

# Sericea Lespedeza:

## A Pasture, Hay, and Conservation Plant

**S**ericea lespedeza (first recognized as *Lespedeza sericea* and later as *Lespedeza cuneata*) is a widely adapted, nonbloating, warm-season perennial legume that can be used for grazing, as hay, or as a conservation plant. Though it grows best on deep, well-drained upland soils, it can be grown on a wide range of soil types and sites. It responds well to fertilization, but can be grown in areas too acidic and infertile to support other forage legumes. It is adapted to most areas in Alabama, except low-lying wet areas, extremely dry or shallow soils, and the alkaline soils in the Black Belt region.

As a forage crop, sericea has several desirable qualities. Because it is a legume, it does not require nitrogen fertilization. It is a vigorous forage crop that persists well when managed properly and when established in a suitable area. Its deep root system makes it more resistant to drought than many other crops. Furthermore, it is a good seed producer and only rarely receives significant damage from insects and diseases.

The conservation qualities of sericea are exceptional. It persists under a wide range of soil conditions, has a vigorous root system, and has a tendency to shed lower leaves, which creates mulch that improves soil structure, increases the organic matter content of the soil, and prevents erosion. Consequently, it is one of the species most commonly planted on strip mine spoils, road banks, and other disturbed or eroded areas.

### Varieties

The sericea first introduced into this country had not been selected or bred for desirable agronomic qualities. The main objection to this “common” sericea probably was that it was not very palatable and livestock would not eat it readily. This created a bad image of the plant that lingers today among many livestock producers. However, breeding programs through the years have changed the species so dramatically that some of the newer varieties hardly resemble the original plant. Most of this breeding work has been done at Auburn University. In fact, it is probable that more research on the management and breeding of sericea lespedeza has been done at Auburn University than anywhere else in the world.



The major improved sericea lespedeza varieties, listed in order of their development, are as follows:

#### **Arlington.**

This early variety was developed around 1950 by the Soil Conservation Service (SCS) from selection of a single plant. It reportedly yields better than common sericea.

**Serala.** In 1962, *Serala* became the first sericea variety released from the Alabama Agricultural Experiment Station. This upright-growing variety has finer and softer stems and more stems per plant than common sericea. It is a better yielder and results in better animal performance than common sericea.

**Gasyn.** In 1963, *Gasyn* was released from the Georgia Agricultural Experiment Station. It has somewhat less tannin, smaller stems, and retains leaves better than common sericea. It has been reported to be a better yielder than *Arlington*.

**Interstate.** In 1969, this variety was released by the Alabama Agricultural Experiment Station. It has fine, soft stems and a distinctive spreading growth habit. It was initially intended for use on road banks, but subsequent grazing trials resulted in animal performance equivalent to



*Serala*. Because of its prostrate growth habit, the variety is not as well suited for hay as *Serala* is.

**Cericea.** The North Carolina Agricultural Experiment Station released this variety in 1972. It has a branching growth habit that allows it to form a thick, dense canopy. It is a slightly better yielder than common sericea, and forage quality is about the same.

**Appalow.** *Appalow* was released in 1978 by the SCS, the USDA, and the Kentucky Agricultural Experiment Station. It is a prostrate, dark green, leafy variety used for soil conservation on highway road banks.

**Serala 76.** The Alabama and Georgia Agricultural Experiment Stations and the USDA released this variety in 1978. In addition to having fine stems and a growth habit similar to *Serala*, this variety is resistant to three species of root-knot nematodes.

**Interstate 76.** Like *Serala 76*, this variety was released by the Alabama and Georgia Agricultural Experiment Stations and the USDA in 1978. It is intermediate in height, between *Serala* and *Interstate*, and has a more open growth habit than *Interstate*. It is a somewhat better yielder than *Interstate* and also is resistant to three species of root-knot nematodes.

**AU Lotan.** This variety was released by the Alabama Agricultural Experiment Station in 1980. It is an upright-growing variety with small, soft stems and is resistant to three species of root-knot nematodes. It was selected primarily for having very low levels of tannin and higher digestibility, which result in better animal performance. Dry matter yields are about 85 percent of those of *Serala*.

**AU Donnelly.** This variety is a low-tannin sericea lespedeza released in 1987. *AU Donnelly* makes more early spring growth and yields higher throughout the season than *AU Lotan*, the only other low-tannin cultivar. *AU Donnelly* averages 6 percent higher in digestible dry matter and 10 percent higher in crude protein than does *AU Lotan* at the hay stage. Tannin content is about the same in *AU Donnelly* as it is in *AU Lotan*.

**AU Grazer.** *AU Grazer*, which was released by the Alabama Agricultural Experiment Station in 1997, is the first grazing-tolerant sericea lespedeza. This is an important development because lack of defoliation tolerance has greatly limited the use of sericea as a forage crop. This variety has fine, pliable stems, intermediate tannin levels, and good overall plant vigor. It is trademark protected by Auburn University.

## Establishment

Sericea should normally be planted in spring after the risk of damage from a hard freeze or heavy frost is past. Late April or May planting dates are usually best in Alabama. It may also be planted in late June to early July if adequate moisture is available, although the earlier spring dates are greatly preferable. Commercially sold seed is normally hulled, but unhulled seed can be planted in autumn with germination occurring throughout the warmer months the

following year. Land planted with sericea should be limed and fertilized according to soil test recommendations.

Plant sericea into a level, firm seedbed that has been prepared well ahead of planting. About 15 to 20 pounds per acre of hulled, scarified seed should be adequate if a preplant incorporated herbicide is used. The seeding rate should be increased to 20 to 30 pounds per acre if no herbicide is used. If germination is less than 85 percent, adjust seeding rate accordingly. For summer plantings, increase the seeding rate by at least 30 percent.

To establish a productive stand, use certified (hulled and scarified) seed of an improved variety. Though inoculation is less critical with sericea than it is with other legumes, the seed should be inoculated just before planting with fresh lespedeza inoculum. In addition, it is highly desirable to firm the seedbed with a cultipacker before planting. The seed should then be planted with a cultipacker-seeder or should be broadcast and then firmed into the soil with a cultipacker. The seed should not be covered with more than ¼ inch of soil. First-year growth of sericea varies greatly. It usually should not be cut or grazed during the establishment year, but this recommendation varies according to weather conditions, particularly rainfall distribution.

The seedling growth of sericea is slow. Weeds are often a serious problem in first-year stands, especially if no herbicide is used during establishment. Herbicide options vary from year to year and from one location to another. Check with local Extension agents or agricultural chemical dealers for up-to-date information on herbicides.

## Hay Production

Cut sericea being grown primarily for hay when the plants are 15 to 18 inches tall. If it is allowed to grow taller, the quality will decline rapidly. Normally, two or three hay cuttings can be made per year, depending on moisture availability. The total hay production per acre per year is usually between 2½ and 4 tons, but 5½ tons were produced with *Serala*, *Serala 76*, and *Interstate 76* in a test at the Alabama Agricultural Experiment Station (Table 1). A thick stand results in hay with thinner stems, a point to keep in mind when establishing a sericea hayfield.

Make the last hay cutting no later than mid-August so food reserves can accumulate in the roots before frost, especially with varieties other than *AU Grazer*. When the weather is cool enough—usually late October or early November in Alabama—that sericea has stopped growing, accumulated forage growth can be removed without

**Table 1.** Pounds of Dry Forage Produced Per Acre by Sericea Varieties at the North Auburn Agricultural Engineering Farm

Variety	1978	1979	1980	3-year average
<i>Serala</i>	10,980	7,790	9,413	9,394
<i>Serala 76</i>	10,886	7,752	9,403	9,347
<i>Interstate 76</i>	11,298	7,208	9,173	9,226
<i>Interstate</i>	9,936	6,819	8,507	8,420

weakening the stand. Research has also shown that a 3- to 5-inch stubble should be left when hay cuttings are made, especially with varieties other than *AU Grazer*.

A unique trait of sericea as a hay crop is that the forage dries rapidly. Because the time from mowing until baling is less than half that of other forages, the chance of rain or other delays interfering with baling is greatly reduced. Sericea can sometimes be baled within 24 hours after being cut and, under excellent drying conditions, perhaps in late afternoon after having been cut in early morning. When completely cured, sericea shatters its leaves readily. Therefore, to minimize leaf shatter, the hay should be raked before completely cured and must then be baled promptly. Many producers cut sericea in the morning, allow it to dry the remainder of the day, and then rake and bale it the next morning while it is still a little damp with dew.

To compare the performance of animals consuming sericea hay and bermudagrass hay, in September 2004, calves at the E.V. Smith Beef Unit were weaned and assigned to one of two feeding schemes. Sixteen steers were in each group. Group 1 was fed free-choice *AU Grazer* sericea hay (round bales) and 6 pounds of a supplement (soyhulls) per steer per day. Group 2 was fed free-choice bermuda hay (round bales) and 6 pounds of the same supplement per steer per day.

Following a 49-day feeding trial, the following results (pounds per day) were obtained:

	<b>Group 1 (sericea hay)</b>	<b>Group 2 (bermuda hay)</b>
Daily gains	1.49	1.38
Hay intake	9.2	13.6
Supplement intake	6.0	6.0
Total intake	15.2	19.6

Both groups gained less than the target of 2.0 pounds per day, but were similar at about 1.5 per day. Intake was quantified by weighing each round bale. Compared to bermudagrass hay, less sericea hay was consumed, but the lowered consumption did not result in decreased performance.

From this data it appears that sericea lespedeza hay provides adequate nutrition for weaned calves when compared to bermudagrass hay. (Data provided by D. Rankins and J. Mosjidis).

## Pasture Production

Grazing of sericea should begin in the spring when the plants are 8 to 10 inches tall. A sericea pasture should not be grazed lower than 4 to 6 inches, because close grazing, especially on a continuous basis, is likely to

hurt the stand. (*AU Grazer* is less sensitive to close grazing than other varieties, however.)

If the stocking rate in a sericea pasture is low, growth may accumulate, resulting in a decline of forage quality. If the height of a sericea pasture reaches 12 to 14 inches, cut it for hay to about a 4-inch height to stimulate regrowth. Beginning around mid- to late August, sericea should either be grazed very lightly or not grazed at all so the plants have an opportunity to store food reserves in the roots. However, the growth that accumulates can be grazed after a killing frost has occurred.

An experiment at the Upper Coastal Plain Substation in Winfield provides evidence of the animal performance that can be obtained from sericea. In this test, *Serala* and *AU Lotan* provided 138 days of grazing and produced impressive daily gains with steers (Table 2). Results of these 2 years of grazing indicate that sericea can be profitable in summer pastures.

The maximum benefit from sericea is obtained when it is worked into a year-round management system with other forage species. Particularly in North Alabama where tall fescue, a cool-season perennial grass, is the predominant pasture species, sericea can be a great complement to a forage program. The forage production cost per pound of animal gain with sericea is among the lowest of forage crops that can be grown in the Southeast. Moving livestock into sericea pastures in the summer is highly desirable because the forage that cool-season crops produce in summer is very low in quality. However, low-tannin sericea varieties are very sensitive to overgrazing.

## Internal Parasite Control

Recent research has shown that sericea lespedeza forage (either as pasture or hay) can help control gastrointestinal parasites in small ruminants, such as goats and sheep. Gastrointestinal parasites are a major problem for small ruminants because there has been an increase in worm resistance to chemical dewormers. For more information, see the Southern Consortium for Small Ruminant Parasite Control Web site at [www.scsrpc.org](http://www.scsrpc.org).

**Table 2.** Performance of Steers on Sericea Pastures, Upper Coastal Plain Substation, Winfield, 1982-83\*

	<b>Days of Grazing</b>	<b>Steers/ Acre</b>	<b>Days/ Acre</b>	<b>Beef Gain/ Acre (lb)</b>	<b>Average Daily Gain (lb)</b>
<b>Rotational Grazing</b>					
<i>Serala</i>	138	1.31	178	268	1.47
<i>AU Lotan</i>	138	1.26	171	305	1.75
<b>Continuous Grazing</b>					
<i>AU Lotan</i>	138	1.19	165	300	1.80

\*Data provided by Dr. Steve Schmidt, Department of Animal and Dairy Sciences, Alabama Experiment Station, Auburn University.

## Sericea Grass Mixtures

Tall fescue or orchardgrass can be grown in the same pasture with sericea. Research by Auburn University personnel indicates that this practice can increase total seasonal forage production by about a ton per acre. Because of the slow seedling growth of sericea, a mixed sericea/cool-season perennial grass stand is most dependably obtained by planting sericea first, then planting grass into the established sericea stand. For example, plant sericea in spring and tall fescue the following autumn.

It is also possible to sod-seed winter annuals into a dormant sericea lespedeza stand to obtain additional forage production during the cooler months. The data presented in Table 3 provide a comparison of Serala sericea, with and without the benefit of sod-seeded rye, to Coastal bermudagrass fertilized with two levels of nitrogen.

When cool-season forage crops are to be planted into a sericea stand, clip the sericea to a height of 3 to 6 inches in late fall. Then, the species to be introduced

should be planted with a drill. Sericea does not furnish as much nitrogen to grasses growing with it as do other legume species. Therefore, during the dormant season of sericea, a mixed sericea-grass pasture should be fertilized with the same level of nitrogen the grass would receive if grown alone.

## Outlook For the Future

The future of sericea appears even brighter than the past with the advantages of wide adaptation, perenniality, nitrogen fixation, drought tolerance, resistance to diseases and insects, and, in recent variety releases, improved forage yield, good forage quality, low cost gains, and grazing tolerance (with *AU Grazer*). Sericea lespedeza has a place on many livestock farms in Alabama and other states. It is a forage crop that has been greatly improved by breeding programs, and dramatic acreage expansion will most likely occur in the future.

**Table 3.** A Comparison of Grazing Dates and Animal Performance (4 Years' Data) on Coastal Bermudagrass and Serala Sericea at Piedmont Substation, Camp Hill

	Grazing Began	Grazing Ended	Cow-Calf Days/Acre	Stocking Rate (Cow-Calf Units)	ADG of Calves	Cow Gain/Acre	Calf Gain/Acre
<b>Coastal Bermuda (150 lb. N/Acre)</b>	Apr 5*	Sept 12	139	0.99	1.48	144	185
<b>Coastal Bermuda (100 lb. N/Acre)</b>	Apr 5*	Sept 12	103	0.75	1.78	143	180
<b>Serala sericea</b>	Apr 12	Sept 12	126	0.89	1.57	64	178
<b>Rye, sod-seeded in sericea</b>	Dec 5 (2 yr) Mar 13 (3 yr)	Jan 6 (2 yr) Apr 12 (3 yr)	34	1.00	1.88	52	50

Data taken from Auburn University Agricultural Experiment Station Bulletin 388, "Grazing for Beef Cows and Calves in Alabama's Piedmont."

\*Grazing for first 30 to 50 days was mainly little barley and other weedy species



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