



Natural Resources Conservation Service

CONSERVATION PRACTICE STANDARD

RANGE PLANTING

CODE 550

(ac)

DEFINITION

Establishment of adapted perennial or self- sustaining vegetation such as grasses, forbs, legumes, shrubs and trees.

PURPOSE

This practice is used to accomplish one or more of the following purposes:

- Restore a plant community similar to the Ecological Site Description reference state for the site 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 range, pasture, forest or other suitable location where the principle goals and method of vegetation management is herbivore based. This practice shall be applied 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 is unsatisfactory

CRITERIA

General Criteria Applicable to All Purposes

Seeding species and rates will be derived from the California Vegetation Guide in Section II of the Field Office Technical Guide and will correspond to the soil vegetation group, the MLRA and the 4Eta Zone.

Specified seeding/plant material rates, methods of planting, date of planting and/or species selection shall be consistent with documented guidance cited by Plant Materials Program, research institutions or agency demonstration trials for achieving satisfactory establishment.

Species, cultivars or varieties selected for richness and or diversity, must be compatible with ecological site description(s), local laws and regulations, management objectives and adapted to climate conditions, soils, landform, or position, (e.g., aspect), and recommended seed transfer zones.

Species, cultivars or varieties selected shall provide adequate cover to control erosion by wind and/or water within an acceptable period of time.

Pre-planting treatments to control invasive plants in highly degraded areas is required for enduring management and restoration.

Seedbed preparation and planting methods will be suitable to meet any special needs for obtaining an acceptable establishment of planted materials.

Recommended planting depths, hydrologic conditions, dates, seeding rates, soil amendments needed for establishment, minimum seed quality standards and management during the establishment period such as weed control and deferment from grazing shall be followed to enhance establishment success.

Seeding rates will be calculated on a pure live seed (PLS) basis.

Additional Criteria to Restore a Plant Community Similar to Its Ecological Site Description Reference State or the Desired Plant Community

Selection of species or combination of species shall be designed to meet or move the site to the ecological site description reference state or the desired plant community.

Additional Criteria to Improve Forages for Livestock

Selection of a species or combination of species shall be designed to meet the desired nutritional requirements for the kind and class of livestock.

Selection of species or combination of species shall be designed to meet the desired season of use or grazing period.

Species planted as mixtures will exhibit compatible palatability to avoid selective grazing.

Additional Criteria for Improved Water Quality and Quantity

Select a species or combination of species that will maintain a stable soil surface and increase infiltration.

Species that have high evapotranspiration rates shall not be planted when watershed yields are the primary objective.

A mixture of functional groups inherent to the site's hydrologic zones shall be planted when riparian area stream bank stability and water temperature criteria are important.

Additional Criteria for Improving Forage Browse or Cover for Wildlife

Selection of planted species shall meet nectar, dietary, and palatability requirements for the intended wildlife species.

Species will be selected and planted in a designed manner that will meet the cover and life history requirements of the wildlife species of concern.

Additional Criteria to Improve Water Quality and Quantity

Select a species or combination of species that will maintain a stable soil surface and increase infiltration.

Species that have high evapotranspiration rates shall not be planted when watershed yields are the primary objective.

A mixture of functional groups inherent to the site's hydrologic zone(s) shall be planted when riparian area stream bank stability, and water temperature criteria are important.

Additional Criteria to Increase Carbon Sequestration

For optimal carbon storage, select species that increase site biomass.

Where carbon sequestration goals are at an appropriate spatial scale, deep rooted perennial species that will increase soil carbon storage will be selected.

Reduce the temporal frequency of carbon releases caused by nonhistorical repetition of wildfires on degraded sites by selecting less flammable perennial plants appropriate for the site.

CONSIDERATIONS

Planting materials selected should contribute to wildlife and aesthetics when opportunities exist.

Other practices such as *Brush Management (314)*, *Herbaceous Weed Control (315)*, or *Grazing Land Mechanical Treatment (548)* may be used to promote a satisfactory site preparation to ensure a successful range planting.

Use of locally certified planting materials should be encouraged; 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, seed mixture ratios).

Where air quality concerns exist, site preparation techniques should be utilized that will minimize airborne particulate matter generation and transport.

To retain existing benefits of the current plant community, evaluate compatibility of resident species with those to be seeded. Alternative plant materials and/or alternative treatments should be explored if current plant community benefits are likely to be lost or substantially impaired as a result of the planting.

Stand establishment and success of native species can be maximized by ensuring adequate rest from grazing (1-2 years) post seeding. Implement *Prescribed Grazing (528)* if needed to maintain the seeding once established.

Where multiple species of natives are to be established for the purposes of ecological site restoration, establishing groups of species in phases can enhance the effectiveness of competition control and enhance restoration success. For example, it may be more effective to establish perennial native grasses before introducing native annual forbs.

For perennial species, the first one to three years after planting usually determines the overall success of this practice. Emphasis on competition control and reduced defoliation and/or seed predation by rodents during this period can substantially improve establishment success.

Control of annual species for two to three years prior to planting may be necessary to ensure establishment of native perennial seeding.

Where available, irrigation water can effectively suppress annual competition prior to planting and enhance desirable seedling establishment following planting.

In most cases, nitrogen fertilization of native grass species will result in increased competition from exotic annual grasses which may result in seeding failure.

PLANS AND SPECIFICATIONS

For standard plantings, appropriate forms, worksheets, etc. may be used to develop specifications and documentation. Where plantings require more detailed information or require the use of other conservation practices prior to planting, site-specific specifications and requirements will be prepared.

OPERATION AND MAINTENANCE

Operation

Identify any required items needed to assist in stand establishment such as mowing, burning, flash or target grazing, or herbicides to control weeds and vestige of invasive plants. Address insect and disease

control needs where they are likely to create establishment problems. Focusing on the ecological mechanisms and processes that direct succession is central to successful stand establishment.

Maintenance

The cooperators have an understanding of the management required to maintain the resulting plant community.

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

REFERENCES

Association of Official Seed Certifying Agencies, Native Plant Connection (2003) URL: <http://aosca.org/SiteContent/Documents///aoscanativeplantbrochure.pdf> (accessed 29Dec2015).

Jones, TA. 2005. Genetic principles for the use of native seeds: just the FAQs, please, just the FAQs. *Native Plants Journal* 6:14-18, 20-24.

Mangold, JM, et al. 2007. Revegetating Russian knapweed (*Acrotilon repens*) infestations using morphologically diverse species and seedbed preparation. *Rangeland Ecology and Management* 60:378-385.

Sheley, R.L., J.M. Mangold, and J.J. Anderson. 2006. Potential for successional theory to guide restoration of invasive plant dominated rangeland. *Ecological Monographs*. 76(3):365- 379.

USDA-NRCS Technical Publications by the Plant Materials Centers. <http://www.plant-materials.nrcs.usda.gov/technical/publications/seedplant-pubs.html>

USDA-NRCS. Technical documents related to plant species community dynamics. The Ecological Site Information System (ESIS) is the repository for the data associated with the collection of forestland and rangeland plot data and the development of ecological site descriptions. <https://esis.sc.egov.usda.gov/>