hay. Of course, we must grade our hay. Then the agent could keep a sample of each grade and the purchaser could tell him which hay he wanted. In this way, our hay could be sold much more satisfactorily to us. Don’t think this would keep us from selling on the outside. We could report to the agent that we had sold so much hay to Mr. Wilson of Alabama, and he could give us credit for so much hay sold, and in this way he would know how much hay we still had on hand and where he could get hay to sell. Another thing; if we form such an organization and appoint our agent, this agent can go about over the country and take orders for our hay; he can go to the mill men around the country, in North Louisiana and Arkansas, people who use a great deal of hay, and get orders and make business for us in that way. From a farmer’s standpoint, it seems to me this is the only economical way it can be done. As it is, we plunge about and try to sell our hay. Mr Smith goes to Arkansas and tries to sell his hay; I go to another
point and try to sell my hay. If we had an association, we could both turn our hay over to the association and it would be sold by the agent. I know all the hay that can be raised in this vicinity can be sold in North Louisiana and South Arkansas. We only want to get the people to using it. A great deal has been said about lespeza and its merits. We all know it has very many merits. I find it is the very best hay I have ever used. It is better than alfalfa, because it doesn't overdose the horse. The animal can digest it better than alfalfa. I also find it is better than timothy.

As I have said, it seems to me that marketing hay can only be accomplished in the way I have suggested, if we only have sense enough to form the association. Excuse me for putting it that way, but every farmer has his own idea. He thinks he knows more about growing a crop and marketing it than anybody else. He never knows anything until he travels around the country and learns something. The first thing the farmer thinks about is the cost. I don't think it would cost over 10 cents a ton to handle our hay in that way. It certainly would not cost over 25 cents a ton.

Another thing this agent can attend to and that is the transportation. If he gets an order for a carload of hay, he communicates with me and I have nothing to do with the railroad. He can get rates on hay and see after all that part of it. He can also make the collections, taking a certain percent, which would be the cost of handling the hay per ton.

There is another thing we have to contend with in the early part of the season; that is the negro farmers and others who flood the early market. As soon as they cut their hay they bring it to market, and the liverymen and others deal with such people as they please. They purchase their hay at a very low price. Now, if we had an association we could take these small farmers' hay into it. After awhile, we could show them the importance of having such an association. Or, we could purchase their hay and turn it over to the association. The best part of the hay season is in February and March, because the demand is stronger at that time. The small quantities that have been bought will have been exhausted then and a good price can be obtained.

We come back then to what the farmer should do before he
has any hay for sale. I have decided how it should be cured. There is not a man here who hasn’t just as decided views. The question is which way is the best and most economical. One gentlemen tells me it costs him $8.00 a ton before it reaches the market. My hay costs me about $2.25 when it reaches my barn, pressed. I cut my hay as fast as I can when the dew is sufficiently off the grass to allow my mower to work. Just as fast as I can, I cock it up in cocks of about 300 pounds. I cover it with tarpaulins and leave it covered. I leave it in the cocks about four or five days; leave it to go through the sweat right there, with the result that I have no bad hay; it is not burned; it remains green and animals consume it very readily. After that is done, I press it as rapidly as I can. Some use a side-delivery rake, but there is the danger of being visited by a storm, and if we have a hot sun it is going to be injured. It costs me about $2.25 a ton to cure the hay in the way I have stated.

If you have hay in that shape and you report it to your agent he can then recommend that hay. The thing is to have good hay to offer for sale.

Col. I. C. Terry, in answer to questions by members of the association.

My tarpaulins are ten feet square. They cover three to five hundred pounds. The cocks are about six feet high. I put about two pounds of pebbles in each corner of the tarpaulins and in this way hold them on the cocks. They are made of eight-ounce duck, or lowells, which costs about 7½ to 9 cents per yard. It can be bought in bales for about 8 cents. You don’t want them oiled. They look very thin, but the moment the rain begins to fall they swell and form a perfect covering. I begin harvesting my hay about the middle of August. The tarpaulins cost about $1.25. You can use them every week; about eight times in a season. I use about two hundred tarpaulins on two hundred acres, or one tarpaulin to the acre. They will last seven or eight years. I am very careful, however, with them. You should not allow them to get wet and neglect them. They will dry out on the cock, but don’t let them get bundled up, for they will rot. The cost of the tarpaulins is about 10 cents per ton of hay for the first year.

I have often been asked how lespedeza compares with timothy as a commercial crop. It is sufficient answer to say that...
SHOWING THE USE OF HAY CAPS IN CURING LESPEDEZA AT THE EXPERIMENT STATION, BATON ROUGE.
farmer can raise twice as much lespedeza as timothy to the acre. This I know, as I was raised on a farm where timothy was the principal hay crop.

In my experience I found that a stick and a string really furnish the best anchorage for fastening hay caps with the least trouble of anything that I tried. I take a stick about three-quarters of an inch in diameter and fifteen inches long, sharpened at both ends and tied with a good strong cord in the middle, leaving about 2 1/2 or 3 feet of the cord free. When the caps are stretched on the hay cock, grasp the stick in the hand about the center and thrust it an arm's length under the hay cock, carrying the stick parallel with the ground. Raise the stick so one end goes into the hay cock and push the other slightly into the ground, slanting the top of the stick a little toward the outside of the hay cock. Then withdraw the hand and push the hay down on the stick, and pass the other end of the string through the eyelet in the corner of the hay cap, drawing it slightly so as to stretch the hay cap a little. I found that this avoids the necessity of carrying much weight and the strings don't become entangled and the covers are not injured and the caps and sticks, with their strings, can be picked up much more readily than where weights are used to hold the caps down.

W. R. Dodson.

GRADES OF LESPEDEZA HAY.

The following are the grades of lespedeza hay recommended by the Louisiana Lespedeza Growers' Association:

Choice lespedeza hay shall be lespedeza not mixed with over one-twentieth foreign growth, properly cured, bright natural color, sound and well baled.

No. 1 lespedeza hay shall be lespedeza with not more than one-eighth mixed with foreign growth, properly cured, good color, sound and well baled.

No. 2 lespedeza hay shall be lespedeza not good enough for No. 1, not over one-fourth mixed with foreign growth, fair color, sound and well baled.

No. 3 lespedeza hay shall include all hay not good enough for other grades, sound and well baled, provided that no hay shall be termed lespedeza unless it contains at least 50% of lespedeza.

No-grade hay shall include all hay badly cured, stained, threshed, or from which the seed have been removed, or is in any way unsound.

The above names and descriptions of grades were recommended for general adoption after every feature had been fully discussed by the Louisiana Lespedeza Growers' Association in annual meeting at Monroe, La., June 28, 1911.

It is hoped that all growers will try to conform to the standards thus recommended, and aid in establishing a classified market for lespedeza. If this is done it will no doubt result in great benefit to the industry, especially in extending the market for this kind of hay.