



# Forage Crops Production Technology

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&  
NATURAL RESOURCES  
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## ANNUAL LESPEDEZA

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### Stand persistence and production is encouraged by --

- ✓ Adequate seed production and storage in soil.
- ✓ Controlling vegetative competition during establishment.
- ✓ Controlling vegetative competition during seed production.
- ✓ Deferring harvest (including grazing) during seed production.
- ✓ Adequate moisture.
- ✓ Long frost-free growing period.

Annual lespedezas are most commonly grown in the southeastern part of Oklahoma as part of grass-legume pastures. These legumes are most productive during late summer when production of many other forages are relatively low and forage quality tends to be less than adequate. This allows lespedeza to fill an important niche in the overall forage program.

Annual lespedeza species, commonly called 'striate' and 'Korean', are warm-season legumes used for pasture and hay. The genus of these species was formerly *Lepedeza*. Both species are introductions from eastern Asia. Striate lespedeza (*Kummerowia striata* [Thunb.] Schindler) is also known as common lespedeza or Japan clover. Korean lespedeza became the common name for *K. stipulacea* [Maxim.] Makino because of its country of origin.

### 1. Description

Both annual lespedeza species are fine stemmed, leafy, herbaceous legumes with shallow taproot systems. When not cut during the season, plants grow to a height of 2 to 3 feet. Some lespedeza flowers have no petals while others are pink to purple. Pods contain

single seeds that is blue-black and may or may not be mottled.

Striate lespedezas are easily distinguished from Korean. Striate cotyledons have an indentation on one edge near the outer end, whereas those of Korean are nearly elliptical. Leaves of Korean are broader and the stipules larger than those of striate. Pods initiate in leaf axils along the entire stem of striate, whereas pods of Korean are borne in clusters at the tips of branches developing from leaf axils. Leaves of Korean turn forward around the developing pods, giving protection against shattering when the seeds are mature. Leaves of striate do not turn forward after flowering, so this species has a greater potential for seed shattering. Pubescence on stems of Korean points upward, whereas pubescence points downward in striate.

**2. History and Origin:** The total area of annual lespedeza in the US reached about 40 million acres in 1949. Annual lespedeza was often grown in rotations with small grains. It provided pasture, hay, or seed after the grain crop was harvested, fixed nitrogen (N)

for the rotation, and then reseeded itself for the next year. Increased fertilizer use after World War II and emphasis on higher-yielding crops resulted in a shift away from annual lespedeza. Today it is used mainly as a pasture legume with limited amounts being cut for hay. Annual lespedeza has naturalized over a substantial portion of its range and is common in many pastures, especially where little or no N fertilizer is applied.

Annual lespedezas are grown in a wide belt extending from eastern Oklahoma, Texas, and Kansas into southern Iowa and eastward to the Atlantic Coast. The western boundary is limited by lack of moisture. The northern boundary is limited by the plant's inability to produce seed before a killing frost.

Korean varieties tend to mature earlier than striate lespedeza and are grown in the upper two-thirds of the lespedeza region. Striate matures later and is more important in the southern part of the region; however, a newly released early-maturing striate variety, 'Marion', may move its range farther north.

**3. Establishment:** Annual lespedezas are among the easiest of the pasture legumes to establish. They can be sown from midwinter to early spring. Broadcasting without covering in late winter, and allowing frost heaving to bury the seed, normally provides good stands in grass pastures. Korean seed that has not been hulled should be seeded at 20-30 kg/ha, whereas the seeding rate for striate should be somewhat higher. Seed should be inoculated with *Bradyrhizobium* spp. (cowpea miscellany group) the first time it is planted in a new area.

If pastures are managed properly, annual lespedeza should reseed itself. In Oklahoma, plants should not be grazed heavily or cut from mid September to mid November for adequate seed production. Reseeding or establishment in cool-season grass pastures is improved by grazing or cutting the grass in early spring to reduce shading. High rates of N fertilizer on grass sods will reduce the potential for successful establishment.

Soon after maturity, annual lespedeza seed may have poor germination. The germination percentage of a seed lot increases with time, a characteristic important for stand persistence in pastures that reseed naturally. Seed with little or no dormancy may germinate during a warm period in fall or winter and be killed by frost. In early spring, germinating seed may be killed by late

frosts. Because much seed remains dormant, there is usually sufficient seed left to make a solid stand after the potential for spring frost is past.

**4. Soil Fertility and pH:** Annual lespedezas grow relatively well on eroded, acidic soils low in phosphorus (P) that will not support many other forage legumes. Their ability to grow on low fertility soils makes them valuable legumes for low-input pasture systems. However, annual lespedezas do respond to lime and fertilization and grow best on productive, well-drained soils. Korean lespedeza is less tolerant of acid soil and more tolerant of alkaline soil than is striate lespedeza.

**5. Yield Potential:** Hay yields of annual lespedeza usually range from 1 to 2 tons per acre; however, on soils with good fertility and well distributed rainfall, yields can exceed 6 tons per acre. Hay can be harvested once or twice per year. If harvested once, it should be cut in the early bloom stage for optimum yield and quality. If harvested twice, the first cut should be in mid to late July when the lower leaves become senescent and again at first bloom.

**6. Varieties:** Four cultivars of striate lespedeza have been produced commercially in the US; however, most striate lespedeza seed sold today is the variety Kobe. Marion was released in 1989. Marion flowered about 3 weeks earlier than 'Summit' (a Korean type) and 4 weeks earlier than Kobe. Marion is resistant to many foliar diseases that affect Korean cultivars, resulting in greater leaf retention and better forage quality.

Several Korean lespedeza varieties have been released, but few are still grown, and Korean lespedeza seed may be from any variety. Seed of the variety Summit, released in 1963, is still available.

**7. Forage Quality:** Annual lespedezas are excellent pasture legumes for summer grazing. Although they do not normally produce high yields, the forage that is produced is free of bloat hazard and develops when it is most needed. They are most productive during late summer, when the growth rate and quality of most perennial pastures, especially cool-season grasses, are low. Annual lespedezas maintain good quality during summer. Tests in Missouri showed that Marion and Summit produced forage with 12 to 15% crude protein and good TDN.

**8. Seed Production:** Commercial seed yields of annual lespedeza usually range from 200 to 300 pounds per acre; however, greater yields may be

achieved. Seed is normally marketed unhulled (seed still enclosed by the pod). Seed is usually harvested directly with a combine when the leaves become dry and the pods have turned brown or after a killing frost. Harvesting before leaves become completely dry is desirable to reduce seed shattering, especially for striate cultivars. Under these conditions, seed moisture is too high for storage, and seed must be dried to maintain seed viability. Seed shattering is sufficient to ensure dense volunteer stands the next season.

**9. Diseases and Pests:** Diseases can cause great losses, with Korean cultivars being the most susceptible. Bacterial wilt is a serious problem on Korean cultivars in the northern part of the lespedeza region. Tar spot causes heavy leaf spotting, defoliation, and a reduction of yield and quality. Rhizoctonia, powdery mildew, and southern blight are sometimes serious in the southern part of the lespedeza-growing region.

Root-knot nematodes can damage annual lespedeza in the southeastern coastal plain. Lespedeza is also a favorable host for the soybean cyst nematode, tobacco stunt nematode, and sting nematode.

Insect damage to annual lespedeza is usually slight, but damage can be caused by grasshoppers, armyworms, lespedeza webworms, and the three-cornered alfalfa hopper.

Images of annual lespedeza can be found at  
<http://forage.okstate.edu/images/misclegumejpg's/lespedeza/annullesp.htm>

Common or Striate Lespedeza seed images  
<http://forage.okstate.edu/images/seeds/an-lesp-sd-06.htm>

Korean Lespedeza seed images  
<http://forage.okstate.edu/images/seeds/an-lesp-sd-07.htm>



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