

NATURAL RESOURCES CONSERVATION SERVICE  
CONSERVATION PRACTICE STANDARD

**HAYLAND MANAGEMENT**

(acres)

CODE 210 CA INTERIM

**DEFINITION**

Proper treatment and use of hayland.

**PURPOSES**

To prolong life of desirable forage species, to maintain or improve the quality and quantity of forage, and to protect the soil and reduce water loss.

**CONDITIONS WHERE PRACTICE APPLIES**

On all land on which long-term stands of perennial plants are managed and harvested for hay. Forage plants left in a rotation for 8 years or more are considered long-term stands. Land planted to annual plants for hay and forage crops in short-term rotations is cropland.

**CRITERIA**

Delay haying newly planted field until plants are well rooted.

Perform harvest operations based on Table 1.

**Irrigation** - On irrigated haylands, apply water as soon as possible after harvesting. It will also often be necessary to apply at least one additional irrigation before the next cutting. Need should be determined by checking soil moisture with a shovel, auger, or probe. Readily available soil moisture should not be depleted below 50% of available water holding capacity during the growing season.

Amounts of water applied at each irrigation should be adjusted to match consumptive use (See local Irrigation Guide). Irrigation frequency and amount of water applied should be increased according when soil and/or irrigation water is high in soluble salts.

Some native or mountain meadows may be wetlands, therefore, their status must be adequately determined before they are manipulated, and prevalent wetland policies adhered to.

**CONSIDERATIONS**

Maintaining meadows used as hayland may require special management because of variable moisture conditions and growing seasons.

Grazing hay aftermath should usually be avoided. The practice is often detrimental to stands and yearly repetition may have a cumulative undesirable effect on the life of the stands, the quality and the yields of hay.

Major factors to address in planning include:

- (1) Minimum mowing height
- (2) Adequate rest period
- (3) Fertility management
- (4) Adequate, timely, irrigation that avoids erosion, runoff, deep leaching and drowning of plants.

Alfalfa is often the dominant species. The rest period should be controlled by two factors. Harvesting time should be gauged by protein content and when the new growth starts at the base, but before it gets high enough to allow the mower to clip off the growing tip. If the growing tip is cut off, it takes 10 to 14 days for the growth to get the same stage, plus it uses food reserves from the roots.

Mowing height is gauged by the amount needed for erosion control and to keep from clipping the new growth at the base. Protein content is highest at the bud or pre-bloom stage (about 20 percent) and stays high during the early bloom stage (15 to 20 percent), but rapidly declines as the bloom percent increases and really gets low if allowed to form seeds (5 to 10 percent). Maximum carbohydrate reserves in the roots follow the reverse being the lowest if cut each time in the bud stage and highest if in the seed stage. Usually the early bloom state allows for adequate food storage, but if stands are thinning, allowing the hay to seed at the end of the season can increase vigor.

Alfalfa is very subject to drowning or scalding out if flooded over 8 hours when temperatures are near 100 degrees F., so care should be taken to avoid letting water stack up in excess on the ends of the runs where flood irrigation is used.

Grazing aftermath usually depletes food reserves in the roots very fast as most California winters are warm enough that the new growth will start from the base several times when grazed and the plant is in a weakened state by the Spring and very subject to invasion by annuals.

Herbicides are effective in keeping out the annuals but the production is hurt for the first cutting due to a slower start and can stay low unless reserves are built back up. Grazing is discouraged, but if it is used, a one time, fast harvest, where no new regrowth is grazed, can minimize the losses. Grazing can have a beneficial effect in destroying overwintering protection for alfalfa weevils and other harmful insects. Avoid grazing when wet.

Nitrogen is the main growth stimulator, is water-soluble and is easily leached. Phosphorus enhances palatability and seed production and is used with the rotation to help maintain the legume balance. Sulfur is needed on many soils. Fertilizer balance is important and the N to P<sub>2</sub>O<sub>5</sub> ratio should be about 3:1 for most grass-legume mix pastures. Use soil or tissue tests to determine fertilizer needed. Nitrogen is usually applied in split applications, especially on soils easily leached. Phosphorous is best utilized if applied in the Fall.

### **Endangered Species Considerations**

Determine if installation of this practice with any others proposed will have any effect on any federal or state listed Rare, Threatened or Endangered species or their habitat. NRCS's objective is to benefit these species and others of concern or at least not have any adverse effect on a listed species. If the Environmental Evaluation indicates the action may adversely affect a listed species or result in adverse modification of habitat of listed species which has been determined to be critical habitat, NRCS will advise the land user of the requirements of the Endangered Species Act and recommend alternative conservation treatments that avoid the adverse effects. Further assistance will be provided only if the landowner selects one of the alternative conservation treatments for installation; or at the request of the landowners, NRCS may initiate consultation with the Fish and Wildlife Service, National Marine Fisheries Service and/or California Department of Fish and Game. If the Environmental

Evaluation indicates the action will not affect a listed species or result in adverse modification of critical habitat, consultation generally will not apply and usually would not be initiated. Document any special considerations for endangered species in the Practice Requirements Worksheet.

Some species are year-round residents in some streams, such as, freshwater shrimp. Other species, such as steelhead and salmon, utilize streams during various seasons. Be aware that during critical periods, such as spawning, eggs in gravels, and rearing of young may preclude activities in the stream that may directly affect the stream habitat during those periods. For example there should be no disturbance of stream gravel beds that may have eggs in them. That could include any equipment in the stream or even walking in the stream or work upstream that may result in sediment depositing in the gravel beds. Document any special considerations for endangered species in the Practice Requirements Worksheet.

### **Water Quantity**

When properly installed this practice reduces runoff, increases infiltration, and increases transpiration. There will be a reduction in the amount of surface water leaving the field, and an increase in the amount of water infiltrating into the root zone.

1. Effects on the water budget, especially on volumes and rates of runoff, infiltration evaporation, transpiration, deep percolation and ground water recharge.
2. Variability of practice's effects caused by seasonal weather variations.
3. Effects of management of vegetation on soil moisture.
4. Effects on increasing organic matter on water holding capacity of the soil.
5. Potential for a change in plant growth and transpiration because of changes in volume of soil water.

### **Water Quality**

With the reduced runoff, there will be less erosion, less sediment and other pollutants transported to the surface receiving waters. The increased infiltration increases the possibility of soluble substances leaching into the ground water.

1. Effects on erosion and the movement of sediment, pathogens , and soluble and sediment-attached substances that could be carried by runoff.
2. Effects on the use and management of nutrients and pesticides and resulting effects on surface and ground water quality.
3. Effects on the visual quality of downstream water resources.

### **PLANS AND SPECIFICATIONS**

Plans and specifications shall be in keeping with this standard and shall describe the requirements for applying the practice.

Specify the frequency and amount of fertilizer and lime application, stage of growth for harvesting different species or mixtures for hay, other locally important management practices, and weed and brush control.

### **OPERATION AND MAINTENANCE**

The owner or operator will be responsible for operating and maintaining this practice. Planned vegetation will be reestablished as needed to maintain at least 60 percent ground cover.

**Table 1. Hayland** - Use the following as a guide in determining proper time of harvest:

	<u>Period</u>	<u>Growth Stage for Cutting</u>	<u>Minimum Cutting Height (inches)</u>
<u>GRASSES</u>			
Bermudagrass	All cuttings	12-18"	3
Bromegrass, Smooth	First cutting	Between 80% head emergence and flowering.	4
	Second cutting	When basal sprouts appear at soil surface (at time of 2 <sup>nd</sup> cutting, sterile heads will be 15 to 20" up the stems).	4
Fescue, Tall	First cutting	Between 1/10 bloom stage and 25% flowering.	4
	Second cutting	Same as smooth bromegrass.	4
Orchardgrass	--	Same as tall fescue	
Canarygrass, Reed	First cutting	Between 80% heading and flowering.	6
	Second cutting	Same as smooth bromegrass.	6
Other grasses	First cutting	Between 80% heading and flowering	4
	Second cutting	After 8 to 10" recovery growth.	4
Grass-legume mixtures	--	When legume is ready as noted below or at a height favorable to other desired species	3-4
<u>LEGUMES</u>			
Alfalfa	First cutting	1/10 to 1/4 in bloom	3
	Later cuttings	1/4 in bloom <sup>1/</sup>	3
	Last cutting	About 4 to 6 weeks before killing frost	3
Clovers, Ladino	First cutting	1/4 to 1/2 in bloom	3
	Second cutting	Same at first cutting <sup>1/</sup> or when 8 to 10" high	3
Trefoil, Birdsfoot	First cutting	1/10 to 1/4 in bloom	2
	Second cutting	After 6 to 8 week recovery period <sup>1/</sup>	2

<sup>1/</sup> But before growing tip of new basal growth would be clipped off by mower.