

LIBRARY OF THE
Massachusetts Agricultural College
AMHERST, MASS.

UNIVERSITY OF KENTUCKY
COLLEGE OF AGRICULTURE

Extension Division

THOMAS P. COOPER, Dean and Director

CIRCULAR NO. 258

KOREAN LESPEDEZA

Lexington, Ky.

June, 1932

Published in connection with the agricultural extension work carried on by cooperation of the College of Agriculture, University of Kentucky, with the U. S. Department of Agriculture and distributed in furtherance of the work provided for in the Act of Congress of May 8, 1914.

I
ture,
succe
thoug
need.
alfal
has b

annu
ature
rathe
occu
plan
in h
long
form
Jep
crop
cont
grou
near
pod
or w
othe
whe

grow

CIRCULAR NO. 258

Korean Lespedeza

By RALPH KENNEY

Kentucky has need for a legume, both for hay and for pasture, that can be grown under varied soil conditions with more success than is attained with red clover and alfalfa. It is thought that Korean lespedeza in a large measure meets this need, for it is adaptable to conditions unsuited to clover and alfalfa. The crop has succeeded in every part of the state and has become a favorite for pasture or hay.

Description and Habits of Growth. Korean lespedeza is an annual legume. The seeds germinate at a slightly lower temperature than those of the clovers and alfalfa, but the plants grow rather slowly until early summer. The most rapid growth occurs in July, August and September. In thin stands the plants usually form a central stem varying from 8 to 24 inches in height, with numerous almost prostrate lateral branches as long as the central stem or longer. In thick stands few branches form and the plants grow to a height of 6 to 36 inches or more, depending on soil and season. When the stand is thick, the crop usually lodges if the height exceeds 12 inches, but growth continues. The small, purple flowers are borne singly or in groups of varying number, usually not more than seven, mostly near the ends of the small branches. Each seed is enclosed in a pod or "hull" in which it remains after falling from the plant or when the seed crop is threshed in the usual way. Unlike the other lespedezas, the leaves of Korean lespedeza do not drop when the plants mature or are killed by frost.

Korean is the earliest-maturing of all the annual lespedezas grown in this country and the most reliable and heaviest pro-

ducer of seed. In the most northern counties of the State the plants sometimes are killed by frost before they are completely mature. However, during the five years the crop has been grown there, enough seed always has ripened to provide for heavy reseeding. In southern Kentucky the plants always mature before killing frost occurs. Even under very close grazing, Korean lespedeza produces sufficient seed to assure a perfect volunteer stand the following year. Experience does not warrant a statement regarding the number of years that Korean lespedeza will continue to grow well by volunteer reseeding, but many fields have produced healthy and vigorous crops for four years after the original seeding.

Korean lespedeza is native to the Manchurian peninsula in eastern Asia. The plant was grown first in the United States from seed sent to the United States Department of Agriculture by a medical missionary in Korea. It has grown in Korea in a wild state for centuries but has never been cultivated there. The climate of its native country is about the same as that of Tennessee, Kentucky and Ohio, except that the rainfall there is only about half that of Kentucky. The first seed was sent to Kentucky from the United States Department of Agriculture in small trial lots in 1924. A few farmers in Shelby and Christian Counties obtained some of this, which was sown in rows and cultivated, to produce more seed. From that time on the state has each year sowed as much as was produced at home and some from outside sources.

Distribution. The approximate production of Korean lespedeza seed in Kentucky was as follows: 1925, 6 pounds; 1926, 60 pounds; 1927, 600 pounds; 1928, 6,000 pounds; 1929, 60,000 pounds; 1930, 600,000 pounds; 1931, 3,000,000 pounds. In 1931, 8,488 men sowed it, in 89 counties served by county agents. Practically all fields sowed in 1929, 1930 and 1931 are still occupied by the crop. This represents 200,000 to 300,000 acres, since most of it was sowed in mixtures at rates of less than ten pounds per acre. The distribution of growers in 1929 and 1931 is shown by the maps, Figures 1 and 2. Every county in the State has Korean lespedeza growers.

KENTUCKY

KOREAN DISTRIBUTION, 1929.

Countries with crossed lines have over 100 growers.
 Countries with parallel lines have 50-100 growers.
 Dots indicate individual growers.
 No record is available for countries blank.
 Approximately 60,000 pounds Korean seed sown 1929.

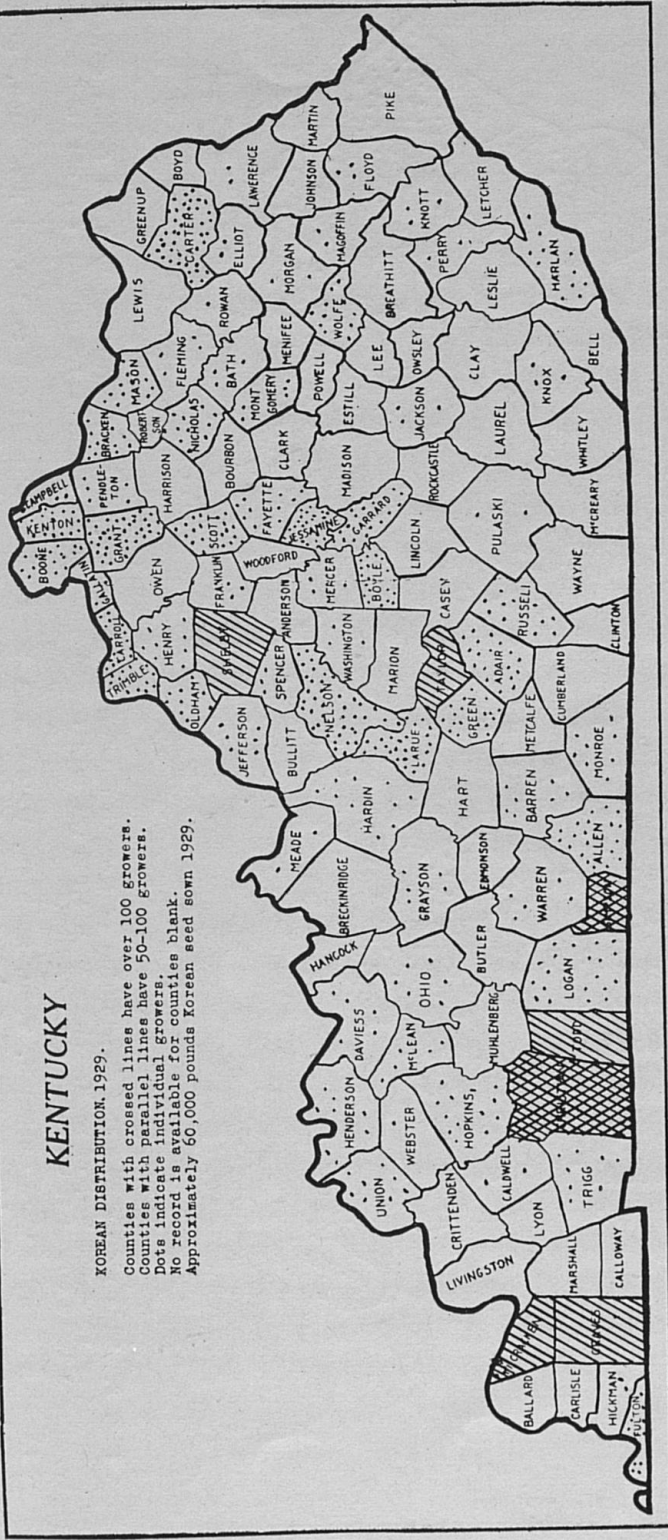


Fig. 1. This map shows the distribution of Korean sowing in Kentucky, 1929. More than 1,200 farms sowed the seed. At the same time over 2,000 men sowed Korean or common Lespedeza in approximately 25,000 acres of bluegrass pastures.

Leading counties in Korean sowing were Shelby 100,000 lbs., Todd 100,000 lbs., Christian 50,000 lbs., and Fayette, Graves, Nelson and Simpson over 25,000 lbs. each.

KENTUCKY

KOREAN DISTRIBUTION, 1931.

Countries in solid black have over 100 growers.
Countries with parallel lines have 10-70 growers.
Countries with crossed lines have 50-100 growers.
Dotted areas indicate additional growers.
No record available for quantities blank.
Approximately 1,000,000 pounds Korean seed
sown 1931.

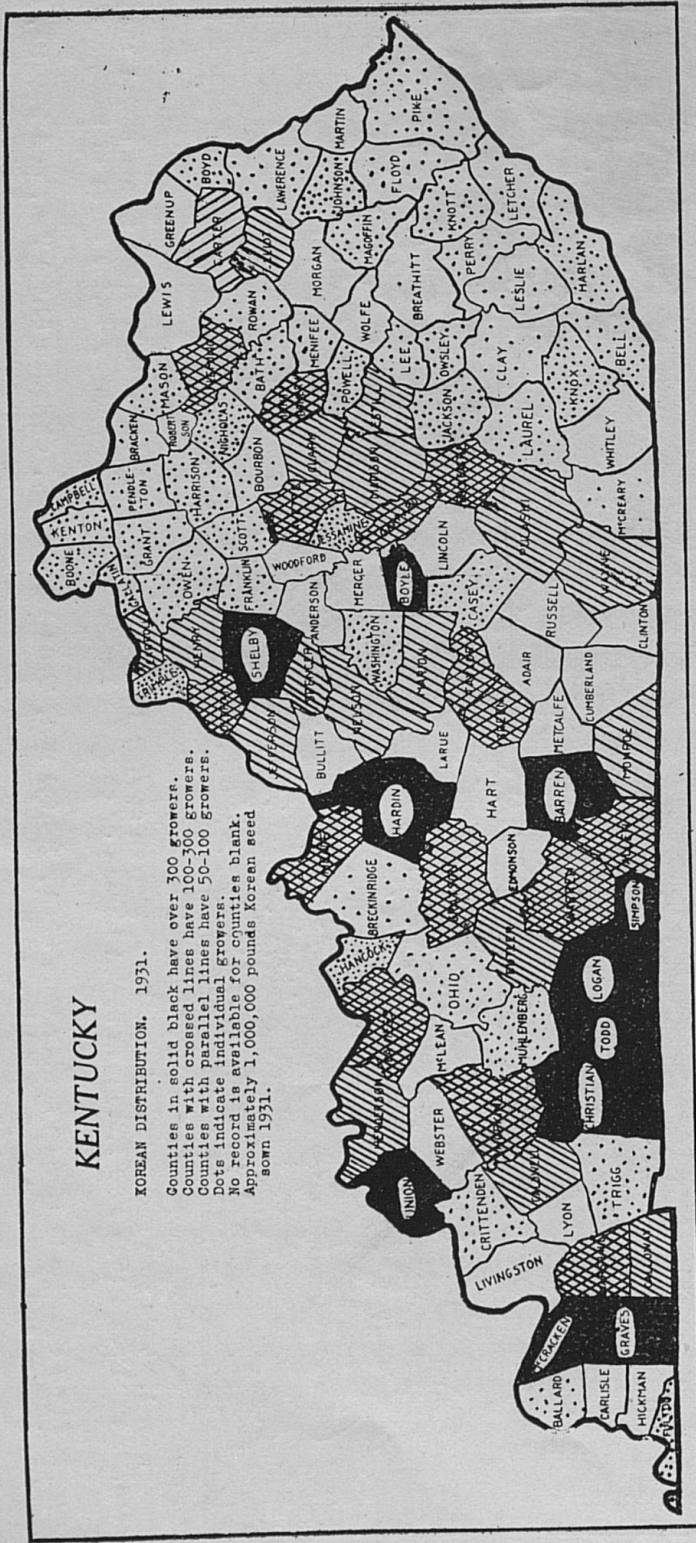


Fig. 2. This map shows the distribution of Korean sowing in Kentucky, 1931. Approximately 8,500 farms sowed approximately 1,000,000 lbs. of seed. More than 1,000 farmers sowed Korean or common Lespedeza on old bluegrass pastures and 1,500 sowed it on other old pastures.

Leading counties were Christian, Todd, Simpson, Union, and Henderson, with 60,000 to 100,000 lbs. each, and Shelby, Hardin, Barren, Logan, Graves and McCracken additional, having more than 300 growers.

Kore
and
use o
for h
ment
Stati

a po
field
lost
abili
hay
able

capa
in K
with
acid
Lan
prod

plan
gras
gras
whic
ada
or t
inte
sow
nite
pat

seed
goo
193

Economic Importance. Up to this time, 100,000 pounds of Korean lespedeza seed has been sown in each of five counties, and 30,000 pounds or more in each of five others. This large use of seed indicates that the plant is widely used in mixtures for hay and pasture. It's use is recommended by the Department of Agronomy, of the Kentucky Agricultural Experiment Station, in practically all hay and pasture mixtures.

The plant's habit of volunteer reseeding each year presents a possibility of improving the productivity of poor spots in fields where formerly, if the first seeding of grass or clover was lost over winter, no growth would appear except weeds. Its ability to produce good pasture on acid soil and frequently fine hay on lowlands, is of great advantage to farmers who are not able to lime for red clover, sweet clover or alfalfa.

Adaptations; Drouth Resistance. Korean lespedeza seems capable of growth under all conditions of soil and climate found in Kentucky. Failures to obtain stands are less frequent than with red clover and similar crops. Profitable growth is made on acid soils, altho the plant responds to the application of lime. Lands so wet that they can not be planted to corn until late produce large yields of Korean lespedeza.

Lespedeza is more likely to give a stand than other forage plants when sown on old pastures where bare spots and thin grass growth prevail. It is an ideal legume to sow with bluegrass when starting new sod. It adds much nitrogen to the soil which causes the Bluegrass to become so vigorous that, on soil adapted to the latter, the lespedeza is crowded out within two or three years. It is valuable for sowing with orchard grass intended either for pasture or seed production. When it is sown with timothy or redtop it maintains a stand perhaps indefinitely, and the grass growth is made larger. It grows in briar patches and in shade better than most weeds.

Because of its drouth resistance Korean lespedeza matured seed in nearly all localities in the drouth of 1930 and produced a good volunteer stand in 1931. It furnished much grazing in 1930 where as much as five pounds or more of seed per acre was

sown, whereas nearly all grasses and clovers perished in the drouth. Again, in 1931, many fields sown to mixtures that contained Korean lespedeza showed little or no survival of plants other than lespedeza. It seems quite evident that the centuries of wild growth in a dry region have made Korean lespedeza especially fitted to survive drouth conditions in Kentucky, such as the general drouth of 1930 and the drouth conditions that occur almost every year on poor spots and where rock is near the surface.

GROWING THE CROP

Time and Method of Sowing. The seed may be sown any time from February 15 to May. In 1931, several seedings that did not sprout until June 15, made good stands and matured seed by the end of the season. In one instance, lespedeza was sown in corn after the last cultivation and matured seed. More than ninety percent of the seedings in Kentucky were without any nurse crop.

Seed Bed. Stands have been obtained on all kinds of seed-beds. Sowing in small grain without stirring the ground before or afterwards is a common practice. Probably the poorest seed-bed is a plowed field. Where land has been disked and sown in oats, many consider it best to use a cultipacker before broadcasting lespedeza seed, and then to cultipack at right angles to the last working, after the seed is sown. Such work is more necessary as the season advances. However, when oats are sown very early, cultipacking may not be of value.

Inoculation. Frequently Korean lespedeza must be inoculated or the crop will be unsatisfactory. If the bacteria are already in the soil from growing common lespedeza or cowpeas, the Korean should do well from this natural inoculation. In northern Kentucky and in the mountains, inoculation is rarely present. To inoculate the seed it is advisable to use commercial culture. While the seeds are damp from applying the culture, it is a good plan to mix about a pint of well-pulverized soil from an old lespedeza field with each 25 pounds of the seed. This use of culture and soil is a double inoculation, and were one to fail

the other might succeed. Even in southern and western Kentucky, many failures to make good growth are due to lack of inoculation.

Rate of Seeding. For a full crop the first year, 20 to 25 pounds of seed per acre are generally required. Equally good yields, however, are frequently obtained with 10 to 15 pounds per acre. When sown in mixtures the usual rate has been 3 to 5 pounds per acre. Experience has shown that the use of more seed is profitable. Many growers have sown as little as 1 pound per acre mixed with grass and clover. This amount produced sufficient seed the first year to make a full volunteer stand the second year, even when the field was grazed.

On land "laid out," and on rolling gullied land that has not been plowed for several years, the bare spots should be seeded heavily. The better spots may be sown lighter, and at least a little seed scattered over all. In thin, worn, hilly bluegrass pastures, three to five pounds per acre should fill the bare spots, and add enough nitrogen, in a few years, that the bluegrass will spread out and cover the worn places and washouts. More than 1,000 Kentucky farmers sowed some variety of lespedeza, mostly Korean, on old bluegrass pastures in 1931 and more than 1,500 sowed it on old pastures of other grasses, mostly redtop, timothy and orchard grass. This method of improving pastures is the cheapest and surest at the command of farmers today.

Pasture. The growing season for all annual lespedezas is from midsummer until fall. Korean lespedeza is ready to be grazed from two to three weeks earlier than any other variety. Under favorable conditions the plants are three inches high by May 15, in the latitude 100 miles south of Cincinnati or anywhere west of Louisville, and by June 1 in the hills of northern Kentucky or anywhere in the State. After maturity Korean lespedeza retains its leaves until late winter and early spring. This provides winter grazing. All other annual lespedezas drop their leaves with the first killing frosts. Soils of medium fertility have carried 1,000 pounds of liveweight of stock per acre from June to October. Fertile fields carry two and three times this amount of stock in good seasons.



Fig. 3. The number of livestock on this Hereford breeding farm has been doubled because Korean lespedeza made more pasture.

Korean lespedeza promises to increase the grazing capacity of Kentucky pastures more than any other pasture crop. One farmer who handles purebred herefords in Union County has doubled his herd of livestock since first sowing it in 1929. This owner states that had he not been growing Korean lespedeza in 1930 he would have been out of feed and pasture because of the drouth and would have been obliged to sell his herd. Many herds of dairy cattle are being maintained today on pastures of Korean lespedeza. Hog and sheep producers are finding it profitable. Poultrymen are sowing it in yards intended for rotation in chicken pasture. The plants grazed or tramped into the ground continue to grow and mature abundant seed for the next year's stand.

For Hay. Wherever six inches of Korean lespedeza can be cut, the crop may be expected to produce a ton of hay per acre. Growth of 12 to 14 inches has made two tons and where knee-high, it has yielded 3 to 4 tons per acre.

Experience indicates that where Korean lespedeza is growing well, the hay crop should be harvested when the plants are

about ready to fall over. The lower leaves soon mold and decay where lodging occurs. Lodging usually occurs in August, and approximately coincides with the beginning of bloom. In 1928, 1929, 1930 and 1931, the first bloom in central Kentucky and around Bowling Green, Shelbyville and Louisville occurred August 13 to 15. Where lespedeza is mowed at this time new shoots are usually sent up which mature ample seed for the next year's stand. In many instances such crops may be grazed during September without seriously endangering reseeding. Some growers prefer this crop to be grazed early in the season, perhaps until July, then to harvest the succeeding growth for hay about September 1.

Where the crop does not lodge, lespedeza should be mowed in time for new shoots to mature seed. At Morganfield, in Union County, a field mowed September 3, 1930, reseeded abundantly. Growers will have to learn by experience the satisfactory and safe time to mow the crop. Growth and climatic conditions of the locality must be considered.

Korean lespedeza hay appears to be about equal to red clover hay but perhaps not quite so good as alfalfa hay at its best. Korean hay is much easier to cure than red clover, alfalfa or soybean hay. Mowed one day it is frequently ready to bale the next day. If wet it quickly dries and the leaves shatter less than those of any other variety of lespedeza, even less than leaves of alfalfa or soybean hay. With continued rains it does not discolor or spoil easily. Its harvest season is when rains are least apt to occur and when the surface of the ground is usually hot and dry, which aids in quick curing.

Hilltops within a few miles of Cincinnati yielded two tons per acre in 1931. In the mountains of eastern Kentucky, 1½ tons per acre have been harvested. On bottom lands in Union County, the crop has yielded 3 and 4 tons per acre. More than 250 men in Simpson County, on the Tennessee line, harvested Korean lespedeza hay.

Response to Fertilizers. Altho capable of making perfect stands and profitable growth on the poorest land, Korean lespedeza responds like other legume crops to fertilizer treatments.

One experimental project on the substation farm at Princeton, Kentucky, consists of various fertilizer and liming treatments in a rotation of corn, wheat and hay on limestone land. The hay mixture seeded in the spring of 1930 consisted of 5 pounds red clover, 3 pounds alsike, 4 pounds alfalfa and 3 pounds lespedeza (half Korean and half Common).

The drouth of 1930 killed most of the stand except Korean lespedeza which produced enough seed to give a good stand in 1931. The hay harvested in 1931 was almost wholly Korean lespedeza. The average yield for the untreated check plots was 1,850 pounds per acre. Superphosphate alone increased the yield 585 pounds per acre; one ton of limestone alone increased the yield 595 pounds, and one ton of limestone with superphosphate increased the yield 1,620 pounds. The average increase for one ton and two tons of limestone with superphosphate and potash was 1,684 pounds per acre. The average of 8 plots treated with varying amounts of limestone and hydrated lime of one-third ton and less, with superphosphate and potash, showed an increase of 1,935 pounds over the check plots.*

Lespedeza for Stopping Gullies. Farmers have expressed surprise at the vigorous growth of Korean lespedeza on worn washed land. Its ability to grow on subsoil and on steep land, even in the bottoms of gullies, provides a most practical way of holding land from washing. Innumerable instances have been noted where the lespedeza grew tall enough to lodge, on the subsoil around and in gullies, whereas, on top soil a few feet away, the plants were only 5 to 8 inches tall.

It has been said that lespedeza loosens the soil and causes washing. As a matter of fact, Korean lespedeza has been sown extensively in Kentucky on poor rolling land and in orchards inclined to wash, and has grown enough plant material to cover the ground and prevent washing. Spots where the first year's sowing does not produce a complete ground cover should be seeded again the next spring if a full stand is desired, for the seeds are produced so near to the ground that they have no

* Unpublished data from the Princeton Substation.

chance to spread. The steep sides of gullies should be sown after most of the heavy spring rains are past.

Lespedeza with Small Grain. In Kentucky the practice of sowing small grains in disked lespedeza stubble is just starting on an extensive scale. A prominent Bluegrass farmer states that this combination has produced a larger yield of cheap hay with less cost and more certain benefit to the soil than anything else in the past two generations of Kentucky farming. As heavy yields of small grain are obtained by this practice as by any other method of seed-bed preparation at the same time of year. The Korean crop seems to make a heavier yield because of the stirring of the soil. Weeds are held in control both by the disking and the harvesting of two crops a season. In addition, abundant seed is produced for a volunteer stand, either for grazing or for hay or seed. Approximately 100 Kentucky farmers sowed wheat, barley or rye last fall on disked Korean lespedeza fields. As many or more sowed oats on such fields this spring. In the spring of 1931, one grower in Union County prepared with a rotary hoe part of a field that was in Korean lespedeza the year before, sowed it in oats and harvested 36 bushels per acre. His lespedeza seed crop was heavier following the oats than on the remainder of the field that grew only volunteer Korean lespedeza. The weeds were cut on the portion without oats. The hay crop following oats was clean, whereas, even after mowing, the other part was very weedy. At present it is not known how many years this method of cropping may be repeated, but it has been done for three years, with yields as high the third year as the first. Present indications are that a tall stubble left from small grain protects the growth of lespedeza better than a short stubble. Most of such small grain will probably be cut for hay.

Growth of Lespedeza Amongst Weeds. Korean lespedeza has shown remarkable ability to thrive in competition with many kinds of weeds. Often it is found tall and vigorous in the midst of a heavy stand of smartweed, but it does not seem able to compete with a heavy growth of horseweed. Lespedeza cannot

be recommended as a crop to smother weeds but it competes more successfully with them than most grasses and clovers. When Korean lespedeza has been sown in small grain, growth of the grain checks weeds more than it does the lespedeza. Harvesting the grain removes a large part of the weeds.

In volunteer stands of Korean lespedeza two years old or older it is nearly always necessary to clip the weeds once or twice. Care must be taken not to cut off the tops of the lespedeza plants. This can be avoided by elevating the sickle bar or by mowing before the lespedeza has made much growth. Many hay and seed crops have been destroyed by not heeding this advice. One clipping of weeds about the time of red clover hay harvest is usually sufficient. The weed growth for the remainder of the season is best let alone.

Korean Lespedeza in Orchards. Korean lespedeza is being used in many large orchards in Kentucky, because of its ability to make stands, prevent erosion and improve productivity. In Henderson County, it is being extensively used in the large peach orchards. It is used in a 40-acre apple orchard in Rowan County. Thus far it seems to fill the requirements for a cover crop which reseeds itself without further expense after being once well started.

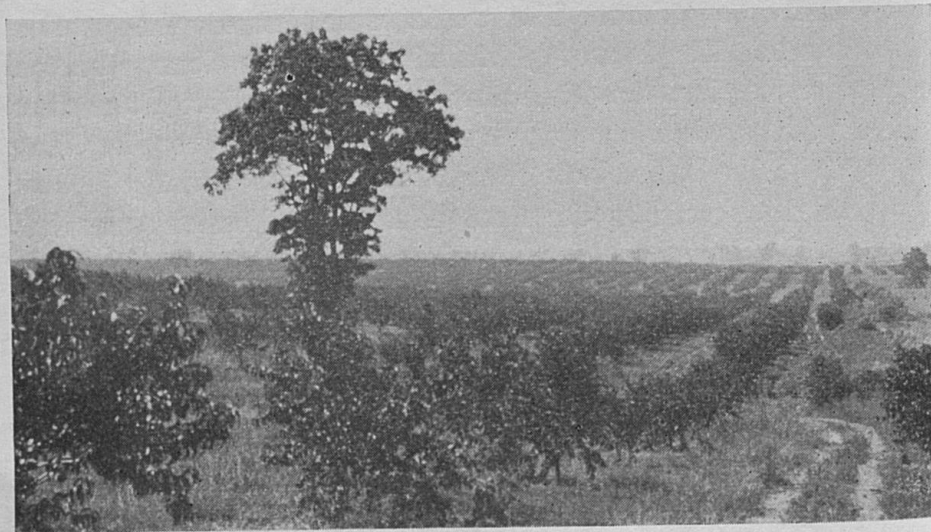


Fig. 4. Korean lespedeza sowed in 125-acre peach orchard.

Two or three early diskings may be made without hindering reseeding for a full stand. Abundant material for a mulch may be grown in the orchard if mulch is desired. The growth of Korean lespedeza is low enough not to interfere with any orchard practice requiring the movement of men and machinery. In the fall when the crop is dry there is danger of fire. However, this danger can be obviated by making fire guards at intervals with a disk harrow.

Seed Production. Korean probably produces the heaviest yield of seed of any of the annual varieties of lespedeza. From 200 to 300 pounds per acre is a normal yield the second or third year after planting. Such yields are also obtained under good conditions the first year, but there are more failures to obtain very high yields the first year than successes. Under very favorable conditions much heavier seed yields may be obtained.

It is probable that seed production will be restricted finally to low, fertile land which offers the most favorable conditions for high yields. Experienced men who can grow Korean lespedeza on a large enough scale to warrant the expense of machinery probably will be the most able to produce the seed cheaply enough to make a profit. This should result in very high quality seed.



Fig. 5. The seed crop and the straw pile from five acres.

Harvesting the Seed Crop. The present practice is to harvest the seed crop after the plants are dead ripe. There is a tendency to harvest at an earlier stage while leaves are still green, sacrificing perhaps a little of the seed yield to obtain a more palatable straw with more of the leaves adhering to the stems after threshing.

Following the experience with Common lespedeza the seed of which readily shatters into a pan, growers of Korean lespedeza at first exclusively used a seed pan when mowing the crop. This is slow (*work*) requiring one man to drive and another to walk behind the pan with a rake to pull the mowed plants over the pan. Usually two men harvest 4 to 6 acres in a day by this method. The lespedeza is pulled over the pan and dropped so that raking is not necessary. The pan has a hinged lid with holes thru which the seed and small trash pass. When the pan is full the material is scooped into a sack. The amount of seed obtained varies according to maturity and dryness. Usually it is from 5 to 30 percent of the crop. When the price of seed is high such a saving of seed is profitable but when the price is low the profit is doubtful.

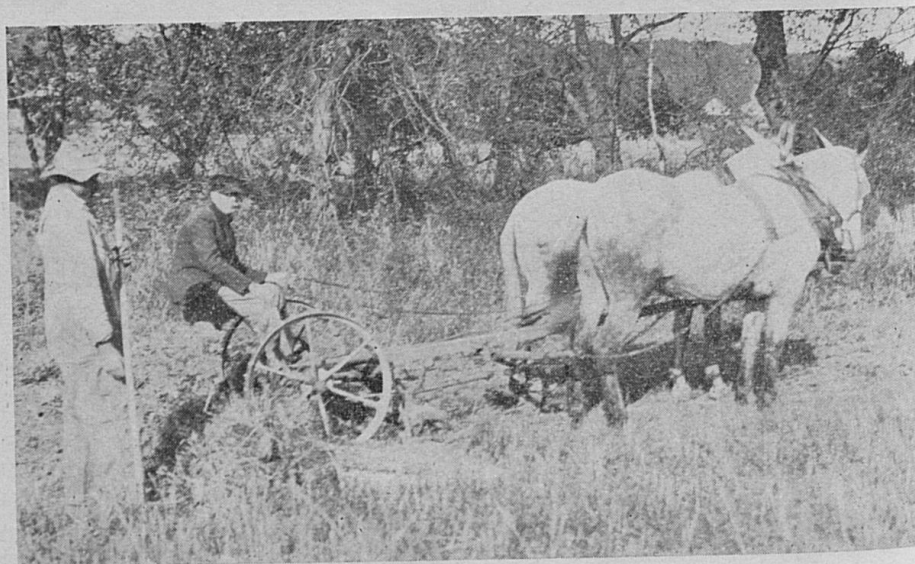


Fig. 6. Showing the seed pan attached to mower and extra man to rake off the bunches.

In 1930 the growth was short. Reels were placed on mowers to eliminate the man behind the pan. Some of these reels threshed or flailed out the seed so successfully that two-thirds of the crop was obtained. It was also found that the fairway cutter bar, with sickles with serrated sections would harvest from 50 to 300 pounds of seed per acre where an ordinary cutter bar could not be set low enough to harvest anything. The fairway cutter bar was designed for use on golf courses. Many of these bars were used in Kentucky in 1930.

In 1931 the crop was so tall that very few seed pans and fairway bars were used. The crops were mowed while wet with dew or rain, often at night. The rakes were operated also while the crop was damp. Threshing was started about mid-forenoon of the same day the crop was cut, if threshers were available, and very little seed was lost. Commonly, a side-delivery rake was used to place the crop in windrows, and two push rakes to bring it to the thresher.

Threshing. Threshing is done almost entirely with grain separators. Clover seed hullers, corn shredders and combine harvesters with pick-up attachments all have been made to do

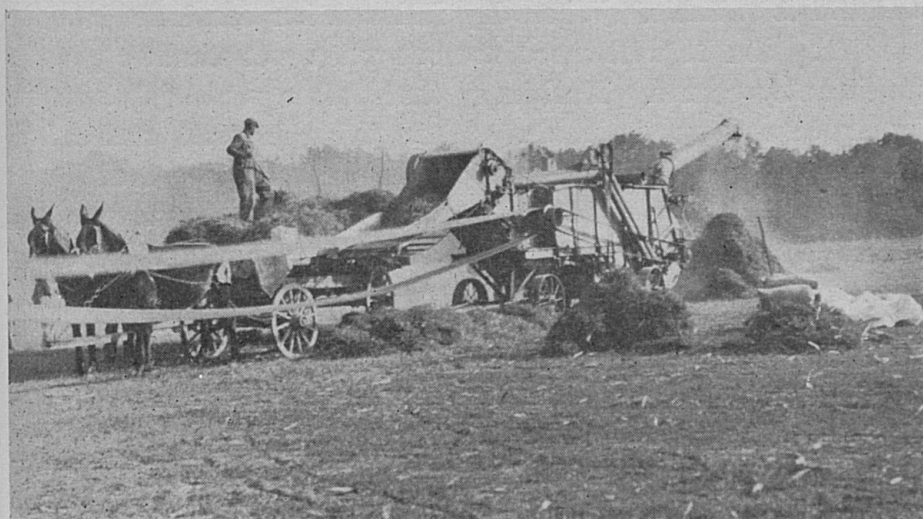


Fig. 7. The grain separator is used to thresh Korean lespedeza seed.

satisfactory threshing. Some adjustments are necessary on all grain separators. Generally the speed of the cylinder is reduced one-third or more. Two concaves are removed and replaced with blanks. The wind is greatly reduced. Orchard grass screens are put on the bottom. With a little care in making these adjustments and checking the loss by turning the stacker into a sack so that the operator may look for lost seed, any machine can be made to do good work. The grain separator operates on dry material so fast that two men are needed to feed.

The clover huller usually removes the hulls and hulling is undesirable because it is difficult to remove weed seeds, especially dodder, from hulled seed, with ordinary seed-cleaning equipment. Some operators, however, have adjusted clover hullers so that Korean lespedeza seed may be threshed without removing the hulls.

The combine harvester-thresher has not been used enough as yet for one to judge of its efficiency. Several have proved adequate and it seems reasonable to anticipate that with some changes or adjustments their use will become greater. The problem in threshing is largely one of getting the job done when weather is suitable. When dry fall weather continues late, the seed crop can be well cared for but when wet weather prevails much delay occurs. Machinery that does a rapid job is in the latter case very desirable. After being mowed and raked, Korean lespedeza seed crops may lie on the ground until late winter, with little loss. A number of such crops were not threshed until February in 1930. One of these made 600 pounds of seed per acre.

A good job with a grain separator should give seed of 85 to 90 percent purity. More than two-thirds of all separators operated in Kentucky in 1931 had recleaners attached and seed from them ran 95-98 percent in purity. With a good outfit and an experienced operator a day's threshing ranges from 3,500 pounds to 8,000 pounds.

K
excellent
passing
or use
the th
and is
one to
additi
to the



Fig
catch

L
seed-c
who
screen
the co
year
entire
tors r
clean
of th
perce

Korean Lespedeza Straw. Korean lespedeza straw is an excellent rough feed. Many leaves adhere to the stems after passing thru the threshing machine. It may be baled and sold or used on the farm. All stock relish it. It may be blown from the thresher into the mow. Year-old straw has an agreeable odor and is desirable feed when it has been stored under cover. From one to two tons of such straw per acre usually is obtained in addition to a good seed crop. The straw is a valuable addition to the feed supply on the average farm where seed is harvested.



Fig. 8. Wagons hauling to the thresher are covered with tarpaulins to catch shattered seed.

Recleaning the Seed. Specific directions as to regulating seed-cleaning machinery can not be given in a few words. Men who operate extensive custom cleaning plants use 20 to 30 screens. They vary the combinations of screens according to the condition of the seed. The condition of the seed varies from year to year. One operator well equipped in 1930 used almost entirely different screens in 1931. Possibly experienced operators may reduce the operations to a standard system.

The number of times that seed should be passed thru the cleaning machine depends on the purity of the seed and the size of the machine. Usually two runs are enough to render it 98 percent pure or better. On the other hand, some seed must be

run 8 times in order to produce the same degree of purity. Experienced operators lose less than 10 percent of the Korean seed in recleaning. The second-grade seed likewise will amount to less than 10 percent. Some operators become so expert that they can run ragweed seeds of 98 percent purity from one spout and dodder seed of equal purity from another. A slotted top screen removes ragweed and below a round-holed screen with 16 holes per inch removes dodder. A steady speed, with uniform feed and air flow are required for the best work. An electric motor seems to be the best source of power, altho some large cleaners are operated by gas engines. If the seed is damp when it comes from the thresher and contains immature, sappy weed seeds, running immediately thru the recleaner does much to condition the seed for safer storage.

Satisfactory work is done by small fanning mills as well as large ones. More than 30 custom recleaners were being used in Kentucky in 1931 compared with fewer than five, three years before. The smallest modern fanning mills run by hand can turn out about 300 pounds of seed per hour. The largest power-driven cleaners operating this year range in capacity from 600 to 1,000 pounds per hour. The rate depends on the purity of the uncleaned seed.

Dodder in Lespedeza. It is thought that the first fields sown to Korean lespedeza carried dodder in the soil. For several years no effort was made to control dodder. No proper cleaning equipment for removing it from threshed seed was known. Today growers of certified seed, and others, wage constant battle against dodder. Some farmers scrape all vegetation off with hoes, at the surface of the ground, in the infested area, and pile it to dry, in the middle of the scraped ground. Some have tried chemical sprays but these as yet are not popular. The most extensively used method is to spray or sprinkle the infested area with kerosene or crude oil and burn. If the dodder vines are not completely killed by one operation, the work must be repeated. It is best to begin the destruction of dodder when the patches are less than 3 feet in diameter and go over the field every week thereafter, in search of live remnants.

Some farmers cut off all growth from infested spots with hand sickles in late summer and haul the material away to be dried and burned. Pulling dodder vines off by hand and putting them into a sack almost invariably scatters it more by means of small fragments that are dropped. Besides, the dodder rarely is pulled clean. One of the most practical control measures is to graze the field from the time dodder first appears. Stock eat dodder vines as readily as lespedeza.

Peculiar Characteristics of Korean Lespedeza Seed. After having been harvested, Korean lespedeza seed must pass thru several weeks of a maturing process before high germination is attained. In the season of 1930-1931, samples tested by the Kentucky Experiment Station Seed Laboratory showed germination as follows:

Nov. 19, '30,	13 samples averaged 28.5% germinated + 63 % hard.
Dec. 16, '30,	29 samples averaged 62.4% germinated + 31.7% hard.
Jan. 19, '31,	22 samples averaged 87.6% germinated + 9.1% hard.
Feb. 18, '27,	24 samples averaged 87.7% germinated + 8.6% hard.
Mar. 16, '26,	25 samples averaged 90.5% germinated + 6. % hard.

Similar results were obtained in the season of 1931-1932.

This characteristic of the seed is of great value to seed growers who are not able to thresh their crops on time and let them lie on the ground until midwinter. Frequently volunteer stands come up in late fall and are winter killed. This small stand is from soft seeds which have sprouted. There is always abundant hard seed left for the next spring. Sometimes volunteer stands come up during warm weather in February, which are killed by freezing. But, as in the fall, there is always sufficient hard seed left to make a solid stand when freezing is past. Few failures of a volunteer stand from freezing have ever been reported in Kentucky.

Another characteristic of Korean lespedeza makes volunteer stands more certain than with other lespedezas. Much seed is held on old branches up from the ground until about the middle of April. These seeds do not germinate so readily as seeds lying on the ground. They dry out soon after a rain, whereas seeds

on the ground may remain wet for weeks at a time. About the middle of April these seeds drop to the ground.

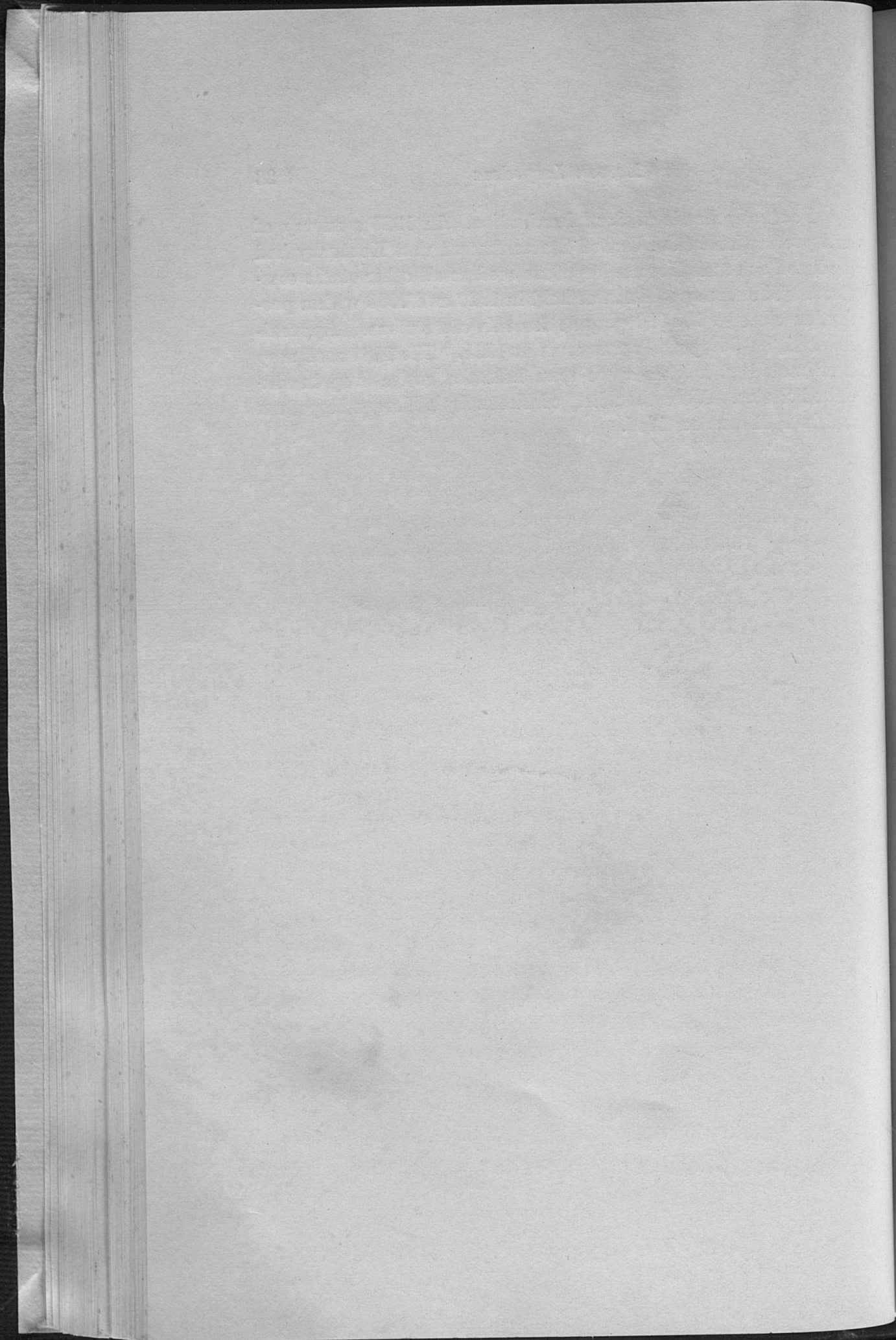
Germination of Old Seed. Tests made in the Experiment Station Seed Laboratory indicate that Korean lespedeza seed does not deteriorate rapidly with age.

VIABILITY OF KOREAN LESPEDEZA SEED OF DIFFERENT AGES

Sample No.	Year Grown	Test June, 1930			Test December, 1931				
		Percent sprouted.	Percent hard.	Total	Percent sprouted.	Percent hard.	Total		
48837	1928	74	+	25	(99)	73	+	8	(81)
48839	1928	67	+	22	(89)	69	+	15	(84)
48841	1928	73	+	23	(96)	65	+	11	(76)
48819	1929	81	+	7	(88)	69	+	2	(71)
48845	1929	82	+	14	(96)	77	+	17	(94)
48954	1929	81	+	15	(96)	70	+	19	(89)
March, 1931									
51075	1930	92	+	8	(100)	96	+	4	(100)
51076	1930	93	+	6	(99)	99	+	1	(100)
51077	1930	98	+	1	(99)	94	+	6	(100)

It is noted that the samples from 1928 and 1929 crops did not show high germination. These samples may have been taken from seed of not more than 90-95 percent purity. The three-year-old seed lost an average of 14.3 percent in their third year. The two-year-old seed lost an average of 8.6 percent. The one-year-old seed lost nothing. The one-year-old seed were from high-quality certified crops produced in 1930. Fifteen other samples of one-year-old Korean seed tested at the same time showed an average loss of 1.4 percent.

Kentucky Leads in Seed Production. In 1928 a survey of seed production in the United States showed that Kentucky had produced as much Korean lespedeza seed as all other states combined. The same position was held in 1929 and 1930 with a production close to 700,000 pounds for this state alone. Approximately 1,000,000 pounds was sown in 1931. The 1931 seed crop is estimated at a little more than half the entire crop in the United States. More than half of Kentucky's Korean lespedeza seed in 1931 was certified.



th
K

co
D
fo