Issued May 2, 1911.

U. S. DEPARTMENT OF AGRICULTURE.

FARMERS' BULLETIN 441.

LESPEDEZA, OR JAPAN CLOVER.

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AND

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WASHINGTON:
GOVERNMENT PRINTING OFFICE.
1911.

LETTER OF TRANSMITTAL.

U. S. Department of Agriculture,
Bureau of Plant Industry,
Office of the Chief,
Washington, D. C., February 14, 1911.

Sir: I have the honor to transmit herewith, and to recommend for publication as a Farmers' Bulletin, the accompanying manuscript, entitled "Lespedeza, or Japan Clover."

The lespedeza plant, which was accidentally introduced into the United States about sixty years ago, has now spread over all the Southern States and northward into Kansas and Pennsylvania. Over all of its area it is highly esteemed as a constituent of pastures, and in the lower Mississippi Valley grows so luxuriantly that splendid crops of hay are cut.

This bulletin is based on manuscripts prepared independently by Mr. A. D. McNair, of the Office of Farm Management, and Mr. W. B. Mercier, of the Office of Farmers' Cooperative Demonstration Work, both based on experience and study of the plant in the lower Mississippi Valley. These two papers have been combined and edited by Mr. C. V. Piper, Agrostologist in Charge of Forage-Crop Investigations, and some material concerning the behavior and value of lespedeza in other States has been added.

On account of the high value of lespedeza in a comparatively limited region, a great deal of interest in the crop has been excited over the whole area where it grows. This bulletin is designed to meet the increasing demands for information, and it is also hoped that it will be of much practical value in the region where the crop is at present most utilized.

Respectfully,

Wm. A. Taylor,
Acting Chief of Bureau.

Hon. James Wilson,
Secretary of Agriculture.

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LESPEDEZA, OR JAPAN CLOVER.

INTRODUCTION.

Lespedeza, or Japan clover (*Lespedeza striata*) (figs. 1 and 2), is a native of eastern Asia that was first found in this country in central Georgia in 1846. It has spread since then so that it now covers more or less abundantly the whole area from central New Jersey westward to central Kansas and southward to the Gulf of Mexico (fig. 3). There is reason to believe that it has now reached nearly the limits over which it will spread naturally. A common belief exists in the South that the plant was first introduced during the Civil War. This is erroneous, though it is doubtless true that the spread of the plant was greatly increased during that struggle by the movements of cavalry.

Lespedeza is a summer annual that begins its growth in the middle part of spring but does not reach maturity until September and October. It is sometimes confused with the yellow-flowered hop clovers, but is readily distinguished by its purplish blossoms, which do not appear till August or later, while the hop clovers bloom early.

Over most of its area lespedeza grows only 4 to 6 inches high, and there has thus arisen the common idea that it is adapted only to grazing. Under favorable conditions, however, especially in the lower Mississippi Valley on certain soils, the plants grow commonly to a height of 12 inches, frequently reaching 18 inches, and in exceptional cases 24 to 30 inches. Where the stand is very thin the plants have a prostrate habit, but where it is thick they grow upright, and the yield of hay from such plants is large, often exceeding 2 tons per acre and exceptionally reaching 3 or even 4 tons per acre (fig. 4).

Under such conditions lespedeza is a crop of very high value, which has become more and more appreciated in late years, so that many farmers now employ it in regular rotations. It is not improbable that a wider knowledge of the merits of the crop will cause it to be more generally cultivated and perhaps over a considerably wider area.

Lespedeza grows during practically the same season as certain other leguminous forage crops; i. e., cowpeas, soy beans, velvet beans, and beggarweed. Its desirability in any particular place will depend upon its ability to compete with the above-mentioned crops.

LESPEDEZA FOR PASTURAGE.

The value of lespedeza for grazing was early recognized, and it has been looked upon with high favor as a constituent of pastures. It grows in all types of soil, even the poorest, and thus furnishes a considerable quantity of forage in pine barrens and in gravelly soils where scarcely any other plants grow. The natural spread of the plant has made it a constituent of practically every pasture in the region covered by its distribution. Everywhere it is valued for its ability to grow in very poor soils, either in fields or in open woodlands, and to withstand severe drought. Its value depends upon its palatability, its high feeding value, which approaches alfalfa, and

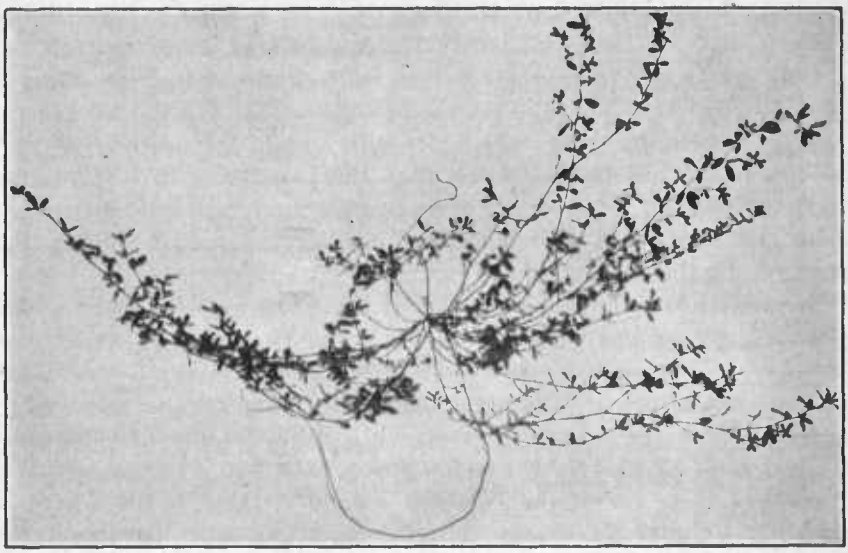

FIG. 1.—A plant of lespedeza, showing the character of growth where the stand is thin.

its ability to thrive under all sorts of conditions, and thus to furnish pasturage in the summer and fall till killed by frosts. It will withstand almost any amount of grazing. In no sense can it be considered a weed, as it quickly succumbs to cultivation. Like other clovers, it sometimes causes horses and mules to "slobber."

The best pastures in the South are perhaps those which in summer consist of Bermuda grass and lespedeza. With the addition of redtop and bur clover, sweet clover, or hairy vetch, such pastures can be grazed the year around, the Bermuda grass and lespedeza growing in summer, the others mostly in winter. In poor or mixed pastures lespedeza commonly holds its own with broom sedge and similar coarse grasses and unquestionably adds materially to the grazing. It is perhaps no exaggeration to state that it has increased the carrying

capacity of practically all the pasture land of the South by at least 25 per cent.

Lespedeza reseeds itself so readily that it is rarely necessary to sow it on pasture lands. This, however, is often desirable in a new pasture or in old pastures where for any reason the plant does not

FIG. 2.—A plant of lespedeza, showing the upright growth made where the stand is reasonably thick.

occur. It occasionally happens that the lespedeza seeds sprout unusually early owing to favorable weather, and the plants are killed by late frosts. Such pastures may be reseeded simply by scattering the seed over the top of the sod, but with better results after scratching with a harrow. New pastures should be seeded early in the spring, preferably in February in the southern tier of States and later northward. Seedings up to the middle of April in Louisiana

have given satisfactory results. An excellent stand is frequently secured simply by spreading the manure from stock fed on ripe hay or by allowing the animals to run freely from one pasture to another when the seeds are ripe. Sometimes hay with ripe seeds is scattered over the high points of pastures in which lespedeza is desired, the winds and rains spreading the seeds over much of the field. The seed will live over in the soil at least one year, so that fairly good stands may be expected after only one season of clean tillage. It is not wise, however, to rely wholly on such voluntcer growth.

LESPEDEZA AS A FARM CROP.

Until comparatively recent years lespedeza was utilized mainly as a pasture crop, though in certain sections the taller growths were cut

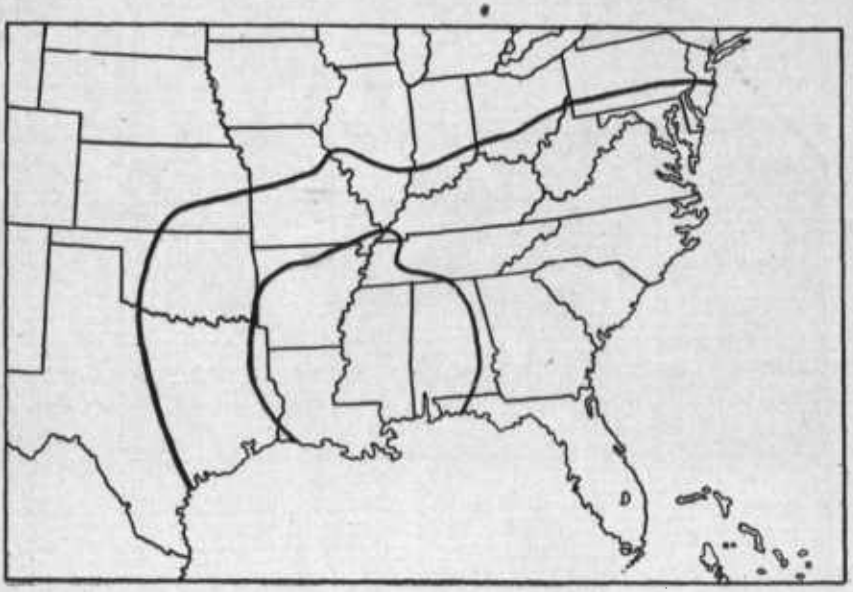

FIG. 3.—Map of the southeastern part of the United States showing the approximate area over which lespedeza is now naturalized and within which (the smaller area) it is cut for hay.

for hay. At the present time, however, it is becoming more and more used as a regular farm crop, the seed being sown when the crop is desired, according to the particular rotation employed. On favorable soils or with good treatment it gives high yields, making it a most profitable crop. The experiences of farmers, as well as experiments, have developed many different methods or rotations in which the crop can be employed. The most important of these are here discussed.

Lespedeza, like other legumes, extracts nitrogen from the air through the bacterial tubercles or "nitrogen balls" on the roots.

Owing, perhaps, to the occurrence of numerous American species of this plant, lespedeza is nearly always naturally inoculated. It is advisable, however, when planting it for the first time in new soils to provide inoculation either by the use of pure cultures or by the soil-transfer method.[1]

BERMUDA GRASS AND LESPEDEZA.

Lespedeza is very commonly a constituent of Bermuda-grass meadows, and probably the first lespedeza cut for hay was in such a mixture. The admixture of lespedeza in Bermuda grass is in every way desirable. While it does not add, perhaps, to the yield of hay, it

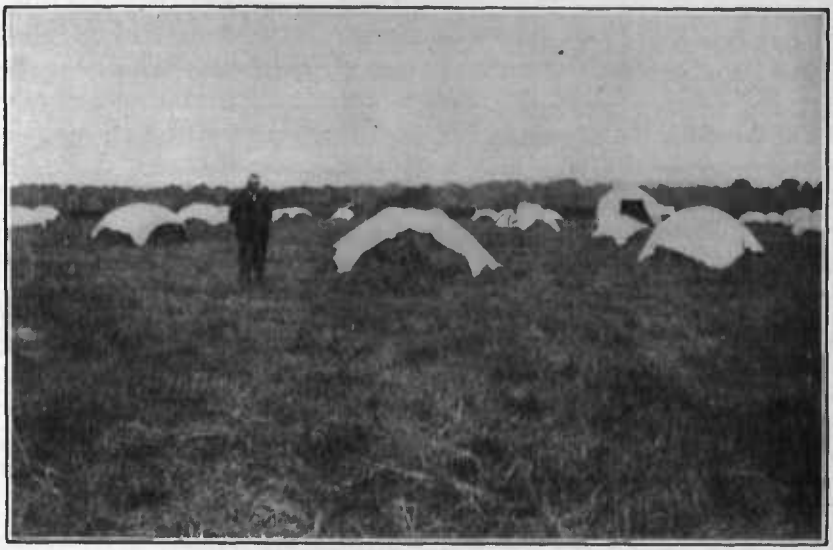

FIG. 4.—A corner of a lespedeza hayfield at Monroe, La., showing haycocks with canvas covers. This farm produced 300 tons of hay from 115 acres in 1907.

materially improves the quality. Such a meadow may persist for years, but eventually the ingress of weeds reduces its value. It is seldom necessary to sow the lespedeza, as it usually finds its way into the Bermuda-grass meadow quickly.

REDTOP AND LESPEDEZA.

Redtop makes an excellent combination with lespedeza in the same field, yielding a crop of each every year. The redtop is preferably sown in the fall and the lespedeza on the same land the following February. The redtop is cut about June 1, at which time the clover is only 3 to 4 inches high. Following the cutting of redtop, the lespedeza occupies the ground exclusively until September or October,

[1] See Circular No. 63 of the Bureau of Plant Industry, entitled "Methods of Legume Inoculation."

when it is likewise cut for hay. The redtop, being perennial, comes again the following year, while the lespedeza reseeds itself. Each crop reproduces indefinitely with proper management or until broom sedge creeps in, which occurs usually about the third year. It then becomes necessary to break the land and plant something else.

In some of the valleys of western Arkansas only the redtop is sown, the lespedeza growing as a volunteer crop. Grown in this way, the lespedeza is free from mixture at cutting time, and is of high quality, at least as long as the broom sedge does not appear.

The cutting of the redtop should not be delayed too long, as it results in an inferior quality of hay, and is apt to decrease the yield of lespedeza hay.

The crops of redtop and lespedeza succeed best on bottom lands where there is plenty of moisture and even where it is too wet for corn and cotton.

The combination of redtop and lespedeza is different from that of Bermuda grass and lespedeza previously mentioned, for the reason that the Bermuda grass and lespedeza have the same season of growth, and the hay produced is a mixture of the two, whereas the redtop-lespedeza combination yields first a cutting of redtop and later in the season a cutting of practically pure lespedeza hay.

OATS AND LESPEDEZA.

The combination of oats and lespedeza is quite commonly employed by progressive farmers. The seed of lespedeza is sometimes sown with the grain in the fall, but it is preferable to wait until February or March. In sowing, 15 pounds of seed per acre is sufficient, though 25 pounds is often sown. It is advisable to harrow the seed in lightly after sowing. With proper handling, such a rotation can be continued several years without resowing the lespedeza. For this purpose good results may be obtained on some soils by disking the lespedeza stubble rather than plowing.

For example, Mr. Guy P. Stubbs, of Ouachita Parish, Louisiana, had a large acreage of lespedeza in 1907, which was harvested, and the land plowed and sowed to oats in October and November. The oats were cut about June 1, 1908, giving a yield of 35 bushels per acre. When the oats were cut, the volunteer lespedeza was about 4 inches high, and this, when harvested, yielded 2 tons of cured hay per acre. Assuming the oats to be worth 60 cents a bushel and the hay $14 a ton, there was produced $21 worth of oats and $28 worth of hay, a total value of $49 per acre.

Perhaps in no case does this rotation represent the entire system of farming on any particular farm, but it is a feature of many farms. It is fairly common in parts of Louisiana and Mississippi, but is not

permanent on any one farm. Sooner or later, corn or cotton or both occupy the land for a season. This is due to the fact that it is a rotation without an intertilled crop and permits the multiplication of weeds, particularly broom sedge and ragweed.

CORN, OATS, AND LESPEDEZA.

A three-year rotation of corn, oats, and lespedeza has much to commend it. Corn is harvested the first year, oats and lespedeza the second year, and the lespedeza alone the third year. Sometimes the lespedeza is allowed to reseed itself and is harvested the fourth year. Such a system is used by Mr. Jacob Grewe, of Ouachita Parish, Louisiana. In the fall of 1908 Mr. Grewe sowed 55 acres of Monroe sandy loam soil[1] to winter oats, and in February, 1909, sowed lespedeza in the oats. The oats were cut about June 1, yielding 1,400 bushels, or about 25½ bushels per acre. Mr. Grewe states that his second year's crop of lespedeza is usually better than the first, and yields 2 to 3 tons per acre on good land.

This three-year rotation is really part of a four-year rotation in which cotton should be included, especially in those sections not yet infested by the boll weevil. In Mr. Grewe's case he omitted the cotton, not because it did not fit into his system, but because the boll weevil had done so much damage that he was content to drop cotton and plant something else.

This rotation permits the farming of much more land than corn and cotton alone. The additional work of harvesting oats is quickly performed and the extra work of harvesting lespedeza comes in the fall when it does not interfere with other work. If there is any interference, the cutting of lespedeza can be delayed without serious injury, provided only that it is cut before it is injured by frost.

This sequence of crops, moreover, is well calculated both to improve the land and to increase yields. Lespedeza is comparable with cowpeas as a fertilizer and occupies the land two seasons out of three. This rotation also checks soil erosion, because the fields are covered with oats one winter and with lespedeza stubble two winters out of the three.

COTTON, CORN, OATS, AND LESPEDEZA.

A rotation of cotton, corn, oats, and lespedeza, which is followed by Mr. Kenneth McKay, of East Feliciana Parish, Louisiana, may be either a four-year or a five-year rotation, depending on whether the lespedeza stands two years or three years. It calls for more comment and discussion than the preceding systems, because it embraces the

[1] For a description of Monroe sandy loam, see the Fifth Annual Report of the Bureau of Soils, 1903, pp. 419–438.

leading crops of the South. Any cropping system designed for the cotton belt and embracing lespedeza should, if possible, include the two crops which are most important in that region, viz, cotton and corn. As a four-year rotation this is outlined in detail in the following table:

TABLE I.—*A four-year rotation of cotton, corn, oats, and lespedeza.*

Year.	First field.	Second field.	Third field.	Fourth field.
First	Cotton	Corn (with cowpeas between the rows).	Oats, followed by lespedeza.	Lespedeza.
Second	Corn (with cowpeas between the rows).	Oats, followed by lespedeza.	Lespedeza	Cotton.
Third	Oats, followed by lespedeza.	Lespedeza	Cotton	Corn (with cowpeas between the rows).
Fourth	Lespedeza	Cotton	Corn (with cowpeas between the rows).	Oats, followed by lespedeza.

Provision is here made for five crops in four years (six crops, if the cowpeas are counted), as follows:

One money crop—cotton.

Two cereals for money or feed—corn and oats.

Two hay crops for money or feed—lespedeza.

A pasture or fertilizing crop—cowpeas.

Lespedeza is also a fertilizing crop. Thus three years out of four the land is provided with crops that provide humus and nitrogen.

In this system only half the land is in intertilled crops, corn and cotton, the other half being devoted to oats and lespedeza. This has an important bearing on the acreage that can be farmed. Where cotton and corn are the only crops or almost the only crops grown it means a small acreage for each man and for each horse, because all or nearly all the land that is cropped must be intertilled.

It is entirely practicable, if desired, to abandon the lespedeza at the end of the third year and plant cotton the fourth year, making it a three-year rotation.

The leading advantages of the rotation just described over the plan of growing cotton and corn exclusively are as follows: (1) It enables the farmer to farm more acres per man and per horse; (2) it enriches the soil, thereby increasing the yield per acre of every crop; and (3) as a result of the foregoing advantages the farmer's income is greatly increased.

It is interesting to compare the four-year rotation just outlined with that well-known three-year rotation of cotton, corn with cowpeas, and oats followed by cowpeas. The rotations are similar. Substitute lespedeza for cowpeas in the third year, and let the lespedeza perpetuate itself so that it can be harvested the fourth year, and we have exactly the four-year rotation here presented.

One notable advantage of the lespedeza over the cowpeas is that the lespedeza involves no labor immediately after oat harvest, whereas the oat stubble must be either plowed or disked to prepare for planting cowpeas. The period of oat harvest (late May and early June) is a time when farmers are busy cultivating their crops of cotton and corn, and are particularly crowded if the season is wet; hence, there is little time to prepare land and plant cowpeas. But if lespedeza is sown on the oat field in February it will usually be about 3 inches high at oat harvest.

LESPEDEZA IN DAIRY-FARM ROTATIONS.

An excellent rotation for a dairy farm in which lespedeza can be used for hay and also for pasture is as follows:

TABLE II.—*A four-year rotation for a dairy farm, with lespedeza for hay and pasture.*

Year.	First field.	Second field.	Third field.	Fourth field.
First	Corn (with cowpeas between the rows).	Soy beans[1]	Oats Lespedeza	Lespedeza.
Second	Soy beans or Spanish peanuts.[1]	Oats Lespedeza	Lespedeza	Corn (with cowpeas between the rows).
Third	Oats Lespedeza	Lespedeza	Corn (with cowpeas between the rows).	Soy beans or Spanish peanuts.[1]
Fourth	Lespedeza	Corn (with cowpeas between the rows.)	Soy beans or Spanish peanuts.[1]	Oats. Lespedeza.

[1] Peanuts may be substituted for soy beans in this rotation, in which case the peanuts may be used as cow feed or hog feed, or both, or may be sold as a money crop.

A farm of 60 acres divided into 4 fields of 15 acres each and cropped according to this plan would furnish all the hay and grain needed for 3 work horses, 16 cows in milk, and enough hogs to make 1,000 pounds of live pork, and would supply 5 to 10 tons of surplus hay for sale. This is on the assumption of a yield of 40 bushels of corn per acre, 20 bushels of soy beans and 1 ton of soy-bean hay per acre, 40 bushels of oats per acre, and 2¼ tons of lespedeza hay per acre.

Such yields could not be looked for the first season unless the land was very good, but the practice of this rotation, together with the manure produced on such a farm, would soon bring it to this standard with only a moderate use of commercial fertilizers. In addition to the hay and grain produced, this farm would furnish half the pasture needed for the live stock. The other half might be obtained from a permanent Bermuda-grass pasture, which could be provided separate and apart from the rotation outlined.

For pasture purposes, a rotation of crops embracing lespedeza is superior to one embracing only the larger annual legumes, like cowpeas, peanuts, and soy beans. Alfalfa is more productive, but is

scarcely suitable for short rotations and is not so generally adapted to southern soils. Soy beans, peanuts, and cowpeas fit nicely into various rotations, but they are not pasture plants except for hogs, and even then principally for their grain. Lespedeza, however, is good for both hay and pasture, and its pasture season includes the months from May to October, inclusive. It can be grazed all the season and come again the next year; it can be grazed until June, and will then make hay in the fall; or it can be cut in August and grazed the rest of the season and still make seed to renew the stand.

HARVESTING LESPEDEZA.

The date of harvesting lespedeza will depend upon whether the crop is for hay or seed or both. The plants usually begin to blossom in late summer, and it is the common practice to cut for hay in October, after some of the seeds are mature. Where it is desirable to have the crop reseed itself, some of the seeds must be allowed to mature, which can be accomplished in several ways: (1) The crop may be cut early, not later than the time the first blossoms appear, in which case a new growth starts from the stubble and matures seed before frost; (2) the crop may be cut after some of the seeds have matured, enough being shattered in mowing and handling to seed the land for the succeeding crop; and (3) the mower may leave narrow strips of the plants uncut at each round.

Isolated plants of lespedeza have nearly prostrate, spreading branches which are too near the ground to be mowed but which bear seed abundantly. When, however, the plants are tall and crowded, they grow perfectly erect with nearly erect branches and no seeds are produced near the ground. It is quite easy to tell from the appearance of a field mown before any seed is ripe whether a succeeding crop may be expected. If there are prostrate branches in the stubble, the number of these will determine whether enough seed will be produced to renew the stand.

YIELDS OF HAY.

Lespedeza is commonly harvested with an ordinary mowing machine, and it is usually not profitable to cut for hay unless the height is 8 inches or more, for if shorter the hay is very difficult to rake.

The lespedeza plant contains less water than any other cultivated legume, so that it is not difficult to cure. It cures more easily and quickly than red clover, alfalfa, or cowpeas, though not as quickly as timothy. It must not, of course, be stored or baled too soon, else it will heat and mold like other hay plants.

In good haying weather mowing can begin as soon as the dew is off, and the lespedeza can be raked into windrows the same day. It

should stand in the windrows at least a day and then be put in small cocks until cured.

On the lands best adapted to the growing of lespedeza, yields of 1½ to 2½ tons per acre are common. Such land normally yields 30 to 35 bushels of oats per acre. Where lespedeza grows with its accustomed thickness to the height of 8 or 9 inches, a yield of a ton to the acre may be expected, allowing 2 inches for the stubble. A height of 12 to 14 inches will give approximately 2 tons per acre, and at its extreme height of 24 to 30 inches maximum yields of 4 tons or even more have been reported.

HARVESTING FOR SEED.

Seed of lespedeza is at present harvested mostly in Louisiana and to a less extent in Mississippi. For this purpose the crop is mown before frost, when the larger part of the seeds have matured but the plants are still green. It should be raked immediately after mowing, or when it is wet with dew, so as to prevent shattering and to permit it to cure entirely in the windrows. More commonly, however, the newly cut lespedeza is put into small cocks called "pats." These pats are so small that they will dry out even if rained on. A few growers are using bunching attachments to the mowing machines which automatically leave the crop in small bunches. When thoroughly dry the crop is put in the barn or stack, or even thrashed directly from the field. For hauling, the wagon should have tight wagon frames or else have sheets spread over the bottom so as to catch the loose seed. Much care should also be taken in unloading from the wagons, as otherwise much seed will be lost.

For thrashing the straw should be thoroughly dry, as otherwise much trouble is experienced on account of the mucilaginous nature of the plants. After thrashing, the seed should be spread out rather thinly on the floor to dry. Much depth should be avoided, as otherwise the seeds are likely to heat and become moldy. For commercial purposes the seed should be run through a fanning machine for recleaning, but for farm purposes may be used as it comes from the thrasher. Good seed recleaned but unhulled weighs about 25 pounds to the bushel. Practically all the seed on the market is unhulled. (See fig. 5.)

For home use usually sufficient seed can be obtained from the bottom of the hay mow, especially if the hay is cut after a considerable portion of the seeds have ripened.

A cheap and easy method of saving seed for home use, though some growers use the same method in saving seed for the market, is what is known as the pan method. A galvanized iron pan is attached to the rear of the cutter bar of the mowing machine and extends about

2½ feet back, being as long as the bar itself. Small iron rods extend across the pan in the direction of the line of motion. A man walks behind and as the lespedeza falls on the iron rods he rakes it off, letting it fall on the ground. In this operation considerable seed shatters into the pan and is removed when the pan is full. This is afterwards cleaned with a fanning mill. (See fig. 6.)

It is usually best to utilize the comparatively short crop grown on hill lands for gathering seed, as there is much less straw to thrash and the seed yield is usually as great or greater. Furthermore, where the plants are tall the large yield of hay makes it more valuable than the seed crop would be.

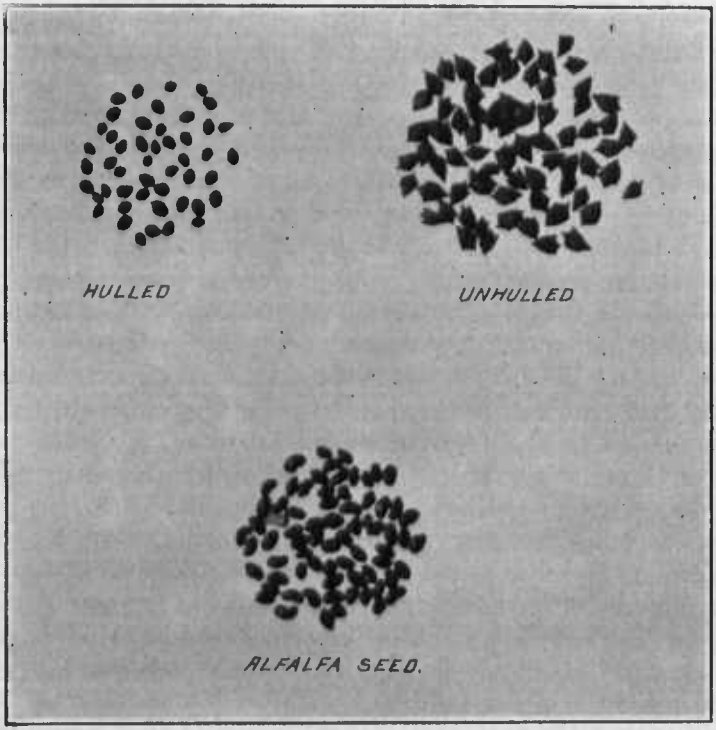

FIG. 5.—Seed of lespedeza and alfalfa, showing relative sizes.

The yield of seed varies from 5 to 12 bushels per acre and commonly commands a price of $3 to $3.50 per bushel. At the present time the demand is greater than the supply. The straw from thrashed lespedeza has considerable value as feed and it is not uncommonly baled for this purpose.

POSSIBILITY OF EXTENDING THE LESPEDEZA-PRODUCING AREA.

Figure 3, page 8, shows the approximate area over which lespedeza now occurs naturally and also the area within which it is cut

for hay. It is a matter both of interest and of importance to determine whether this area can be extended to embrace at least all the cotton belt. The eastern half of the cotton belt differs from the central part scarcely at all in climate, but does differ greatly in soils. Lespedeza grows especially well in the lower Mississippi Valley on the black lands and on soils composed largely of silt. On the black soils alfalfa often thrives luxuriantly. But even on lands that will not grow alfalfa well, lespedeza produces fine crops. On the other hand, in eastern Alabama, Georgia, South Carolina, and northern Florida lespedeza seems rarely to grow tall enough to justify cutting for hay. Whether the value of the crop would justify special treat-

FIG. 6.—Lespedeza pan, with top raised to show wires or rods between which the seed falls into the pan when the crop is harvested.

ment, as liming and manuring, in localities where other summer legumes like cowpeas, beggarweed, soy beans, and velvet beans are being grown successfully is doubtful. The question requires experimental investigation.

Northward it is hardly likely that lespedeza will ever be anything more than a grazing plant, the season being too short to allow the luxuriant growth attained in Louisiana and Mississippi.

One other factor may be important. Lespedeza is a variable plant, sufficiently so to justify the separation of the various types in the

hope that the best may grow large enough to yield hay crops over a wider area than is now suited to the plant.

Pending further investigations it should be borne in mind that the use of lespedeza as a hay crop is recommended only in the region indicated on the map (fig. 3), and that even within the area there shown the plant does not grow tall on the poorer soils, although it responds remarkably well to both manure and lime.

SUMMARY.

(1) Lespedeza, or Japan clover, introduced into the United States from Asia about sixty years ago, now occurs from New Jersey westward to Kansas and southward to the Gulf of Mexico.

(2) Lespedeza is an annual and is esteemed as a constituent of pastures, being especially valuable for this purpose on poor or thin soils where other plants do not thrive. It withstands drought well and matures seed under very severe grazing; hence, it is rarely necessary to resow it on pasture lands.

(3) Artificial inoculation with nitrogen-fixing bacteria is necessary only when the seed is first sown on new land.

(4) At the present time lespedeza can be recommended as a hay crop only on the fertile lands of the lower Mississippi Valley and on certain silt soils, where it frequently attains a height of from 12 to 30 inches and yields from two to four tons of hay per acre. Only one cutting of hay can be obtained in a season.

(5) In other regions lespedeza seldom grows more than 4 to 6 inches high, and under such conditions it is unlikely that the plant will be profitable for other than grazing purposes.

(6) With Bermuda grass lespedeza produces excellent pastures in the South, materially improving the quality of the hay without perhaps increasing its quantity.

(7) Under conditions where it thrives, lespedeza has increased the carrying capacity of permanent pasture lands of the South by at least 25 per cent.

(8) The lespedeza plant has a lower moisture content than any other cultivated legume and can be cured more rapidly than red clover, alfalfa, or cowpeas, though not as quickly as timothy.

(9) The present demand for the seed of lespedeza is greater than the supply. Under favorable conditions the yields are from 5 to 12 bushels of seed per acre, which command a price of $3 to $3.50 a bushel.

(10) In the lower Mississippi Valley the plant is being increasingly sown in regular rotation with excellent results.

(11) Alfalfa is more productive than lespedeza, but is scarcely suitable for short rotations and is not so generally adapted to southern soils.

(12) For pasture purposes in the lower Mississippi Valley a rotation embracing lespedeza is superior to one involving only the larger annual legumes, such as cowpeas, peanuts, and soy beans, lespedeza being excellent for both pasturage and hay, whereas the other legumes mentioned are not properly pasture crops.

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