FORAGE AND BIOMASS 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 1). Percent PLS can be computed using decimal values with the following equation.

% PLS = [(Percent germination + Percent hard seed) x 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.

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 used to determine Pure Live Seed 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 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.

Surface drainage will be installed as needed. 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

Planting methods will be selected that plant to the proper depth ensuring seed or planting material will contact soil moisture uniformly and be firmed around the seed or planting material. See Appendix 1 - Planting Rates For Louisiana By MLRA's for seeding/planting rates, dates and adaptation.

Bermudagrass is commonly propagated by plant parts such as rhizomes or sprigs (underground storage roots), stolons (above ground runners) or tops (mature stems).

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 debearded 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.

Drills used to plant into cover (no-till) shall have the capability to ensure proper placement of the seed into the soil and firming of soil after placement.

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

Plant nutrients and soil amendments necessary for establishment shall be applied according to specifications in the conservation practice standard, Nutrient Management (590).

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. Mowing 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. 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% of 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.

CRITERIA FOR DETERMINING STAND ESTABLISHMENT

Introduced Grasses and Legumes. Usually establish within first growing season. An exception may be bahiagrass which may take 2 years. All other species should be evaluated at end of first growing season. If plants emerged and died due to frost or drought, evaluations can be made during first growing season. The months of September thru November is the best for conducting assessments.

Native Plantings. Native grasses and legumes may take more than one growing season to establish and should not be considered a failure until after the second season. If plants emerged and died due to frost or drought, evaluations can be made following first growing season.

Method of Making Determinations. Refer to Grazing Lands Technical Note Number 3 – ***Criteria for Stand Establishment: Pasture Planting***

Table 1. Multiplication factors used to determine bulk-seeding rate using percent germination and purity.

	% Germination																		
% Purity	**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.