



Practice Specification Forage Harvest Management (Code 511)

SCOPE:

This work will consist of the timely cutting and removal of forages from the field as hay, green-chop or ensilage.

GENERAL SPECIFICATIONS APPLICABLE TO ALL PURPOSES

Refer to Vermont NRCS 511 Forage Harvest Management conservation practice standard. Forage will be harvested at a frequency and height that optimizes the desired forage stand, plant community, and stand life. Follow Vermont Cooperative Extension Service (CES) recommendations for forage harvest. The following criteria must be met:

Stage of Maturity. Harvest forage at the stage of maturity that provides the desired quality and quantity without compromising plant vigor and stand longevity.

Delay harvest if prolonged or heavy precipitation is forecast that would seriously damage cut forage. Where weather conditions make it difficult to harvest the desired quality of forage, use mechanical or chemical conditioners and/or ensile.

Moisture Content. Harvest silage/haylage crops within the optimum moisture range for the type of storage method(s) or structure(s) being utilized. Approximate optimum moisture should be as follows:

- Top unload upright (tower), bunker and horizontal bag silos at 60 to 68 percent moisture.
- Bottom unload upright silos at 45 to 55 percent moisture.
- All corn silage regardless of storage structure at 63 to 68 percent moisture.

For optimal dry hay quality, rake hay at 30 to 40 percent moisture and ted or invert swaths when moisture is above 40 percent.

To preserve forage quality and quantity, bale field cured hay at 15 to 20 percent moisture and bale force airdried hay at 20 to 35 percent moisture.

Length of Cut. When harvested for ensilage forage will be chopped to a size appropriate for type of storage structure used and optimal effective fiber. The length of chop selected will allow adequate packing to produce the anaerobic conditions necessary to ensure the proper ensiling process. A shorter chop length on very dry silage may help to ensure good packing and adequate silage density.

Stubble Height. Cut forage plants at a height that will promote the vigor and health of the desired species. Cutting heights will provide adequate residual leaf area; adequate numbers of terminal, basal or auxiliary tillers or buds; insulation from extreme heat or cold; and/or unsevered stem bases that store food reserves needed for full, vigorous recovery. Follow CES recommendations for proper stubble heights to avoid winterkill of forage species in cold climates. **Refer to Table 1.**

Contaminants. Forage shall not contain contaminants that can cause illness or death to the animal being fed or rejection of the offered forage, i.e. poisonous plants, hardware (wire), alkaloid or endophyte containing forages to sensitive livestock species and drought stressed or frosted hydrocyanogenic forages. Check CES contaminant notices, cautions, and recommendations for the specific harvest site location and area.

When green chopping summer annual grasses containing hydrocyanic acid (HCN), such as sorghum-sudangrass hybrids, delay harvest until grass is greater than 18 inches tall. Test these forages for HCN if stressed by drought or frost prior to green chopping. When Birdsfoot Trefoil and White Clover are stressed they should be tested before green chopping as well. When ensilage forages exhibit high levels (>2,500 ppm) of nitrates, delay feeding of ensilage for at least six weeks.

Additional Criteria to Improve or Maintain Stand Life, Plant Vigor and Forage Species Mix

Stage of Maturity and Harvest Interval. Cut forage plants at a stage of maturity or harvest interval range that will provide adequate food reserves and/or basal or auxiliary tillers or buds for regrowth and/or reproduction to occur without loss of plant vigor.

Cut reseeding annuals at a stage of maturity and frequency that ensures the production of ample viable seed or carryover of hard seed to maintain desired stand density.

If plants show signs of short-term environmental stress, harvests will be adjusted in a manner that encourages the continued health and vigor of the stand, i.e., not harvesting the last cutting due to drought stress if plants have not reached their over- wintering heights.

Do not harvest alfalfa for at least 30 to 45 days prior to the mean killing frost date.

Manipulate timing and cutting heights of harvest to ensure germination and establishment of reseeding or seeded annuals.

Additional Criteria for Use as a Nutrient Uptake Tool

Employ a harvest regime that utilizes the maximum amount of available or targeted nutrients. Using this practice for this purpose may require more frequent harvests to increase uptake instead of managing for stand longevity. Forages may be planned for harvest that are known to have high uptake rate of soil nutrients such as sorghum-sudangrass.

When producing forages on high fertility/sludge program, test soils for heavy metals and test forages for same if soil tests indicate levels exceeding EPA limitations.

Additional Criteria to Control Disease, Insect, Weed and Invasive Plant Infestations

Follow CES guidelines when available for control of disease, insect, weed and invasive plant infestations to forage.

Schedule harvest periods to control disease, insect, and weed infestations. When a pesticide is used to control disease, insects or weeds, adhere to the specified days to harvest period stated on the pesticide label. Evaluate pest management options by planning conservation practice standard Pest Management (595) for all forage areas to be harvested. Also plan and schedule removal of invasive plants and noxious weeds.

Lessen incidence of disease, insect damage, and weed infestation by managing harvests to maintain a full, vigorous, dense forage stand.

Cut forages after dew, rain, or irrigation water on the leaves has evaporated.

Additional Criteria to Improve Wildlife Habitat Values

If client objectives include providing suitable habitat for desired wildlife specie(s) then appropriate harvest schedule(s), cover patterns, and minimum plant heights to provide suitable habitat for the desired specie(s) should be implemented and maintained.

Time harvests to benefit the desired wildlife species by following state guidelines.

Coordinate this practice with conservation practice standard Upland Wildlife Habitat Management (645) and accompanying job sheets or implementation requirements.

REFERENCES:

University of Vermont Extension System Crops and Soils webpage <http://pss.uvm.edu/vtcrops/>

University of Vermont Extension System Hay and Haylage Management webpage <http://pss.uvm.edu/vtcrops/?Page=forage.html#ForageManagement>

Table 1. University of Maine Cooperative Extension's Summary of Good Hay-Making Practices			
Species	Harvest Period	Growth Stage	Minimum Stubble Height After Cutting
<u>Orchardgrass</u>	First Second	Boot to early head stage. After 8-10" recovery regrowth.	2-3" 2-3"
Smooth Brome grass	First Second	Full head. When basal sprouts appear at soil surface.	2-3" 2-3"
Timothy	First Second	Late boot to early head. When basal sprouts appear at soil surface.	2-3" 2-3"
Alfalfa	First, Second, and Third	Full bud, ¼ bloom or after <u>5-6 week</u> recovery period.	1-2"
Ladino and Red Clover	First and Second	¼ to ½ bloom or 8-10"	2"

Specific Site Requirements