Forage and Biomass Planting

Implementation Requirements (512)

Prepared for: _____

Prepared by: _____

Farm: _____ Tract: _____ Date: _____



Over-seeding warm-season pasture with small grains, or ryegrass, keeps fields productive year-round. Light disking, in late summer, prepares this Bermudagrass pasture for over-seeding.



Native warm-season grasses can offset summertime declines in cool-season forage production. Use of a native grass drill helps ensure uniform seed distribution and correct planting depth.

DEFINITION

Establishing or renovating native or introduced forage species.

PURPOSES

- ☐ Improvement or maintenance of livestock nutrition and health.
- ☐ Extending the length of the grazing season.
- ☐ Reducing soil erosion caused by wind and/or water.
- ☐ Improving or enhancing wildlife habitat.
- ☐ Establish adapted and compatible species, varieties, or cultivars.

CRITERIA

Plant species selection will be made based upon needs and desires of the land user, adaptability to the soil and climate, plant compatibility, and plant resistance to disease and insects common to the site or location.

Lime, phosphorous, and potassium will be applied in accordance with soil test recommendations. When planting warm season perennial grasses on sandy soils, apply half recommended potash at planting, and half at midseason.

Apply lime at least 6 months prior to planting, and if possible, till lime into soil. For lime applications to no-till or permanent pasture, do not apply more than 1.0 ton/ac. at one time. If recommendations exceed 1.0 ton/ac., apply excess in 1.0-ton increments every 6 to 9 months until the full rate is applied. For fastest neutralization, use lime with particles finer than 60 mesh.

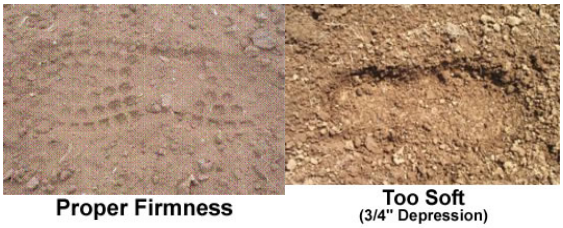
Nitrogen applications will be timed with attention to control of competition from annual weeds and residual sod, as well as crop needs. When making nitrogen recommendations for perennials grass plantings, utilize NCDA&CS Agronomic Division Crop Note 12: Fertilization of Forage & Pasture Crops (available at http://www.ncagr.gov/agronomi/pubs.htm).

For annual plantings and overseeded legumes, NC Forages and Pasture Technical Note 2 – Considerations for Pasture Fertilization may be referenced (*available on the NC eFOTG > Reference Lists > Technical Notes > Pasture and Forages*).

Site preparation will ensure close contact of seeds or sprigs with the soil, minimize competition from annual weeds and/or residual sod, and safe and efficient equipment operation. Competition from annual weeds or residual sod may need to be addressed with herbicides and/or tillage in the years prior to planned establishment. Special consideration of residual nitrogen reduction to eliminate annual weed competition through the use of small grains may be needed with certain sensitive forages.

For overseeding legumes or annual grasses, sod should be grazed or clipped to 2 inches or less.

When preparing a conventionally tilled seedbed, a cultipacker should be used to ensure firmness. Proper firmness may be assessed when an adult leaves footprints of no more than 1/8 in. to ¼ in. depression.



Proper Firmness

Too Soft
(3/4" Depression)

No-till plantings into herbicide-killed sod during autumn may be susceptible to grasshopper, cricket, and/or other insect damage. Fall armyworms may also be problematic for some crops. Adjusting planting dates and/or using pesticides may address insect pressure. For recommendation on Pest Control during pasture planting and establishment period, consult North Carolina Extension specialists and/or NC Ag Chemicals Manual available at http://ipm.ncsu.edu/Agchem/agchem.html.

Seed will conform to the seed laws and regulations of North Carolina.

All seed, should be tested for purity and germination prior to planting. Send a sample of seeds to the North Carolina Department of Agriculture and Consumer Services Testing Lab, or perform the Ragdoll Germination Test (see Appendix 1).

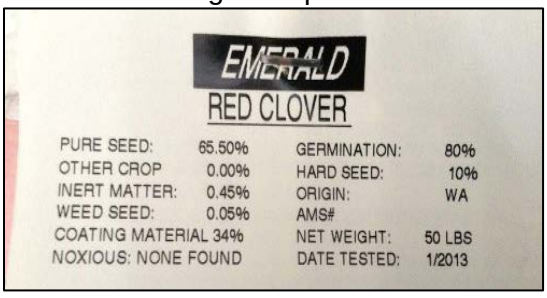
When planting legumes, careful attention should be paid to using the proper species of inoculant bacteria. For some species, the inoculant bacteria is usually already present in the soil (e.g. lespedezas, kudzu, hairy vetch, hop clover). For other legumes, use the table below to select inoculant:

Legume	Inoculant bacteria
Alfalfa, sweetclovers	*Sinorhizobium meliloti*
True Clovers	*Rhizobium leguminosarum biovar trifolii*
Birdsfoot Trefoil	*Mesorhizobium loti*
Winter peas, vetch	*Rhizobium leguminosarum biovar viceae*
Cow peas, sweet peas	*Rhizobium leguminosarum biovar phaseoli*
Forage soybeans	*Bradyrhizobium japonicum*
Forage peanuts	*Bradyrhizobium spp.*

For seeding depth, rate, and timing, refer to the "Forage Planting Guide for North Carolina" (*available on the NC eFOTG > Section IV > Conservation Practice Standards > Forage and Biomass Planting > Implementation Requirements)*.

To calculate Pure Live Seed percentage and bulk seed rates, use the information available on the seed tag and the following formula:
%PLS = (Germination % x Purity %)/ 100, where
% Germ = "quick germ" + "hard" or "firm," and where
% Purity = "other crop" + "inert" + "coating" + "weed."

See the following example of red clover:



Example:
Total Germ = 80 + 10 = 90 %
Purity = 100 - (0.45 +0.05 + 34) = 65.5%
% PLS = 0.90 x 0.655 = 58.95%
To plant at 9# PLS/ac.:
9#/ 0.5895 = 15.3 # bulk seed/ ac.

Calibrate drills and broadcaster equipment before planting. Plant on the contour or across the predominate slope. Operate equipment according to manufacturer's instructions.

Nurse crops may be helpful when planting on very erosive sites or when the target crop is expected to establish slowly.

OPERATION AND MAINTENANCE

Growth of seedlings or sprigs will be monitored for stress. Stress may be

alleviated by reducing weeds, controlling residual sod canopy, early harvest of any companion crops, and timely irrigation when conditions permit. Replanting may be necessary. Though evidence of stand adequacy varies by species planted, as a rule of thumb established stand should have at least 75% ground cover at one month fgfgfg post planting. In the case of sprigs, source/ handling and distance from site may influence planting success.

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Invasion by undesirable plants will be controlled by cutting, using selective herbicide, or by grazing management by manipulating livestock stocking rates, density, and duration of stay.

Insects and diseases will be controlled when an infestation threatens stand survival.

Newly seeded areas should be protected from grazing until plants are well established. Refer to "Forage Facts: Grazing Guide" (*available on NC eFOTG > Section I > Reference Lists > Technical References > Pasture and Forages*).

Once established, forage use of plantings should be managed according to NRCS Prescribed Grazing (CPS528) and Forage Harvest Management (CPS511) practices.

Forage & Biomass Planting Specifications for NRCS 512/327/342/612, CRP CP-1 and CP-2

Client: _____ **Tract(s):** _____

Field(s)	Species	Per Acre Planting Rate	Seeding Depth	Seeding Date	Seedbed Preparation	Lime & Fertilize	Operation & Maintenance
	1.Include variety/cultivar, from seed or sprig, and inoculant species (if applicable) *2.Use Forage Planting Guide for NC*	*1.Use Forage Planting Guide for NC* *2. Indicate if Drilled or Broadcast* *3. Indicate if Bulk or PLS*	*1.Use Forage Planting Guide for NC*	*1.Use Forage Planting Guide for NC*	*1.Include herbicide, grazing or clipping, tillage and/or cultivation, and firmness*	*1.Include N rates & timing, with competition considerations* *2.Include lime intervals & rates* *3.Include P & K timing & rates*	*1.Include weed and/or residual sod competition* *2.Include pest control measures* *3.Include grazing guidance* *4.Include guidance for haying* *5.Include stand assessment criteria* *6.Include any irrigation guidance*

Additional Considerations:

APPENDIX 1

RAGDOLL TEST

- Use a firm paper towel such as a brown hand towel or equivalent. The soft, very absorbent paper towels often used in a kitchen make poor ragdools because they allow roots and shoots to penetrate into the fiber, making seedlings difficult to remove during counting. If no other type of towel is available, the soft towel can be used, but it is best to use two layers. These towels often hold too much water which drowns the seeds.
- Wet the towel and allow free water to drip off for a minute. Lay the wet towel flat.
- Count out 100 seeds (50 for larger seeds like corn, peanuts, and soybeans) and place them on one half of the towel. Fold the towel in half and roll into a moderately tight tube. Rolling it around a pencil works well. Place the tube in a jar or sealable plastic bag. *To test the procedure, always place 5-10 seeds of some species you know will germinate such as beans, corn, alfalfa or clover*.
- Position the ragdoll so the tube is upright. Doing this causes roots to grow down and shoots to grow upward so that seedlings are more earily removed during counting. The ragdoll should be kept in a warm place (between 75 and 85º F). A little water in the bottom of the jar or plastic bag will insure adequate moisture.
- Make the first germination count for most seeds in about three days. Open the towel and count the seedlings as you remove them. After another three to four days make another count. If you had 100 seeds, the number of seedlings removed equals the percentage germination.
- You can distinguish hard or firm (dormant) seeds from dead seeds by pushing down on each non-germinated seed with the flat part of a pencil eraser. If the seed does not flatten with gentle pressure, it is considered hard. Dead seed will usually be moldy at the end of the test.

Certify and document installation of conservation practices according to Title 450, General Manual (GM), Part 407, and applicable conservation practice Statement of Work (SOW) found in Section IV of the eFOTG.

PRACTICE DESIGN

(Anyone can prepare Implementation Requirements (IR), granted it is reviewed and approved by an individual with appropriate Design JAA)

IR Prepared by (Name & Title): _____ Date: _____ Project JAA Class: ____

(Individuals with appropriate Design JAA can prepare, design, and approve their own work)

Design Approved by (Name & Title): _____ Date: _____ Design JAA Level: ____

(Anyone can review the IR with the Client/Producer, granted it's been approved by an individual with appropriate Design JAA)

Implementation Requirements Reviewed with the Client/Producer on (insert date): _____.

_____ _____

Printed Producer Name Producer Signature

PRACTICE CONSTRUCTION & CERTIFICATION

I. Practice Installation

(Anyone can perform Practice Installations, granted it is performed under the technical supervision of an individual with appropriate C&C JAA)

Pre-Construction/Implementation meeting completed with Client/Contractor on (insert date): _____.

Completed By (Name & Title): _____ Date: _____ C&C JAA Level: _____

Implementation TA provided by (Name & Title):_____ Date: _____

Implementation TA provided by (Name & Title):_____ Date: _____

II. On-Site Practice Inspection & Checkout

(Anyone can perform On-Site Practice Inspections & Checkouts, granted it is certified by an individual with appropriate C&C JAA)

Amount Completed: _____(units) (Note: Take picture(s) and mark As-Built location on practice certification map)

Remarks: _____

_____

Checkout by (Name & Title): _____ Date: _____ C&C JAA Level: _____

III. Construction/Installation Certification

(Only individuals with appropriate C&C JAA can validate and approve Construction/Installation certifications)

This practice meets NRCS standards and specifications: ☐ Yes ☐ No (If No, state reason(s) in remarks section below).

Remarks: _____

_____

Certification by (Name & Title): _____ Date: _____ C&C JAA Level: _____

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