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SPECIES: Lespedeza bicolor

Introductory

SPECIES: Lespedeza bicolor

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ABBREVIATION :
LESBIC

SYNONYMS :
NO-ENTRY

SCS PLANT CODE :
LEBI

COMMON NAMES :
bicolor lespedeza
shrub lespedeza
Japanese bushclover

TAXONOMY :
The currently accepted scientific name for bicolor lespedeza is Lespedeza bicolor Turcz. [1,13,18]. Recognized varieties are as follows [1]:

L. bicolor var. bicolor Turcz.
L. bicolor var. japonica
L. bicolor var. rosa

LIFE FORM :

Shrub

FEDERAL LEGAL STATUS :
No special status

OTHER STATUS :
NO-ENTRY

DISTRIBUTION AND OCCURRENCE

SPECIES: Lespedeza bicolor

GENERAL DISTRIBUTION :
Bicolor lespedeza is native to Japan [14]. It has been introduced in the United States and now occurs throughout most of the Southeast from Arkansas to Maryland south to northern Florida and Texas [14,29].

ECOSYSTEMS :
FRES12 Longleaf - slash pine
FRES13 Loblolly - shortleaf pine
FRES14 Oak - pine
FRES15 Oak - hickory
FRES31 Shinnery
FRES32 Texas savanna
FRES38 Plains grasslands
FRES39 Prairie

STATES :
AL AR FL GA KY MD MS NC OK PA
RI SC TN VT VA WV

BLM PHYSIOGRAPHIC REGIONS :
14 Great Plains

KUCHLER PLANT ASSOCIATIONS :
K062 Mesquite - live oak savanna
K069 Bluestem - grama prairie
K071 Shinnery
K076 Blackland prairie
K077 Bluestem - sacahuista prairie
K079 Palmetto prairie
K084 Cross Timbers
K085 Mesquite - buffalograss
K086 Juniper - oak savanna
K087 Mesquite - oak savanna
K088 Fayette prairie
K089 Black Belt
K111 Oak - hickory - pine forest
K112 Southern mixed forest
K115 Sand pine scrub

SAF COVER TYPES :

66 Ashe juniper - redberry (Pinchot) juniper
67 Mohrs ("shin") oak
68 Mesquite
69 Sand pine
70 Longleaf pine
71 Longleaf pine - scrub oak
75 Shortleaf pine
76 Shortleaf pine - oak
78 Virginia pine - oak
79 Virginia pine
80 Loblolly pine
81 Loblolly pine
82 Loblolly pine - hardwood
84 Slash pine
85 Slash pine - hardwood
89 Live oak

SRM (RANGELAND) COVER TYPES :
NO-ENTRY

HABITAT TYPES AND PLANT COMMUNITIES :
NO-ENTRY

MANAGEMENT CONSIDERATIONS

SPECIES: Lespedeza bicolor

IMPORTANCE TO LIVESTOCK AND WILDLIFE :
Bicolor lespedeza provides good cover for birds and small mammals [3,7]. It is often planted as food for northern bobwhite and other upland game birds [7,15]. On the Alabama Piedmont, the seeds of bicolor lespedeza comprised nearly 34.1 percent of the total food volume consumed by northern bobwhite [26]. Rabbits eat the bark in the winter. When planting bicolor lespedeza for wildlife food, direct seeding in the field is more successful than transplanting seedlings [29]. Bicolor lespedeza has been grown in Japan for hay production. Yields and quality are good [25].

PALATABILITY :
NO-ENTRY

NUTRITIONAL VALUE :
Bicolor lespedeza seeds are high in protein content but are generally low in digestibility [20]. Nutritional values of aerial parts of fresh, immature and fresh, early bloom to full-bloom bicolor lespedeza are fair to poor. Some nutritional values (percent) are listed below [22]:

aerial part, fresh immature fresh, early bloom

calcium	1.63	1.57
iron	0.034	0.030
magnesium	0.38	0.33
phosphorous	0.48	0.24
potassium	1.65	1.21
P:Ca ratio	1:3	1:6

COVER VALUE :
NO-ENTRY

VALUE FOR REHABILITATION OF DISTURBED SITES :
Bicolor lespedeza is a nitrogen-fixing legume planted for wildlife habitat improvement, erosion control, and stabilization along streambanks and steep slopes [14,16,29]. In the East it grows rapidly, and its leaves produce a heavy soil-protecting mulch. Nursery stock and field seedings of about 10 pounds per acre (1.5 kg/ha) are used for wildlife habitat enhancement and erosion control [14]. It has been planted on infertile acidic soils in the lower Coastal Plain of Virginia, North Carolina, South Carolina, and in the Piedmont of North Carolina and Virginia [17]. It has also been planted on sandy soils of eastern Texas [27]. Establishment is usually most rapid and assured by planting seedlings but can also be accomplished by direct seeding. Normally, seed is mixed and sown with herbaceous species [29].

The cultivator 'Natob' is an early maturing, hardy, geographic strain of bicolor lespedeza. 'Natob' is more winter hardy than any other lespedeza shrub grown in this country [3,7]. This culitvator is recommended where the growing season is 145 days or longer and the first frost is September 25 or later. Its seed yield is about 350 pounds per acre (52.9 kg/ha) in most parts of the recommended area [3].

OTHER USES AND VALUES :
Bicolor lespedza is a good source of pollen for honey bees [14]. It is often planted as an ornamental in the southeastern United States [25]. Tryptophane-derived alkaloids having uterus-contracting or halucinogenic properties have been isolated in Japanese laboratories from Lespedeza bicolor var. japonic [1].

OTHER MANAGEMENT CONSIDERATIONS :
Bicolor lespedeza can interfere with initial tree growth and survival and make later management operations difficult [17].

BOTANICAL AND ECOLOGICAL CHARACTERISTICS

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GENERAL BOTANICAL CHARACTERISTICS :
Bicolor lespedeza is an introduced, large, leguminous, deciduous shrub ranging in height from 4 to 10 feet (1.2-3 m) [2,14]. It has an upright spreading stem with many slender branches [2,27]. The leaves are rounded 0.79 to 2 inches (2-5 cm) long [2]. Bicolor lespedeza has no

taproot but does have a much branched, well-nodulated, lateral root system [7].

RAUNKIAER LIFE FORM :
Phanerophyte

REGENERATION PROCESSES :
Sexual reproduction: Bicolor lespedeza is easily propogated by seed. The flowers are self-pollinated or cross-pollinated by honeybees, bumblebees, and other insects [29]. The fruit is a one-seeded, indehiscent pod [13]. Seeds are stored in the seed bank or ingested by birds and dispersed in their droppings [7,15]. Invitro bicolor lespedeza seeds immersed in water for 16 hours at room temperature required at least 3 days to germinate. Germination was 10 percent after 3 days and 30 percent after 7 days [6]. Germination is enhanced by scarification [9,29]. Seeds may remain viable for up to 20 years if stored at 50 degrees Fahrenheit (10 deg C) and 40 percent relative humidity [29].

Vegetative reproduction: Bicolor lespedeza will sprout from the root crown after top-kill [23,25].

SITE CHARACTERISTICS :
Bicolor lespedeza is found in fields, open woodlands, clearings, fence and hedge rows, and along roadsides [13]. It occurs at elevations from sea level to 2,500 feet (762 m) [30]. It is capable of maintaining itself on acidic (lower pH limit 4.5) nutrient-poor soils [17,30]. It is not frost tolerant and is often killed to the ground where the date of the first killing frost is September 30 or earlier [7]. Bicolor lespedeza is somewhat shade tolerant [14].

SUCCESSIONAL STATUS :
Bicolor lespedeza is a colonizer of early- to mid-seral grassland and some open forest communities after disturbance. It is most abundant in communities that are frequently disturbed and may become the dominant species in these areas [26]. Bicolor lespedeza abundance will gradually decrease in the absence of disturbance. Bicolor lespedeza densities generally remain high in areas with a disturbance regime of 4 years [5,26].

SEASONAL DEVELOPMENT :
Bicolor lespedeza generally flowers in July and August, but flowering begins as early as June in Mississippi and as late as September in Maryland [29]. The fruit ripens in late September to late October [7,29]. The pods fall to the ground when ripe and most of them are down by early winter [29].

FIRE ECOLOGY

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FIRE ECOLOGY OR ADAPTATIONS :
Bicolor lespedeza will sprout from the root crown following top-kill [7,23,25]. Both on-site, fire-scarified seeds and off-site seeds are important sources for colonizing burned areas [9].

POSTFIRE REGENERATION STRATEGY :
survivor species; on-site surviving root crown or caudex
off-site colonizer; seed carried by animals or water; postfire yr 1&2
Ground residual colonizer (onsite, initial community)

FIRE EFFECTS

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IMMEDIATE FIRE EFFECT ON PLANT :
Fire may top-kill bicolor lespedeza. High-severity fires may consume seeds stored in the seed bank and destroy underground portions of the plant.

DISCUSSION AND QUALIFICATION OF FIRE EFFECT :
NO-ENTRY

PLANT RESPONSE TO FIRE :
Bicolor lespedeza generally increases in density under a frequent burning regime (4 years) [7,26] because it sprouts from the root crown after top-kill [7,23,25] and establishes new individuals from both on- and off-site seed sources [8].

DISCUSSION AND QUALIFICATION OF PLANT RESPONSE :
On a site cleared and burned every 4 years since 1962 in the Georgia Piedmont, bicolor lespedeza density was 1,529 per acre (619/ha) compared to 0 on an adjacent site with no previous burning history [5]. The effects of burning, fertilizing and a combination of both on the plant community in the Alabama Piedmont was studied. The extent of coverage of bicolor lespedeza on the various treated sites is as follows [26]:

Unburned and unfertilized= 0.01
Fertilized only= 0.16
Burned only (4 year interval)= 0.73
Burned and fertilized= 0.60

Bicolor lespedeza spread into the woods as a result of regular burning on the North Auburn area and on a large Piedmont private quail preserve in Alabama. On these areas it has become the dominant understory species [26].

Bicolor lespedeza germination has been shown to increase with dry heat treatments of up to 194 degrees Fahrenheit (90 deg C). The percent germination of bicolor lespedeza seed treated with dry heat during the summer of 1966 was as follows [9]:

		Dry heat (degrees C)					
	Control	45	60	70	80	90	100	110
(% germ)	4	44	68	80	100	100	0	0

FIRE MANAGEMENT CONSIDERATIONS :
Prescribed fire can increase bicolor lespedeza density [5,9,26] and consequently improve the habitat for northern bobwhite and other game birds. Nitrogen is a main soil nutrient lost during fire [31]. Because bicolor lespedeza is a nitrogen-fixing plant, it can be planted on burned sites to restore nitrogen to the soil [17].

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