

# AGRICULTURAL EXPERIMENT STATION

KANSAS STATE COLLEGE OF AGRICULTURE  
AND APPLIED SCIENCE

MANHATTAN, KANSAS

## DEPARTMENT OF AGRONOMY

### KOREAN LESPEDEZA<sup>1</sup>

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#### GENERAL CHARACTERISTICS

Korean lespedeza, an annual legume with very fine stems, is a comparatively new crop in Kansas. It is closely related to the small Japanese lespedeza that is common in the southeastern part of the state. In general appearance Korean lespedeza resembles alfalfa. The plants seldom grow more than 15 inches high on good land, on poor upland the growth being much less. Where growing in sparse to scattered stands the plants branch profusely, the lower branches sometimes becoming 15 to 20 inches long and spreading almost horizontally near the ground. Where the stand is thick the plants have an upright manner of growth similar to red clover or alfalfa.

In the average season Korean lespedeza does not start to grow until the latter part of April. It makes rapid growth and by June 1 is usually about an inch high and, if planted on tilled land, can be pastured soon after this date.

#### ADAPTATION TO KANSAS

Moisture and temperature are the most important factors affecting the adaptation of Korean lespedeza. The temperature is not severe enough in Kansas, however, to restrict its growth, with the possible exception of the northwestern part of the state. Available moisture is a more important factor affecting its distribution in this

1. Contribution No. 212 from the Department of Agronomy.

state. On poor upland soil more than 32 inches annual precipitation may be necessary to grow the crop successfully, while on good bottom land it may be grown in areas where the annual precipitation is slightly less than 30 inches. This requirement, therefore, largely limits its production to the eastern third of the state.

#### SOIL ADAPTATION

Korean lespedeza is adapted to a wide variety of soils. It is tolerant to acidity and will stand considerable drought. It does not do so well, however, on poorly drained soils. It grows well, perhaps better than any other legume crop, on poor soil and responds readily to fertilizers, particularly phosphates. It has particular merit for use on poor land. This applies to sloping, eroded land where it is not possible to produce profitably the common farm crops. Being a legume it will gradually increase the fertility as well as improve the physical condition of this type of soil.

#### USE OF KOREAN LESPEDEZA IN CHECKING EROSION

Korean lespedeza grows rapidly and makes enough root development to check erosion. On sloping poor land, it can be established without soil preparation. One seeding is all that is necessary to establish permanently the crop even where it is used for pasture, as sufficient seed will be matured each year to maintain the stand. There will probably be a little hard seed that will not germinate and this will carry over until the next season. The accumulation of this type of seed would probably be enough to perpetuate the stand even though little or no seed were produced during one unfavorable season.

#### KOREAN LESPEDEZA NOT A COMPETITOR OF OTHER LEGUMES

Korean lespedeza is not recommended to replace sweet clover or alfalfa or the other legumes for hay or forage or for soil improvement. Its use is suggested on many soils where the production of the other legumes is difficult or impracticable. Alfalfa and sweet clover, for example, will not grow on poor acid land without expensive soil treatments which limit their use on this type of land.

#### SEEDING KOREAN LESPEDEZA

The amount of seed to use in planting Korean lespedeza will depend largely upon the type of land and the use that is made of the crop. Where it is used on pastures, 2 to 4 pounds is usually enough seed to plant per acre. In other cases, especially on poor soil, for checking erosion as much as 8 pounds per acre may be advisable. On tilled land for hay or for a seed crop it should be seeded at the rate of about 10 to 12 pounds per acre.

When no soil preparation is made the seed should be broadcast the latter part of February or early in March; when the seed is disked or harrowed in, about the 10th of April is soon enough. The

seed will remain dormant until growing conditions are favorable for germination and will germinate readily without any soil preparation unless the grass sod is so thick that the seed cannot get in contact with the soil. Korean lespedeza, however, is not recommended ordinarily for grass land of this quality. On poor pasture land a light disking may aid in obtaining a better stand and stimulating the growth of the young seedlings.

Under the average conditions existing in Kansas, it is not suggested to seed Korean lespedeza with a nurse crop, particularly where the crop is grown for seed. Where it is seeded with a nurse crop wheat is suggested rather than oats, as Korean lespedeza establishes itself more quickly where the ground is firm and well packed. When seeded with oats a half seeding of the oats will give higher yields. It can be seeded at the time the oats is planted, being drilled or broadcast and then harrowed in.

Where no soil treatment is made Korean lespedeza should be planted before the ground dries out and while the soil is freezing at night and thawing during the day as this tends to get the seed in better contact with the soil. If seeding is made after freezing weather is over, soil preparation is necessary to get a stand.

The seed is not difficult to sow and may be distributed by a grass-clover seeder, a wheelbarrow seeder, an alfalfa drill or a grass-clover attachment on a grain drill. Inoculation of the seed does not appear to be necessary. Seedlings of Korean lespedeza seem to be more resistant to cold than those of alfalfa or red clover. There is, therefore, little danger of losing a stand from too early seeding, for when growing naturally the seed lies dormant through the winter and apparently does not germinate until after the severe freezing weather is over.

#### UTILIZATION OF THE CROP

##### KOREAN LESPEDEZA FOR PASTURE

Perhaps the chief use of Korean lespedeza in Kansas is for pasture. This is owing to the fact that it can be established without any soil preparation and it supplies forage during the summer months when most of the pasture plants make little growth. It is especially well adapted to use on blue-grass pastures that provide good feed during the early spring and fall and very little during the summer months. Korean lespedeza makes enough growth to be grazed shortly after June 1, or the time Kentucky blue grass stops growing, and it will continue to make good growth until early September, when blue grass is again vigorous.

Korean lespedeza is palatable to all classes of live stock, particularly cattle. It will stand close grazing by cattle and still be able to set enough seed to maintain the stand. Where it is closely grazed, lateral branches come out near the base of the plant and produce seed.

The carrying capacity of Korean lespedeza will vary greatly with the quality of the soil and growing conditions. At Columbia, Mo.,

three two-year-old heifers were carried on three-fourths of an acre from June 26 to July 12, making a gain of 71 pounds for the 16 days. The area was protected from July 12 until August 9, after which two yearling heifers were grazed on it until September 15, or 37 days. During this time the two heifers gained 169 pounds. This small pasture, therefore, supplied ample forage for five heifers without supplementary feed over a total period of 122 cattle days,<sup>2</sup> the heifers making a total gain of 240 pounds or an average gain per heifer of about 2 pounds a day.

In addition to being palatable, Korean lespedeza apparently does not cause bloat and does not have the laxative effect that frequently results from pasturing sweet clover. It has a nutritive value about equal to sweet clover and alfalfa.

**Seeding in Pasture Mixtures.**—Korean lespedeza is suitable to use in permanent pasture mixtures when it is not feasible to grow other legumes owing to the quality of the land. It is well suited to use in a mixture with all the tame grasses. In a mixture of orchard grass, red top, and meadow fescue, about 4 pounds per acre of Korean lespedeza should be seeded to about 6 pounds per acre of each of the grasses. When the grasses are seeded in the early fall the lespedeza should be sown broadcast on the land the following February or early March.

#### KOREAN LESPEDEZA FOR HAY

For conditions existing in Kansas, Korean lespedeza may not prove so valuable a hay crop as some other legumes, except perhaps on poor land where other leguminous crops cannot be grown. Where it is to be used for hay it should be cut the latter part of August, especially if it is desired to produce enough seed to maintain the stand. For conditions existing at Manhattan 1 to 1½ tons of hay per acre can be produced on good land.

#### SEED PRODUCTION

At the present time the main limitation to the seeding of Korean lespedeza is the high price of the seed, which has seldom sold for less than 40 cents per pound. The high price for seed has been due to the limited amount that has been grown for seed. During the season of 1930 a small area of about two acres was seeded on the Agronomy Farm near Manhattan for the production of seed and about 600 pounds of cleaned seed were obtained regardless of the unfavorable season.

The crop should not be cut for seed until after all the plants have matured and lost their green color, and until most of the seed has turned brown. This stage of growth will be reached in the first part of October. The most common mistake is in cutting too early, which results in low quality and immature seed. If the harvesting is postponed too long, however, considerable loss is apt to occur from shattering.

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2. The term "cattle day" means 24 hours grazing for one cow or heifer.

There is little expense involved in growing lespedeza for seed as no special farm machinery is necessary. The seed crop should be mowed in the early morning when the dew is on the crop in order to eliminate shattering. The cutter bar should be tilted forward as much as possible in order to cut close to the ground. A special low cutter bar is manufactured that makes it possible to cut within one-half of an inch of the ground. This can be purchased for use on John Deere and Deering mowers. A slotted pan can be obtained or easily made to attach to the cutter bar to catch the shattered seed. This should be attached by hinges close to the cutter bar to make it flexible so that it will ride easily over rough ground and allow the bar to settle and cut in low places. The pan should be about 2½ feet wide and 6½ inches high at the back. The lid of the pan should be attached with hinges, the holes being about one-fourth of an inch in diameter and spaced about three-fourths of an inch apart. The crop should be placed in small cocks immediately after cutting.

It is very important in growing Korean lespedeza to plant it on land that is free from weeds. It is desirable, therefore, to plant it on land that has been in row crops for the previous year so that there is little weed seed in the soil. The growth of weeds can be controlled partially by clipping with a mower. In doing this the cutter bar should be raised above the lespedeza. Where the weed growth is heavy the clipped material should be raked up and hauled off. It may be necessary to clip the field several times. It is difficult to clean the seed of many different kinds of weeds, the presence of which reduces its value.

#### THRESHING THE SEED CROP

Threshing should be done directly from the cocks about a week after harvest. If the crop is stacked it should be allowed to sweat before threshing.

Either a grain thresher or a clover huller may be used, but a clover huller is the more efficient machine as it cleans the seed more thoroughly. If a grain thresher is used it is necessary to use a cleaning machine to separate the trash from the seed.

#### DODDER

Dodder is perhaps the most noxious weed to Korean lespedeza. It is, therefore, very important to obtain dodder-free seed. All fields where there is any question regarding the presence of dodder should be carefully rogued. This is true particularly where the crop is being grown for seed. In doing this, the field should be crossed in narrow strips and all dodder plants located with stakes. After the field has been covered the dodder should be destroyed. Perhaps an effective way of doing this is by burning with kerosene, one person going ahead and pouring kerosene on the dodder spots with a sprinkling can, while another follows igniting them.

**KOBE AND TENNESSEE 76 LESPEDEZA**

Kobe and Tennessee 76 are strains of lespedeza selected from the common Japan lespedeza. In the vicinity of Manhattan, Kobe is about three weeks and Tennessee 76 about four weeks later in flowering and maturing seed than Korean. In this section of the state, Kobe will produce enough seed to maintain the stand during an average year. It would be only in seasons when frost was abnormally late, however, that Tennessee 76 would mature sufficient seed to propagate a good stand. Neither of these strains will produce so much forage under Kansas conditions as will Korean. Tennessee 76 is probably too late in maturing to be used in any part of Kansas. Kobe, however, may have enough value for late summer and early fall grazing to warrant its use in the extreme southeastern part of the state.