FORT CHAFFEE
MANEUVER TRAINING CENTER
NATIVE GRASSES RESTORATION

2007
NATIVE GRASS
MANAGEMENT PLAN

Provided by:
USDA, NATURAL RESOURCES
CONSERVATION SERVICE
Booneville Plant Materials Center

Ft. Chaffee Maneuver Training Center
Native Grasses Management Plan
Provided by USDA-NRCS
Booneville Plant Materials Center
2007

A project was started in 2003 by the USDA, Booneville Plant Materials Center (PMC) to test native grasses performance on areas of Fort. Chaffee, Arkansas disturbed by military maneuver activities. This document contains the plan for establishment and management of native warm season perennial grasses based on the results of that project.

Cultivar Selection

The following is a list of native warm season grass cultivars best suited for Western Arkansas:

Big bluestem: Kaw

Switchgrass: Alamo

Little bluestem: Aldous

Indiangrass: Cheyenne

Eastern gamagrass: Bumpers

Site Characterization

The most important step in establishment of native warm season grasses is site characterization. This procedure should be accomplished at least 6 months prior to planting. Site characterization involves analysis of the soils where native grasses are to be established. Soil types can change within areas to be planted. The Sebastain County Soil Survey Manual should be consulted to identify specific soils in the planting area. Individual soils should be sampled separately. As a thumb rule, at least 6 sub-samples per 40 acres should be collected. These sub-samples will then be completely mixed to form one sample for analysis. Be very specific with sample documentation (exactly where the sample was collected). Soils analysis boxes may be obtained from the county Arkansas Cooperative Extension Service (ACES) office. The collected samples should be delivered to the (ACES) office, for analysis. They will need information about species being planted and production level to be achieved. When the sample analysis is returned, it will contain recommendations for lime application for pH adjustment along with recommendations for micro/macro nutrient applications. Adjustment of

pH needs to be addressed 6 months prior to planting, unless some form of hydrated lime (**not recommended**) is used. Ground limestone is recommended for acid buffering to raise pH. The ideal pH for native warm season grasses is 6.0. Fertility issues should be addressed at time of seedbed preparation/planting

Seedbed Preparation

Firm level seedbed is required for uniform planting depth. The area to be planted should have all residue removed, usually burned. After removing all residue an assessment of field condition (severity of ruts/gullies) must be made. If ruts/gullies are too severe for conventional seedbed equipment, then they must be leveled by some kind of earth moving equipment (grader/bulldozer/backhoe). Once all ruts/gullies are leveled the seedbed should be worked with a farm disk/plow to pulverize the soil. The soil should be worked (disked) to a minimum depth of 2 inches. Ideal depth is from 3 to 4 inches. The next step in seedbed preparation is compacting of the soil. For this operation a water filled roller (weight = 300 psi) should be used. This operation insures uniform seed placement in the soil. The seed should be placed no deeper than a quarter of an inch for all species with the exception of eastern gamagrass, which should be planted ½ to ¾ inch deep.

Planting

A native grasses drill should be used for: big bluestem, indiangrass, and little bluestem. The native grasses drill has what are known as 'picker wheels' inside the planting hopper. These picker wheels actually reach through the hopper and 'grab' the fluffy seed and deposit them in the large diameter drop tube. Varying seeding rate is accomplished by changing sprocket diameters to vary the speed of the picker wheels. Switchgrass may be planted either in a 'legume' hopper, or 'grain' hopper. These hoppers have conventional adjustable meters for obtaining rate of seed per acre. The eastern gamagrass should be planted through the 'grain' hopper, which also has adjustable meters. Minimum row spacing is 9 inches. Maximum row spacing is 18 inches.

Post planting

To insure good seed to soil contact, the water filled roller used to firm the seedbed, should again be used following the planting operation. This operation is necessary to maintain good seed moisture contact for appropriate germination.

Planting rates

The native grasses species may be planted in monoculture, or any combination mix. The following table is planting rates per acre. ALL seed should be purchased from vendors on a Pure Live Seed (PLS) basis. There may be dormant seed present or seed that have no germination. If purchased on a PLS basis it may require 50 lbs. of bulk seed to actually get 30 lbs PLS.

Seeding Rate Table

Species	Lbs./ac * Mono	Lbs./ac Mix
Big bluestem	8	4
Indiangrass	9	5
Little Bluestem	10	6
Switchgrass	8	4
Eastern gamagrass	10	5

* Rate is lbs./ac on a pure live seed (PLS) basis

Planting Dates

Planting dates for native species are very flexible. If planting in the fall, wait until after the first killing frost (around Nov. 1). If planting in the spring, start as early as February, and no later than May 15. May 15 is observed as the cut off date because of native grasses slow establishment. Plants must have roots to 6 inches deep prior to any drought. Areas of Ft. Chaffee to be restored have shallow soils and show signs of drought early in June. Areas that are poorly drained are good candidates for fall planting, since they will probably be too wet for seedbed preparation operations in early spring. Shallow drought susceptible soils will work best in spring. Seedlings should germinate within 10 to 14 days after planting. Eastern gamagrass will continue to germinate over a 2 year period.

Mulch

Mulch research conducted at Fort Chaffee showed little stand difference between application of grass hay mulch and small grain straw mulch. The most successful stand of all species was mulched at the rate of 1.5 tons per acre. One ton per acre allowed significant erosion on 1 to 3 percent slopes. Two tons per acre retarded germination of native grasses. Mulch should be applied at a rate to protect the soil. Steeper the slope, the more mulch it needs. The range of mulch is minimum 1 ton/acre, and maximum 2 tons/acre.

Herbicides

Native grasses establish slowly over a 2 to 3 year period. Once germinated, they are only vulnerable to over grazing/harvesting. They will withstand drought, disease, insects, and most weed competition. Therefore, herbicides, if used at all, should only be applied during the establishment year. As the native species mature, any weed problems will diminish.

Management of Warm Season Native Grasses

Warm season native grasses are relatively easy to manage. They are resistant to drought, insects, and disease. They do have one major vulnerability, over grazing/harvesting. These species store carbohydrate, for breaking dormancy, in the lower stem (6 inches above the ground). The grasses may be harvested/grazed within 2 inches of the ground until around July 15. This is the time that they start storing carbohydrates. It is critical to maintain 6 inches stubble height from July 15, until the first killing frost (around Nov. 1).

Spring Burn

Native grass stands can be enhanced by burning the plant residue in early spring (around March 15). This practice, for some unknown reason, enhances seed production. Establish an adequate fire break by disking around the areas to be burned.

Annual Fertility

Fertility of native grasses is dependent on the purpose of the field. For general maintenance, apply 200 pounds per acre of a complete fertilizer. Nitrogen (N) Phosphorus (P) and Potassium (K) = 13-13-13 or 17-17-17. If the field is to be grazed or harvested for hay, the fertilizer recommendation would be 300 pounds per acre of the same complete blend. Fertilizer applications should be made when the plants begin to break dormancy in the spring (April 15).

Harvest Criteria

Native warm season grasses may be harvested/grazed within 2 inches of the ground until July 15. If grazing, allow plants to reach 18 inches in height before exposing to livestock. After July 15th, grazing/harvest pressure needs to be reduced to allow 6 to 8 inches stubble height through the fall. Remaining residue may be utilized after a killing frost (usually around Nov. 1st).