

NATURAL RESOURCES CONSERVATION SERVICE
CONSERVATION PRACTICE STANDARD

RANGE PLANTING

(Acre)

CODE 550



DEFINITION

Establishment of adapted perennial vegetation such as grasses, forbs, legumes, shrubs, and trees.

PURPOSE

- Restore a plant community similar to its historic climax or the desired plant community.
- Provide or improve forages for livestock.
- Provide or improve forage, browse, or cover for wildlife.
- Reduce erosion by wind and/or water.
- Improve water quality and quantity.
- Increase carbon sequestration

CONDITIONS WHERE PRACTICE APPLIES

On rangeland, native or naturalized pasture, grazed forest, or other suitable location where

the principle method of vegetation management will be with herbivores and natural ecological functions, e.g., fire and hydrology. Apply this practice where desirable vegetation is below the acceptable level for natural reseeding to occur, or where the potential for enhancement of the vegetation by grazing management and other range improvement measures is unsatisfactory.

CRITERIA

General Criteria Applicable to All Purposes

Specific seeding/plant material rates, methods of planting, date of planting and/or species selection need to be consistent with documented guidance. Refer to information cited by the USDA-NRCS Brooksville Plant Materials Center, University of Florida, other research institutions or agency demonstration trials for achieving satisfactory establishment.

Species, cultivars, or varieties selected must be compatible with management objectives and adapted to climate conditions, soils, landscape

position, (e.g., aspect), and rangeland ecological site(s). Additionally, species, cultivars, or varieties selected need to provide adequate cover to control erosion by wind and/or water within an acceptable period of time.

Do not plant any species found on the Florida Dep. of Agriculture and Consumer Services or the Florida Dep. of Environmental Protection noxious or prohibited weed lists. Additionally, do not plant any species listed as a Category 1 invasive species by the Florida Exotic Pest Plant Council (see FOTG Section I [f] [4]).

Be sure that recommendations for planting depths, dates, seeding rates, soil amendments, and fertilizer needs for establishment, as well as minimum seed quality/plant material standards and management during the establishment period (e.g., weed control, grazing deferment, etc.) are followed to enhance establishment success.

Whenever possible, use a native grass drill equipped with double disk openers having depth bands followed by cultipacker, press wheels, or drag chains. Plant seed 1/4 to 3/4 inches deep unless specific planting instructions indicate a different depth. Row spacing should not exceed 12 inches.

Broadcasting may be used where the seed can be firmly anchored into the soil. Seedbed modification by cultipacking or other means is needed to accomplish this, and it is recommended to cultipack before and after seed placement. Hand broadcasting is acceptable where equipment cannot be operated because of terrain and an adequate stand of grasses can be expected on the seeded area.

Calculate seeding rates on a pure live seed (PLS, see box) basis or percent germination. With vegetative material (including green chop), base planting rate on pound of planting material per acre or spacing. In all cases, certified named varieties are the first preference for seed selection, followed by adapted non-certified named varieties, then followed by common local ecotypes (local native harvest). Cooperators who harvest seed for their own use must have a germination and purity analysis completed. Regardless of who grows or sells the seed, a copy of the current (within nine months) analysis must be provided.

“Pure Live Seed” or **PLS** represents the percentage of the material in a bag of seed that is viable seed of the desired species. PLS is not shown on the seed tag.

PLS is determined by multiplying the percent of pure seed times the percent of germination. (The % purity and % germination are listed on the seed tag.)

For example, a bag of switchgrass seed has 70% germination and 80% purity.

$PLS = 70\% \text{ germination} \times 80\% \text{ purity} \text{ divided by } 100$, or 56%. In other words, only 56% of the material in the bag is germinable seed.

The PLS is then used to determine the amount of seed to be used. The actual seeding rate is calculated by dividing the recommended seeding rate by the PLS.

For example: $10 \text{ LB/A} \text{ divided by } 0.56 = 17.9 \text{ LB/AC}$. You will need to plant 17.9 LB/A of the switchgrass seed to provide 10 LB/A of pure live seed per acre.

The analysis needs to show purity, germination, harvest location, and weed content. Do not use seed lots that contain noxious or weed seed in excess of that permitted by state seed law. When vegetative or green chop material is used, sites need to be inspected for noxious weed or invasive species prior to harvest.

All plans need to include specifications of what constitutes successful establishment, e.g., minimum percent/ground canopy cover, percent survival, stand density, etc. Make establishment determinations at the end of the second growing season unless it is known the range plants emerged and died during the first season. In that case, establishment determination should be made the first year.

Use a transect(s) located in representative area(s) of the field to make establishment determination. One hundred readings, 3 - 5 steps apart with one-foot square quadrats are recommended for recording the plant counts. Count the total number of plants occurring within the quadrats and divide by 100 to get the number of plants per square foot. More than one transect may be needed on large fields or where stand establishment is not uniform. Delineate those areas of the planted area that do not meet establishment criteria. See Table 1 for suggested criteria for determining stand establishment success.

Table 1. Criteria for Determining Probable Stand Success	
Number of plants per square foot	Probable Success and Suggested Action
0 - 0.5	Failure. Replanting required.
0.05 – 0.1	Probable failure. Replanting recommended
0.1 – 0.5	Questionable. Consider vigor of existing plants, potential to spread, extent of competition, length of contract, weather considerations, adequacy of erosion control, and desires of producer to determine replanting decision.
>0.5	Satisfactory.

Do not graze areas during the first year following seeding/planting and deferment may need to extend into the following growing season to ensure establishment. Exceptions would be where flash or mob grazing is used for weed control (see next page). Dormant season use is permissible as long as adequate residue is left to ensure regrowth and protect from erosion.

Generally, when three weeds per square foot or a 50% canopy are observed, some form of weed control should be considered. Herbicides must be applied in accordance with authorized registered uses, directions on label, and other federal or state policies and requirements. Unless specified differently on label, seeded species should have 3 to 5 leaves per plant before herbicides are applied. Alternatively, mowing can be used to control weeds. Mow or top when weeds are above the height of the planted species and about 6- to 9- inches tall. In some cases, some form of flash or mob grazing can be used to control weeds. Flash or mob grazing uses high concentrations of livestock to harvest palatable competitive plants, e.g. crabgrass, in a short period of time. Cease grazing immediately if there is significant use or damage to seeded plants. In cases where additional applications are needed, the procedure should be repeated soon enough to prevent the weedy vegetation from becoming tough or unpalatable. See Florida NRCS Conservation Practice Standard Pest Management, Code 595, for more information.

Impact to cultural resources, wetlands, and Federal and State protected species needs to be avoided or minimized to the extent practical during planning, design, and implementation of this conservation practice in accordance with established National and Florida NRCS policy; General Manual (GM) Title 420-Part 401, Title 450-Part 401, and Title 190-Parts 410.22 and 410.26; National Planning Procedures Handbook (NPPH) FL Supplements to Parts 600.1 and 600.6; National Cultural Resources Procedures Handbook (NCRPH); and The National Environmental Compliance Handbook (NECH).

Additional Criteria to Improve Forages for Livestock

The nutritional and palatability requirements of the kind and class of livestock that will be utilizing the range planting in addition to the desired season of use or grazing period will determine the species or combination of species planted. Forbs, legumes, and some shrubs are the quality component of livestock and wildlife diets. Include adapted forbs, legumes, and shrubs in any range planting plan when practical.

Site specific grazing management plan(s) need to be provided to the client with any range planting operation. See Florida Conservation Practice Standard Prescribed Grazing, Code 528, for more information.

Additional Criteria for Improved Water Quality and Quantity

Species or combination of species utilized need to maintain a stable soil surface and increase infiltration. Include short-lived perennials and/or annual herbaceous plants in mixtures as nurse crops when soil erosion is a potential problem.

Do not plant species that have high evapotranspiration rates, such as some woody species and phreatophytes, when watershed yields are the primary objective.

Plant a mixture of shrubs and trees indigenous to the site when riparian area, stream bank stability, and water temperature criteria are important. See Florida NRCS Conservation Practice Standards Stream Habitat Improvement and Management, Code 395, and Riparian Forest Buffer, Code 391, for more information.

Additional Criteria for Improving Forage, Browse, or Cover for Wildlife

Utilize plant species that meet dietary and palatability requirements for the intended wildlife species and plant them in a manner that will meet the cover requirements of the wildlife species of concern. See "Management for wildlife: a supplement to wildlife standards and specifications for Florida" (NRCS, 1979), as well as, Florida NRCS Conservation Practice Standard Upland Wildlife Habitat Management, Code 645, for recommended plants for wildlife.

Additional Criteria to Increase Carbon Sequestration

For optimal carbon storage, choose species compatible with the primary management goal(s) that will maximize site biomass increase.

CONSIDERATIONS

When opportunity exists, use plant materials that contribute to wildlife and aesthetics. Activities need to be scheduled to avoid critical periods (e.g., mating, nesting, denning, rearing of young, etc.) when sensitive or protected wildlife species are present.

Other NRCS Conservation Practice Standards such as Brush Management, Code 314, or Grazing Land Mechanical Treatment, Code 548, may be used to promote a satisfactory site preparation to insure a successful range planting. Where air quality concerns exist, utilize site preparation techniques that minimize airborne particulate matter generation and transport.

Encourage the use of certified planting materials, however, distance and source limitations on seed and planting stock should be considered in terms of logistics and costs. Any special handling requirements for planting materials need to be followed for best results, (e.g., beards or awns on seed, hard seed coats, proper inoculant, seed mixture ratios).

PLANS AND SPECIFICATIONS

For standard plantings, appropriate forms, worksheets, etc., may be used to develop specifications and documentation. Plantings that require the use of other practices prior to planting and require preparation of a site specification sheet for that practice.

Minimally, specifications need to include:

- site preparation specifics including type and amount of soil amendments;
- species and seeding or planting rates;
- planting date(s), care and handling of seed or planting material, and stand densities that constitute successful stand establishment;
- a statement that says only viable, high quality, and regionally recommended seed or planting material will be used; and
- specific grazing management plan(s) for both establishment and maintenance phases of expected stand life.

OPERATION AND MAINTENANCE

Operation. Identify any required items needed to assist in stand establishment such as mowing, burning, flash grazing, and herbicides to control weeds. Address insect and disease control needs where they are likely to create

Maintenance. Any necessary replanting due to drought, insects or other uncontrollable events which prevented adequate stand establishment should be addressed as soon as possible. Recommendations may vary from complete re-establishment to overseeding or spot replanting. Thin stands may only need additional grazing deferment during the growing season.

REFERENCES

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- Pfaff, S., M.A. Gonter, and C. Maura. 2002. Florida Native Seed Production Manual. USDA-NRCS, Gainesville, FL. (<http://www.plant-materials.nrcs.usda.gov/pubs/flpmcputilsdprod.pdf>)
- Surrency, D., C.M. Owsley, and M. Kirkland. 2003. Plant Fact Sheet: Switchgrass. USDA-NRCS, Athens, GA. (<http://www.plant-materials.nrcs.usda.gov/pubs/gapmcf04607.pdf>)
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