

PASTURE AND HAY PLANTING SPECIFICATIONS

NATURAL RESOURCES CONSERVATION SERVICE

Seed Source

All seed and planting materials will be labeled and meet state seed quality law standards. Seeding rates will be determined based on pure live seed (PLS) or percent germination information found on the seed tag (Table 3). Percent PLS can be computed using decimal values with the following equation.

$$\% \text{ PLS} = [(\text{Percent germination} + \text{Percent hard seed}) \times \text{Percent purity}] / 100.$$

Seeding rates for individual species in mixtures should be calculated by multiplying the full seeding rate for each species by the desired percentage represented by that species

Legume seed shall be inoculated with the recommended strain of Rhizobia bacteria for the species being planted. Do not use chlorinated water with legume seed inoculant as a sticking agent. Chlorine can kill the Rhizobia bacteria. Soft drinks (colas) containing sugar make excellent sticking agents for inoculating legume seed.

Vegetative material such as roots can be obtained on farm or from a reputable source. If cost-sharing is involved, vegetative materials such as roots and their source will be approved by the designated conservationist.

Louisiana Seed Law

The germination test is valid for nine months after the end of the month the test was made so long as the seed remains in Louisiana. Louisiana Seed Law specifies the kind and amount of weed seed permitted and requires a current analysis report and labeling of all seed to show germination, purity, date of last germination test, and weed content.

Federal Seed Law

For seed shipped across state lines, the germination test is valid for 5 months after the end of the month the test was made.

Seedbed Preparation

Limit soil disturbing activities to the minimum needed to prepare a suitable seedbed. Consider using no-till drills when establishing native grasses and/or legumes on sites with an erosion hazard.

To prepare a seedbed, use equipment and methods that will result in a clean, firm seedbed without excessive weed competition. For soils with good physical condition, use a one-way

disk, tandem disk, or other equipment to break or mix at least the top 3 inches of soil. Lightly disk, harrow, sweep, or use chemicals about one month prior to planting to eliminate any living vegetation should it exist. If the seedbed is not firm at planting time, firm it with a cultipacker, roller, or similar implement.

On fields which have a history of compaction, use a chisel plow or similar implement capable of operating at least 1 to 2 inches below the compacted zone to shatter the compacted layer. More complete destruction of the compacted layer is achieved when deep tillage is performed in the fall when soils are usually their driest. Prior to planting the desired vegetation, lightly disk, harrow, sweep, or use chemicals to eliminate any living vegetation should it exist.

Prepared seedbeds should be firmed with a roller or cultipacker after tillage operations are complete, but prior to seeding. Loose uneven seedbeds are a major cause of poor stands. Shoes or boots should not sink more than ½ inch into a properly prepared seedbed. Seeds sown on the surface without coverage or greater than ½ inch deep have little chance of germinating and developing into seedlings. If seed are surface broadcast, cover the seed immediately with a roller or cultipacker, spike-tooth harrow, or similar implement no deeper than ¼ inch.

Old terraces or other conditions which cause ponding which could drown out the planted species or which cause water concentration and erosion will be drained, repaired, or leveled and smoothed before seedbed preparation. Determination of the need for removal of old terraces will be made in consultation with the client and the designated conservationist based on soil erodibility and planned use of the planting. Any brush should be removed and the area smoothed to the extent necessary to perform required seedbed preparation, planting, and subsequent management practices.

Establishment Method

Bermudagrass is commonly propagated by plant parts such as rhizomes or sprigs (underground storage roots), stolons (above ground runners) or tops (mature stems). See Table 1 for plant dates, depths and rates.

Sprig planting - Sprigs will be planted in rows and firmly covered 1-3 inches deep. The distance between rows will not exceed 42 inches. Sprigs will be well distributed. Bermudagrass sprigs will be uninjured live stems, stolons, and rhizomes. Sprigs will not be cut, chopped or allowed to dry out. Sprigs will be protected from the sun and hot, drying winds. A manure spreader or similar equipment may be used to evenly distribute rhizomes or stolons. Immediately after distribution, cover with a disk to a depth of 2 to 3 inches, then smoothly finish and pack with a roller or cultipacker. Planting must be done in moist ground.

Planting Vegetative Tops - Tops are above-ground, green, mature stems. Tops, unlike sprigs, must develop roots at the nodes to become viable plants. For a top (stem or runner) to root, it must be about six weeks old, 18-24 inches long and have six or more nodes. A manure spreader or similar equipment may be used to evenly distribute tops. Immediately after distribution, cover with a disk to a depth of 2 to 3 inches, then smoothly finish and pack with a roller or cultipacker. Planting must be done in moist ground.

Drilling - Drills used for seeding native plants should be equipped with an agitator in the seed hopper and extra large seed delivery tubes for handling native grasses. Native seeds which have been debarbed or are smooth in nature can be used in conventional drills. If legumes and/or forbs are included in the seeding mixture, the drill should be equipped with a small seed attachment.

Broadcasting - Use of a broadcast seeder, broadcasting seed by hand, and aerial seeding are acceptable methods of seeding where conditions permit seed to be placed in contact with mineral soil on a firm seedbed and where uniform seed distribution can be achieved. Loose uneven seedbeds are a major cause of poor stands. Shoes or boots should not sink more than ½ inch into a properly prepared seedbed. Regardless of method, it will be necessary to use a cultipacker, press wheels or similar techniques following broadcast seeding to aid coverage of seed. Seeds sown on the surface without coverage or greater than ½ inch deep have little chance of germinating and developing into seedlings.

Fertility

Fertilizer for establishment purposes will be done according to a current soil test. A variation of 25% above or below the specified amount of fertilizer for establishment is allowable. Plant nutrients necessary for establishment of the cover shall be applied according to specifications in the conservation practice standard, Nutrient Management (590).

When acid soils are present, lime may be needed for adequate grass growth or for legume establishment. Use dolomitic limestone where magnesium is needed. Lime should be incorporated into the soil during seedbed preparation. Lime shall be applied according to soil test recommendations. Legume seed and fertilizer will not be broadcast together because the fertilizer will damage and kill the legume inoculant.

Management

During Establishment - Growth of seedlings or sprigs will be monitored for water stress. Such stress may require reducing weeds, early harvest of nurse crops, irrigation, or replanting of failed stands. Weed control can be accomplished through any of several methods.

Grazing - Flash grazing by livestock may be used to control annual grasses and forbs, but extreme caution should be used to avoid selective grazing of highly palatable planted species. This method will not be used after July 15, except when abnormal summer moisture promotes excessive weed growth. Flash grazing will not be used when the soil is wet to avoid damage to young plants from hoof action.

Mowing, which can be achieved with a bush hog, is an optional weed control measure during the establishment year and in subsequent years for residue management. Mowing in mid-summer to a height just above the grass seedlings will help reduce weed competition and encourage seedling growth. Mowing should coincide with grassland bird nesting period. Therefore, mowing should

only be performed before April 1 and after July 15. Exceptions may be granted when activities are necessary to facilitate the establishment of desirable cover.

Weed Control

Herbicides - Chemicals used must be federally and locally registered and must be applied in accordance with registered uses, label directions and all applicable laws, regulations, and policies and according to Pest Management (595) specifications. Pre-emerge herbicides may be used as appropriate prior to germination of desired species. When post-emerge herbicides are used, native grass seedlings should be in the 3 to 5 leaf stage. Weed control is needed when there are 3 or more weeds per square foot or when they form a canopy of 50% or more.

Mechanical - Weeds should be mowed when they reach a height of 6 to 8 inches. Mowing height should be above the height of the seeded plants. Mowing should not be done when daily maximum air temperature exceeds 95 degrees to avoid dehydration of seedlings. Where wildlife habitat enhancement, maintenance activities shall not be performed from April 15 – July 15 which coincides with the primary nesting season for most ground nesting bird species in Louisiana.

Table 1. Planting dates, depths, and rates (pure live seed – PLS) for establishing grasses for pasture or hay land.

Species/Cultivar	Planting Date	Planting Depth (in.)	Planting Rate (PLS)	Adaptation
Perennial grasses				
Bahiagrass – Argentine, Pensacola, Tifton 9	3/15-6/1(8/1) ¹	¼ to ½	15 lbs/ac	Sandy soils, not recommended for heavy clay soils, pH 5.5-6.5, Drought tolerant
Common Bermudagrass (hulled seed), Cheyenne Bermudagrass	3/15-6/1(8/1) ¹	¼ to ½	5 lbs/ac	All soils, extremely drought tolerant
Bermudagrass (sprigs) – Alicia, Brazos, Coastal, Grazer, Tifton 44, Tifton 85, Russell, Jiggs, Sumrall	4/15-6/30(8/31) ¹	1 to 3	Footnote 2	All soils, extremely drought tolerant
Bermudagrass (green hay) - Alicia, Jiggs, Grazer, Brazos, Russell, Sumrall , Little Phillip I	4/15-6/30(8/31) ¹	¼ to 2	Footnote 3	All soils, extremely drought tolerant
Bermudagrass (sprigging green hay) – Alicia, Brazos, Grazer, Jiggs, Little Phillip I, Russell, and Sumrall	4/15-6/30(8/31) ¹	¼ to 2	300-500 lbs/ac	All soils, extremely drought tolerant
Dallisgrass	3/15-6/1(8/1) ¹	¼ to ½	5 lbs/ac	Best adapted to moist, fertile clay and loam soils. Drought tolerant.
Switchgrass – Alamo, Blackwell	(12/1) 2/1-5/15 (5/31) ⁵	¼ to ½	4-9 lbs/ac	Best adapted to fertile well-drained soils. Will tolerate poorly drained soils.
Eastern Gamagrass – Pete, Iuka, Iuka IV	(12/1) 2/1-5/15 (5/31) ⁵	¾ to 1 ¼	8-13 lbs/ac	Best adapted to moist, well-drained fertile soils. Does not tolerate standing water for long periods.
Tall fescue – Kentucky-31, Georgia 5, Jesup, AU Triumph, Forager, Penngrazer	9/1-11/1	¼ to ½	20-30 lbs/ac	Best adapted in clayey or loamy soils. Tolerant of acidity and poor drainage. Relatively tolerant of drought. Better adapted to northern Louisiana.
Annual grasses				
Oats	9/1-11/15	1 to 2	100-120 lbs	Less cold tolerant when compared to other small grains but can also be planted earlier and produces more early growth. Adapted to all soils.
Cereal rye	9/15-11/15	1 to 2	90-120 lbs	Early maturing, good producer of fall, winter, and early spring growth. Adapted to all soils.
Annual ryegrass	10/1-11/15	0 to ½	20-30 lbs	Most widely used small grain for overseeding. Adapted to all soils.
Wheat	10/1-11/15	1 to 2	90-120 lbs	Most cold tolerant of the small grains, adapted to all soils.

¹ The date ranges above provide the optimum planting times while the dates in parentheses provide the latest date for planting provided adequate soil moisture is present.

² A bushel of Alicia, Coastal, Grazer or Tifton 44 sprigs contain about 400 sprigs and weigh approximately 15 pounds. Satisfactory stands can be obtained by using 12 – 15 bushels (180-225 lbs) per acre if **planted by hand** in rows three feet apart, 15 – 20 bushels (225-300 lbs) per acre if **planted by machine** in rows or 40 – 50 bushels (600-750 lbs) per acre **if broadcast and disked** into the soil. Since **Brazos contains fewer sprigs** per bushel use 20 - 25 bushels ((300-375lbs) per acre if planted in rows by hand, 25 – 30 bushels (375 -450 lbs) per acre if planted by machine in rows or 50 – 60 bushels (750-900 lbs) per acre if broadcast and disked into the soil.

³ A bale of green, uncured clippings (Alicia, Brazos, Jiggs, Grazer, or Russell) weighing 100 lbs will plant 2500 square feet when spread over the area. This equates to a planting rate of 1,750 lbs/acre.

Table 2. Planting dates, depths, and rates for establishing legumes for pasture or hay land.

Species/Cultivar	Planting Date	Planting Depth	Planting Rate**	Adaptation
Alyceclover	5/1-7/15	¼ to ½ inch	30 lbs/ac	Best adapted to well-drained, sandy soils. Can tolerate soil acidity. Warm season annual.
Alfalfa – Cimarron VR, Florida 77	9/15-11/1	¼ to ½ inch	25 lbs/ac	Adapted to highly fertile, well-drained soils, near neutral pH, and a high level of management. Limited adaptation in Louisiana. Cool season perennial.
Arrowleaf Clover – Amclo, Meechi, Yuchi	9/15-11/15	¼ to ½ inch	8 lbs/ac	Adapted to well-drained soils, does not tolerate acidity or low fertility. Cool season annual. Optimum pH range 5.8 – 6.5.
Ball Clover	9/15-11/15	¼ to ½ inch	5 lbs/ac	Adapted to loamy to clayey soils. Will tolerate poor drainage. Cool season annual
Berseem Clover – Bigbee	9/15-11/15	¼ to ½ inch	20 lbs/ac	Adapted to alkaline and wet soils. Not winter hardy. Cool season annual.
Crimson Clover – Chief, Dixie, Tibbee	9/15-11/15	¼ to ½ inch	15 lbs/ac	Adapted to well-drained soils. Tolerates moderate soil acidity. Cool season annual.
Annual Lespedeza – Common, Kobe, Korean	3/1-5/1	¼ to ½ inch	25 lbs/ac	Adapted to a wide range of well-drained soils. Will grow on eroded, acid soils low in P. Optimum pH 6.0 – 6.5. Warm season annual.
Sericea Lespedeza – AULotan, Serala, Serala 76	3/1-5/1	¼ to ½ inch	30 lbs/ac	Adapted to clayey or loamy soils. Will not tolerate alkaline or poorly drained soils. Warm season perennial.
Red Clover – Kenland, Kenstar, Renegade, Cherokee, Concorde, Acclaim, Cinnamon	9/15-11/15	¼ to ½ inch	12 lbs/ac	Adapted to poorly drained acid soils. Fairly drought tolerant. Very high yielding. Cool season annual to biennial.
Subterranean Clover – Mt. Barker, Nangeela, Tallarook, Woogenellup	9/15-11/15	¼ to ½ inch	15 lbs/ac	Best adapted to well-drained soils. Tolerant of acid soils. Cool season annual.
Hairy Vetch	9/15-11/15	¼ to 1 inch	20 lbs/ac	Best adapted to well-drained soils. Tolerant of acid soils. Cool season annual.
White or Ladino Clover – Louisiana S-1, Osceola, Regal, Canopy, California, Durana	9/15-11/15	¼ to ½ inch	5 lbs/ac	Best adapted to well-drained silt loam and clay textured soils. Not suited to droughty or alkaline soils. Optimum pH 6 – 7. Cool season perennial.
Austrian Winterpea	9/15-11/15	¼ to 1 inch	30 lbs/ac	Adapted to well-drained loam or sandy loam textured soil. Intolerant of highly acid soil. Cool season annual.
Singletary Pea	9/15-11/15	¼ to 1 inch	50 lbs/ac	Adapted to acid to calcareous loamy and clayey soils. Tolerates wet conditions. Cease grazing when seed pods form to avoid poisoning and allow reseeding.

**Seeding rates are for broadcast plantings and can be reduced by 1/3 for drilled plantings. All planting rates should be applied on a Pure Live Seed (PLS) basis

Table 3. Multiplication factors used to determine bulk-seeding rate using percent germination and purity.

% Purity	% Germination																		
	100	95	90	85	80	75	70	65	60	55	50	45	40	35	30	25	20	15	10
100	1.0	1.1	1.2	1.2	1.3	1.4	1.5	1.6	1.7	1.9	2.0	2.3	2.5	2.9	3.4	4.0	5.0	6.7	10.0
95	1.1	1.2	1.2	1.3	1.4	1.5	1.6	1.7	1.8	2.0	2.2	2.4	2.7	3.1	3.6	4.3	5.3	7.1	10.6
90	1.2	1.2	1.3	1.4	1.4	1.5	1.6	1.8	1.9	2.1	2.3	2.5	2.8	3.2	3.8	4.5	5.6	7.5	11.2
85	1.2	1.3	1.4	1.4	1.5	1.6	1.7	1.9	2.0	2.2	2.4	2.7	3.0	3.4	4.0	4.8	5.9	7.9	11.8
80	1.3	1.4	1.4	1.5	1.6	1.7	1.8	2.0	2.1	2.3	2.5	2.8	3.2	3.6	4.2	5.0	6.3	8.4	12.5
75	1.4	1.5	1.5	1.6	1.7	1.8	2.0	2.1	2.3	2.5	2.7	3.0	3.4	3.9	4.5	5.4	6.7	8.9	13.4
70	1.5	1.6	1.6	1.7	1.8	2.0	2.1	2.2	2.4	2.6	2.9	3.2	3.6	4.1	4.8	5.8	7.2	9.6	14.3
65	1.6	1.7	1.8	1.9	2.0	2.1	2.2	2.4	2.6	2.8	3.1	3.5	3.9	4.4	5.2	6.2	7.7	10.3	15.4
60	1.7	1.8	1.9	2.0	2.1	2.2	2.4	2.6	2.8	3.1	3.4	3.8	4.2	4.8	5.6	6.7	8.4	11.2	16.7
55	1.9	2.0	2.1	2.2	2.3	2.5	2.6	2.8	3.1	3.4	3.7	4.1	4.6	5.2	6.1	7.3	9.1	12.2	18.2
50	2.0	2.2	2.3	2.4	2.5	2.7	2.9	3.1	3.4	3.7	4.0	4.5	5.0	5.8	6.7	8.0	10.0	13.4	20.0
45	2.3	2.4	2.5	2.7	2.8	3.0	3.2	3.5	3.8	4.1	4.5	5.0	5.6	6.4	7.5	8.9	11.2	14.9	22.3
40	2.5	2.7	2.8	3.0	3.2	3.4	3.6	3.9	4.2	4.6	5.0	5.6	6.3	7.2	8.4	10.0	12.5	16.7	25.0
35	2.9	3.1	3.2	3.4	3.6	3.9	4.1	4.4	4.8	5.7	5.8	6.4	7.2	8.2	9.6	11.5	14.3	19.1	28.6
30	3.4	3.6	3.8	4.0	4.2	4.5	4.8	5.2	5.6	6.1	6.7	7.5	8.4	9.6	11.2	13.4	16.7	22.3	33.4
25	4.0	4.3	4.5	4.8	5.0	5.4	5.8	6.2	6.7	7.3	8.0	8.9	10.0	11.5	13.4	16.0	20.0	26.7	40.0
20	5.0	5.3	5.6	5.9	6.3	6.7	7.2	7.7	8.4	9.1	10.0	11.2	12.5	14.3	16.7	20.0	25.0	33.4	50.0
15	6.7	7.1	7.5	7.9	8.4	8.9	9.6	10.3	11.2	12.2	13.4	14.9	16.7	19.1	22.3	26.7	33.4	44.5	66.7
10	10.0	10.6	11.2	11.8	12.5	13.4	14.3	15.4	16.7	18.2	20.0	22.3	25.0	28.6	33.4	40.0	50.0	66.7	100.0

To use this chart, simply cross reference the % germination down to the corresponding % purity. Example: The recommended rate of bermudagrass is 20 pounds of Pure Live Seed (PLS) per acre. The source of bermudagrass has 70% germination and 80% purity. Multiply the desired PLS (20) by the number from table (1.8). 36 pounds of bermudagrass would be needed to plant 20 pls pounds.