

**NATURAL RESOURCES CONSERVATION SERVICE
CONSERVATION PRACTICE STANDARD**

PASTURE AND HAY PLANTING

(acre)
CODE 512

DEFINITION

Establishing native or introduced forage species.

PURPOSE

This practice may be applied as part of a conservation management system to accomplish one or more of the following purposes:

- Establish adapted and compatible species, varieties, or cultivars.
- Improve or maintain livestock nutrition and/or health.
- Extend the length of the grazing season.
- Provide emergency forage production.
- Reduce soil erosion by wind and/or water.

CONDITIONS WHERE PRACTICE APPLIES

This practice may be applied on cropland, hayland, pastureland and other agricultural lands where forage production is feasible and desired.

CRITERIA

General Criteria Applicable to All Purposes Stated Above

Plant species and their cultivars shall be selected based upon:

- Climate conditions, such as annual rainfall, seasonal rainfall patterns

humidity levels and temperature extremes.

- Plant resistance to disease and insects common to the site or location.
- Soil condition and position attributes such as pH, available water holding capacity, aspect, drainage class, inherent fertility, salinity, flooding and ponding and levels of toxic elements that may be present such as aluminum.
- Plant compatibility with other forage species and their selected cultivar (s) in rate of establishment, maturity and growth habit when seeded together as a forage mixture.

Species selection, seeding mixtures and rates shall be in conformance with the general specifications that follow.

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

Provide a firm, weed-free seedbed that ensures seed will contact soil moisture uniformly, facilitate seedling emergence and provides a medium that does not restrict or allow roots to become dry.

All seed and planting materials shall meet State of Hawaii seed quality law standards.

Legume seed shall be inoculated with the proper, viable rhizobia before planting.

When coated seed is used, adjust seeding rate to compensate for the weight of coating.

Control of weeds by mowing shall be evaluated as an alternative to use of herbicides.

When plantings are to be irrigated, maintain adequate moisture in the upper six- (6) inches of soil during the first four (4) weeks and then in the upper 12 inches thereafter until the rainy season during the establishment period.

On sloping land where crop residues are present or will result from the existing or planned crop, minimize seedbed operations to maintain adequate residues on the surface for protecting the new planting. When available, also specify a no-till drill or similar seed drill to be used.

Additional Criteria for Improving or Maintaining Livestock Nutrition and/or Health

Forage species must be capable of meeting the desired level of nutrition for the kind and class of the livestock to be fed.

Additional Criteria for Extending the Grazing Season

Forage species selected for establishment shall fulfill a recognized dietary deficiency within the year long forage management program.

Criteria for Providing Emergency Forage Production

Select plants that will produce forage for use during periods when other on-farm/ranch forage is unavailable to meet livestock needs.

Criteria for Reducing Erosion by Wind and/or Water

Plants shall have the ability to provide adequate ground cover, canopy cover, root mass and vegetal retardation to wind forces and water flows either alone or in combination with other forage species when site conditions require erosion protection.

CONSIDERATIONS

Prescribed Burning, Prescribed Grazing, Brush Management, and Grazing Land Mechanical Treatment practices may be used in combination with Pasture and Hay Planting.

Where wildlife management is an objective, the food and cover value of the planting can be enhanced by using an approved habitat evaluation procedure to aid in selecting plant species and providing for other habitat requirements necessary to achieve the objective.

Forage species planted in mixture should exhibit similar palatability to one another to avoid spot or selective grazing.

On land where erosion is a potential problem, seeding should be timed or other provisions made to control erosion during establishment. Stubble mulch seedbeds, increasing seeding rates and adding a rapidly-growing cool season annual to the seed mix are most frequently used to minimize erosion.

Many perennial grasses and legumes start slowly and pre-plant weed control measures may be needed to facilitate establishment.

Residual herbicides can present grass and legume establishment problems on land that has been used for cultivated crops. Composite soil samples may be tested by trial seeding if residual herbicide problems appear probable.

Consider the effect on cultural and historic resources whenever the land is disturbed for planting or other reasons.

Practice Effects

Soil

The long-term effects will be a reduction in sheet and rill erosion and wind erosion. Ephemeral and classic gully erosion will be reduced. On and off-site deposition will be reduced with a corresponding improvement in safety. Soil tilth will improve and compaction will be reduced.

Water

After establishment there will be reduced runoff and increased infiltration. During planting there may be a temporary increase in runoff even though the long-term effect will be a reduction in surface water and an increase in ground water. Consider the effects on the water budget, especially on volumes and rates of runoff, infiltration, evaporation, transpiration, deep percolation, and ground water recharge. The long-term effect will be an increase in the quality of the surface water due to reduced erosion and sediment delivery. Increased infiltration and subsequent percolation may cause more soluble substances to be carried to ground water.

Air

There will be an improvement in air quality because of increased vegetative cover. Initially, air quality may be slightly reduced depending on method of seedbed preparation and location.

Plant

The long-term effect will be an increase in productivity and an improvement in plant health, vigor, suitability and management due to proper species selection and management techniques.

Animal

Animal habitat and health will improve because of proper species selection. Forage quantity and quality will improve. Cover will increase.

Refer to FOTG Section V for additional information on the physical effects of this practice on resource concerns.

PLANS AND SPECIFICATIONS

Site-specific specifications which document the requirements for installing, operating and maintaining the practice on a particular site to achieve its intended purpose(s) shall be prepared in accordance with this standard and the practice specification.

The site-specific specifications shall be documented on the practice jobsheet and given to the client. Other documents such as practice worksheets, maps, drawings, and narrative statements in the conservation plan may be used to plan or design the practice and to prepare the site-specific specifications.

OPERATION AND MAINTENANCE

Growth of seedlings or sprigs 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 stocking rates, density, and duration of stay.

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

REFERENCES

Heath, M. E., D. S. Metcalf, and R. F. Barnes. 1973. *Forages*. The Iowa State University Press, Ames, Iowa. 755 pp.

O' Reilly, M. V. 1992. *Better Pastures for the Tropics*. Frank Sauer & Sons P/L, Rockhampton, Queensland. 80pp.

Skerman, P.J. 1977. *Tropical Forage Legumes*. Food and Agriculture

Organization of the United Nations, Rome. 611 pp.

Smith, B., P. Leung, and G. Love. 1986. *Intensive Grazing Management: Forage, Animals, Men, Profits*. The Graziers Hui, Kamuela, Hawaii. 350 pp.

U.S.D.A. 1981 *Erosion and Sediment Control Guide for Hawaii*. U.S.D.A., N.R.C.S., Honolulu, Hawaii. 178 pp.