

PASTURE AND HAY PLANTING

Grass-Legume Mixtures Planting

Virginia Conservation Practice Job Sheet

512 (c)



Definition

Establishing mixed stands of grass/legumes as part of a resource management conservation plan. The grass/legume mix may be used for forage, hay, pasture, or wildlife habitat.

Purpose

This practice should be used to establish grass/legume stands as part of a conservation plan for livestock. This practice may also be used to improve or maintain livestock nutrition and/or health, extend the grazing season, reduce soil erosion, improve water quality, balance forage supply and demand during periods of low forage production, improve soil quality, improve wildlife habitat, and increase carbon sequestration.

Conditions where Practice Applies

This practice applies on cropland, pastureland, hayland, and other lands where cool season perennial grasses are needed for pasture, forage, hay, or wildlife habitat.

Establishment Specifications

Depending on the species and location within the state, grass/legume mixes may be established in spring or late summer early fall in the Northern Piedmont and Mountain and Valley regions of Virginia. Spring seeding of grass/legume mixtures in the Coastal Plain and Southern Piedmont is usually not recommended due to quick onset of hot weather before good establishment. See page 4 for specific establishment recommendations for your farm.

Stands of grass/legume mixtures may be established either by conventional or no-till methods. Regardless of the seeding method used, care should be taken to avoid planting the seed too deep. If soil erosion is a concern during the establishment period, then it is highly recommended to use a no-till method of planting. This will protect the soil in the field and reduce the potential off-site effects of soil erosion. Avoid planting or cultipacking in wet soil since it may result in improper seed placement and planting failure.

When seeding by *conventional methods*, plowing and disking should be done deep enough to kill all existing vegetation and to incorporate lime and fertilizer into the top 4 – 6 inches of soil. Lime and fertilizer applications will be applied according to the recommendations of an approved soil testing facility. It is best to apply lime 6 months prior to planting. No more than 20 lbs/acre of nitrogen is recommended at planting for grass/legume mixtures. Eliminate any rills and gullies. The surface should be reasonably smooth and free of ridges, rocks, and other obstructions. Prepare a firm seedbed. A dry, firm seedbed is critical to avoid planting seed too deep and to ensure good seed-to-soil contact. The seeding may be done with a drill, cultipacker seeder, cyclone seeder, hydro-seeder, or other suitable equipment. The seed should be covered a depth of ¼ to ½ inches in a firm seedbed. A roller or cultipacker will ensure a good seed-to-soil contact. Cultipack or roll the seeded area only once to ensure good seed-to-soil contact and the proper seeding depth. Conventional seeding may be used for establishment on areas that have been recently cropped, where weedy competition will be reduced, and where the risk of soil erosion is minimal.

When seeding by *no-till methods*, care needs to be exercised with no-till drills to ensure correct seed flow and seeding depth. Calibrate the drill and when planting, check the seeding depth often to avoid planting too deep. Do not pull the drill too fast.

Seed should be placed in firm contact with the mineral soil at a depth of ¼ to ½ inches. Depth control bands or other controls should be used to ensure proper placement of seed. ***Packer wheels are essential.*** Eliminate competitive vegetation by heavy grazing, mowing, and/or herbicides. Undesirable species should be controlled by applying a suitable herbicide at least two weeks before the seeding date. Insecticides should be applied to control potential insect infestations.

Use of adapted and compatible species, varieties, or cultivars is important to the success of the planting. Seed will conform to minimum state standards for purity, germination, and other features. Seed tags and other information may be requested by an NRCS representative to verify seed quality. Legumes will be inoculated with the appropriate rhizobium. Never compromise seed quality.

Weed Control before Planting

Weed control is critical to ensuring a good stand of grasses/legumes. In most situations, control should begin prior to the seeding and seedbed operations. Either conventional seedbed preparation or herbicide application/s or both may be used to control weeds prior to establishment. When using pesticides, consult your local VCE agent for specific pesticide recommendations or the VCE Pest Management Guides located @ <http://www.ext.vt.edu/pubs/pmg/>. Always follow the label instructions when using pesticides.

Operation and Maintenance

After planting, weed control remains an important part of establishment. To control competition and prevent weed seed formation, the established stands may benefit from top clipping above the desired stand as needed from May through July especially during the establishment period. Post emergent herbicides may also be used during the establishment period as recommended by your local extension agent.

Livestock shall be excluded until the plants are well established.

Allow enough time for establishment prior to harvest or disturbance of the stand.

Growth of seedlings shall be monitored for water stress. Water stress may require reducing weeds, early harvest of any companion crops, irrigating when possible, or replanting failed stands, depending on the severity of drought.

Invasion by undesirable plants shall be controlled by cutting, using a selective herbicide, or by grazing management by manipulating livestock type, stocking rates, density, and duration of grazing period.

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

Evaluate forage stands each season or as needed to determine management inputs needed to achieve the desired purpose(s).

Specifications

Site-specific requirements are listed on this specification sheet. This job sheet is provided as a component of a resource conservation plan. Plan maps, location of fields to be planted, complementary conservation practices and measures, grazing schedule, other relevant information and additional specifications may be included. Specifications are prepared in accordance with the NRCS Field Office Technical Guide. See Conservation Practice Standard *Pasture and Hay Planting* (512).

Client:	Farm #:	A no-till drill is available from the SWCD office: <input type="checkbox"/> YES <input type="checkbox"/> NO Phone: () _____
Field(s):	Tract #:	
Prepared By:	Date:	

Purpose (check all that apply)	
<input type="checkbox"/> Establish adapted and compatible species, varieties, or cultivars.	<input type="checkbox"/> Balance forage supply and demand during periods of low forage production.
<input type="checkbox"/> Improve or maintain livestock nutrition and/or health.	<input type="checkbox"/> Reduce soil erosion and improve water quality.
<input type="checkbox"/> Improve soil quality.	<input type="checkbox"/> Improve wildlife habitat.
<input type="checkbox"/> Extend the length of the grazing season.	<input type="checkbox"/> Increase carbon sequestration.

Specifications	Field _____	Field _____	Field _____
Seed Mixture and Rate Grass(es)			
Legume(s)			
Lime (tons/acre)			
Fertilizer (tons/acre)			
Planting Method			
Site Preparation Method			
Site Preparation Treatment Date			
Herbicide (if known & applicable)			
Herbicide Application Dates			
Planting Date(s)			
Total Area Planted (acres)			

Site Preparation (Select method)

A. Site Preparation for No-Till Method

- Graze heavy or mow as low as possible to remove as much of the existing vegetation as possible. **Additional requirements:**

- Apply an approved herbicide to kill existing vegetation at the rate recommended by the VCE in the fall on or by _____ (date). Where dense sods exist, apply a second application on remaining vegetation after spring green-up once vegetation has reached 4-6 inches on or by _____ (date). Follow all label precautions and directions. Wait a minimum of two weeks or as directed by the product label and plant. *All herbicide applications should be performed when vegetation is actively growing.* **Additional requirements:**

- The site will be prepared by grazing followed by an application of herbicide as recommended by the VCE on or by _____ (date). Follow all label precautions and directions. Wait a minimum of two weeks or as directed by the product label and plant. *All herbicide applications should be performed when vegetation is actively growing.* **Additional requirements:**

B. Site Preparation for Conventional Method

- The seedbed should be prepared by disking and/or plowing to a depth of 4-6 inches. After disking, make at least one trip over the field using a cultipacker to firm the seedbed. Ensure that the seedbed is dry and firm to obtain the proper planting depth. Wet soils should not be cultipacked or planted. **Additional requirements:**

- The site will be prepared by grazing followed by disking and/or plowing to a depth of 4-6 inches. After disking, make at least one trip over the field using a cultipacker to firm the seedbed. Ensure that the seedbed is dry and firm to obtain the proper planting depth. Wet soils should not be cultipacked or planted. **Additional requirements:**

Planting Method (Select method)

- No-Till Drill** - Establish vegetation according to the specified seeding rate of _____ lbs/acre. Seed must be placed in firm contact with the mineral soil at a depth of ¼ to ½ inches. *Packer wheels are essential.* Check depth of seed frequently during planting. Depth control bands or other controls should be used to ensure proper placement of seed. **Additional requirements:**

- Conventional tillage** - Seed may be broadcast if accomplished in a uniform manner. A roller or cultipacker should be used to ensure good seed-to-soil contact. No more than ⅓ of the seed should be visible on the soil surface. Seeding depth should never exceed recommendations in table 1. If planting with a drill check depth of seed frequently during planting. **Additional requirements:**

- Frost Seeding** - Spread the seed during the winter when freezing and thawing of the ground is producing frost action with ice crystals coming out of the ground. This is usually between late January and late February when the snow is off the ground. If there is not sufficient frost action after applying the seed, allow your cattle to walk the pastures to tread the seed into the soil surface. Only do this when the soil is firm so that the cattle will not punch the soil and push the seed too deep into the soil. **Additional requirements:**

Operation and Maintenance

Follow the procedures and methods for Operation and Maintenance as outlined in this job sheet.
Livestock shall be excluded until the plants are well established. Control undesirable plants by cutting, selective herbicide, or by grazing management by manipulating livestock type, stocking rates, density, and duration of stay. Insects and diseases shall be controlled when an infestation threatens stand survival. Evaluate forage stands each season or as needed to achieve the desired purpose(s).
Inspect and calibrate all equipment.
Growth of seedlings shall be monitored for water stress. Water stress may require reducing weeds, early harvest of any companion crops, irrigating when possible, or replanting failed stands, depending on the severity of the drought.

Additional requirements:

If needed, an aerial view may be provided. Other relevant information, complementary practices and measures, and additional specifications may be included. See Conservation Plan for field and practice locations.

Additional Notes, Specifications, Requirements, etc.

For more information concerning this practice contact:

_____ at _____

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Grass-Legume Mixture Establishment						
		Recommended Seeding Dates				
Forage	Seeding Rate (pure Live Seed)	Coastal Plain	Southern Piedmont	Mountain/Valley Northern Piedmont	Desired pH	Seeding Depth
Tall fescue, EI *	12	9/1-10/15	2/15-4/1 or	3/1-4/15 or	5.6-6.2	¼"-½"
Or tall fescue EF*	15		8/15-10/1	8/1-9/5		
With 1-2 of						
Ladino clover ¹	1-2	9/1-10/15	8/15-10/1	8/1-9/5	5.8-6.5	⅛"-¼"
Red clover ¹	6	9/1-10/15	8/15-10/1	8/1-9/5	5.8-6.5	⅛"-¼"
Annual lespedeza ¹	6	2/1-3/15	2/15-4/15	3/1-4/15	5.8-6.2	¼"-½"
Kentucky bluegrass with	10	Not	2/15 -4/1	3/1-4/15	6.0-6.5	⅛"-¼"
Ladino clover ¹	1-2	adapted	8/15-10/1	8/1-9/15	5.8-6.2	⅛"-¼"
Orchardgrass with 1-2 of	10	9/1-10/15	2/15-4/1	3/1-4/15	5.8-6.2	¼"-½"
Ladino clover ¹	1-2		8/15-10/1	8/1-9/15	5.8-6.2	⅛"-¼"
Red clover ¹	6				5.8-6.2	⅛"-¼"
Alfalfa	6				6.8-7.0	⅛"-¼"
Annual lespedeza ¹		2/1-3/15	2/15-4/1	3/1-4/15	5.5-6.2	¼"-½"
Orchardgrass and	10	Timothy	Timothy	3-1-4/15	5.8-6.2	¼"-½"
Timothy with 1-2 of	2	not	not	8/1-9/15	5.8-6.2	⅛"-¼"
Ladino clover ¹	1-2	adapted	adapted		5.8-6.2	⅛"-¼"
Red clover ¹	6				5.8-6.2	⅛"-¼"
Annual lespedeza ¹	6			3/1-4/15	5.5-6.2	¼"-½"
Alfalfa and	15	Fall – 30-	Spring – 30 days before last		6.8-7.0	⅛"-¼"
Orchardgrass	5	60 days	killing frost		5.8-6.2	¼"-½"
		before	Fall – 30-60 days before first			
		first	killing frost			
		killing				
		frost				
Rescuegrass aka	10-15	9/1-10/15	4/1-5/1	4/15-5/15	6.0-7.0	¼"-½"
Prairiegrass with one of			8/15-10/1	8/1-9/15		
Ladino clover ¹ or	1-2				5.8-6.2	⅛"-¼"
Red clover ¹	6				5.8-6.2	⅛"-¼"
Timothy with either	5	Timothy	Timothy	4/1-5/1	5.8-6.2	¼"-½"
Red clover ¹ or	6	not	not locally	9/1-9/15	5.8-6.2	⅛"-¼"
Alfalfa	10	locally	adapted		6.8-7.0	⅛"-¼"
		adapted				

*EI = endophyte infected; EF = endophyte free

¹ = Clovers and annual lespedeza may be frost seeded in late winter.

Table 1