



**CONSERVATION ENHANCEMENT ACTIVITY**

**E511C**

**CONSERVATION STEWARDSHIP PROGRAM**

Forage testing for improved harvesting methods and hay quality

**Conservation Practice 511 Forage Harvest Management**

**APPLICABLE LAND USE: Perennial cropland (hayland) and Pasture**

**RESOURCE CONCERN: Animals, Plants**

**ENHANCEMENT LIFE SPAN: 1 year**

**Enhancement Description**

Dry hay forage samples are collected and analyzed following LGU procedures. Analysis results are kept and used to improve harvest decisions to guide forage supplementation of on-farm livestock to meet nutritional needs and improve health and productivity.

**Criteria**

- This enhancement only applies to hay harvested on-farm.
- Develop a plan to harvest hay in a manner that protects stand longevity and maintains or improves forage quality. Plans must include specifications for harvest timing, handling prior to baling, and storage options to best preserve forage quality.
- At least **2 consecutive** cuttings will be required of the same forage type, but additional testing may be needed and should follow the Cooperative Extension or other specialist/nutritionists’ recommendations and documented in the plan.
- Collect hay samples consistent with land grant university or accredited lab protocol for tissue sampling for each harvest cycle. Consult the National Forage Testing Association list of Certified Labs- <https://www.foragetesting.org/links> for more assistance.

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- Complete a record keeping document that will include all the following at a minimum for each cutting:
  - Date and time of harvest AND date of baling
  - Forage type
  - Maturity stage/description during harvest including harvest height
  - Curing and handling prior to baling (number of tedding, raking, and/or merging operations)
  - Moisture during harvest
  - Bale type (Large square, Round, Small Square)
  - Storage type (indoor, poly-wrapped, tubed, tarped, net wrapped, unprotected etc.)
  - Crude protein
  - Fiber (NDF/ADF)
  - Ash
  - Total Digestible Nutrients (TDN)
  - Relative feed value (RFV)
  - Additional recommended tests (where available): NDF-Digestibility (30-hour recommended) and nitrates.
- Provide record keeping documents and hay test results to NRCS office.
- Discuss results with local Cooperative extension educator or livestock nutritionist, provide any recommendations to NRCS office for all harvesting cycles.
- Use results to improve harvesting decisions.
- Use hay analyses to guide forage supplementation to on-farm livestock.



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## Adoption Requirements

This enhancement is considered adopted when the criteria is met, and documentation records are provided.





**Documentation and Implementation Requirements**

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Participant will:

- Prior to implementation, develop a map delineating the fields selected for gathering the hay analysis and record keeping documentation.
- Prior to implementation, ensure forage harvesting tool/machinery is capable of cutting the forage at the desired residual height without compromising plant vigor and stand longevity.
- Prior to implementation, develop a plan to harvest hay in a manner that protects stand longevity and maintains or improves forage quality and maintains adequate stubble. Plans must include specifications for harvest timing, handling prior to baling, and storage options to best preserve forage quality. Refer to NRCS Conservation Practice Standard Forage Harvest Management (Code 511).
- Prior to implementation, provide the forage harvest and forage sampling plan to NRCS for review. Two consecutive cuttings of the same forage type will be evaluated, preferably on the same field, unless the first harvested species will be different than the second harvest on the same field, (for example cool season species fields that transition to warm season forage later in the season). The first cutting must be tested after harvest and is one of the two required. Management decisions must be made from the first test to determine how to improve forage quality for the next cutting. Record keeping should be completed for each cutting and a report completed. Additional testing may be needed and should follow the Cooperative Extension or other specialist/nutritionists' recommendations and documented in the plan.
- During implementation, collect the number of forage samples on mapped field/s during each harvest cycle and send to a land grant university or accredited lab for tissue analysis.
- During implementation, keep records including all items under criteria.
- During implementation, discuss results and implement technical recommendations from Cooperative Extension, nutritionist or NRCS.

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- During implementation, use analysis results and data to improve/adjust forage harvesting activities for the next harvest cycle.

Example: Ash content above internal sources

(calcium, magnesium, potassium, phosphorus); adjust cutting and/or rake heights to reduce external sources (dirt, bedding, etc.), use cutting heights and harvest timing to positively affect fiber level, change harvest timing to increase protein and NDF-d levels etc.

- During implementation use data collected from on-farm hay analysis to improve supplemental feeding periods for animals' health and productivity.
- After implementation, provide tissue analysis and all record keeping documentation to NRCS
- After implementation, provide technical recommendations from Cooperative Extension or other specialist/nutritionist to NRCS.
- After implementation, provide report on how the data enabled improvements to hay harvest and feed supplementation efficiency.

NRCS will:

- As needed, provide technical assistance to meet the criteria of the enhancement.
- Prior to implementation, provide and explain NRCS Conservation Practice Standard Forage Harvest Management (Code 511) as it relates to this enhancement.
- Prior to implementation, verify map and crop/hayfields where enhancement will apply.
- Prior to implementation, provide assistance in determining the forage cutting to be sent for analysis in addition to the required first cutting.
- Prior to implementation, provide assistance in determining the planned number of hay samples above the required 2.



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- During implementation, verify management changes in harvest management have positively affected test values in the forage analysis results. Positive effects are but not limited to increases in crude protein levels, NDF-D and TDN values and/or lowering of NDF/ADF and Ash levels.
- After implementation, verify the hay harvest and hay analysis activities and record keeping meet the specifications of this enhancement.
- After implementation, review data driven report for hay harvest and supplemental feeding improvements.



**IOWA SUPPLEMENT TO CONSERVATION  
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**Additional Criteria for Iowa**

- Additional guidance for quality from ISU Cooperative Extension Service is located in [The Alfalfa Management Guide](#) and is acceptable for other hay.
- Utilize the Forage Harvest Management (511) implementation requirement for information related to harvesting the forage.
- ISU livestock extension specialists recommend using BRANDS software to balance diets for ruminant livestock.
- Work with an extension livestock specialist or private nutrition consultant to balance rations based on analysis of harvested forages.