



CONSERVATION ENHANCEMENT ACTIVITY

E528P

CONSERVATION STEWARDSHIP PROGRAM

Implementing Bale or Swath Grazing to increase organic matter and reduce nutrients in surface water.

Conservation Practice 528: Prescribed Grazing

APPLICABLE LAND USE: Pasture, Crop (Annual & Mixed), Crop (Perennial), Range

RESOURCE CONCERN: Soil, Water

ENHANCEMENT LIFE SPAN: 1 year

Enhancement Description

Improve organic matter, aggregate stability and soil organism habitat in the soil by leaving the biomass harvested from the field on site for animal use, or supplementing organic matter needs with off-field forages. Grazing harvested forages in this manner, will help to incorporate organic matter, feed and diversify the soil microbiome, build better aggregation and increase soil health and critical functions such as infiltration, nutrient cycling, and weather resilience. Forages should be placed evenly throughout the field, but can be concentrated in areas where particular concerns, such as bare ground, need to be remedied. Decisions of forage placement must take into account areas that would be sensitive to such activity such as protecting surface waters from nutrients or steep slopes from erosion.

Criteria

- A written plan for matching the forage quantity and quality produced with the grazing and/or browsing demand will be followed.
- Graze harvested forages to help incorporate organic matter into the soil and to optimize delivery of nutrients to the animals by incorporating the intensity, frequency, timing and duration of grazing and/or browsing needed as determined by

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a planning process that includes: 1) Clear objectives, 2) A resource inventory including a forage inventory, structural improvements and existing resource conditions, 3) Grazing plan, and 4) All potential contingency plans.

- Supplemental feed and/or minerals will be provided as needed to meet the nutritional requirements of the kind and class of grazing and/or browsing livestock.
- Forage access should be designed to meet the objective of the identified resource concern(s) of the field and may be concentrated in areas where concerns, such as bare ground, need to be remedied. Decisions of forage placement must consider areas that would be sensitive to such activity such as protecting surface waters from nutrients or steep slopes from erosion.
- Baling and swathing on fields where this enhancement is applied should meet stubble heights found in NRCS Conservation Practice Standard Forage Harvest Management (Code 511).
- Off-field forages used should not contain noxious or invasive weeds.
- Test soil annually to monitor build-up of excessive nutrient levels. Select sites with low to moderate soils test to supplement organic matter and provide nutrients. Avoid sites with already high nutrient levels. Consideration soil texture constraints for bale locations.
- All non-degradable bale material must be removed from the field when bales are gone.
- Use electric fencing or separate paddocks to control livestock access to bales or swaths to ensure forages are used efficiently.



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Considerations:

- Bales with plastic twine should be placed on their ends to facilitate removal of twine prior to feeding. Net wrap may be left on to assist with controlled feeding.
- Design the size of area or number of bales or swaths to provide enough feed for the livestock for the desired period. (usually 2-5 days). Example:

Average weight of round bale: 900 #

Dry Matter (% dry × bale weight): $900\# \times 85\% = 765\#$

Loss for storage and feeding waste ($765\# \times 75\%$) = 574# DM/Bale

$574\# \text{ DM} \div 30\# \text{ DM/Cow/Day} = 19 \text{ cows would use one round bale per day}$

$100 \text{ cows} \div 19 \text{ cows/round bale/day} = 5.2 \text{ bales per day to feed the herd}$

$5.2 \text{ bales per day} \times 90 \text{ days} = 468 \text{ bales}$

$468 \text{ bales} \div 25 \text{ bales per acre} = 19 \text{ acres needed to bale graze.}$



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Documentation and Implementation Requirements

Participant will:

- Prior to implementation, acquire a Grazing Management Plan on field(s) where swath or bale grazing is planned and provide to NRCS for review and approval. Plans must include all the following components:
 - Producer goals, objectives and resource concerns
 - Location and condition of structural improvements
 - Watering sites with availability, quantity and quality
 - Forage inventory
 - Forage-animal balance sheet
 - Grazing plan for livestock movement
 - Contingency plan
 - Monitoring plan
 - Calculations for determining number of bales or swath rows needed:
 1. Herd size: _____
 2. Average bale weight or swath production (pounds per acre): _____
 3. Average forage Dry Matter (DM)% _____
 4. Average DM # Intake/Cow/Day _____
 5. Number of bales or swath row area needed per day: _____
 6. Spacing of bales (if applicable) based on local criteria _____
 7. Duration of bale or swath grazing (days) _____
 8. Acres needed for bale or swath grazing period: _____

- Prior to implementation, identify location(s) where bale or swath grazing will occur and proximity to sensitive areas such as surface water and soil and drainage limitations.
- Prior to implementation, provide current soil test results (no older than 2 years) in identified areas for bales or swaths to NRCS.
- During implementation record location(s) of bale placement or swathing.
- During implementation, keep records of livestock movement through bale or swathing areas.
- During implementation, monitor livestock condition and feed quality.
- During implementation, record swathing or mowing heights.
- After implementation, provide the following items for review by NRCS:
 - A map showing bale or swath grazing areas.
 - Forage-animal balance sheet
 - Records of livestock movement through bale or swathing areas.

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- Records of swathing or mowing heights.
- Written modifications to grazing management plan based on results of prior bale/swath grazing season and soil test results

NRCS will:

- As needed, provide technical assistance to participant as requested
- Prior to implementation, provide and explain NRCS Conservation Practice Standard Prescribed Grazing (Code 528) and supporting documents that are needed to implement this enhancement, such as forage-animal balance forms
- Prior to implementation, provide and explain NRCS Conservation Practice Standard Forage Harvest Management (Code 511) stubble height requirements
- Prior to implementation, provide assistance with bale spacing recommendations and calculations for determining number of bales or swath rows needed
- Prior to implementation, review soils test results for identified on bale/swath grazing areas
- After implementation, review map and locations of bale/swath grazing areas
- After implementation, review records of livestock movement through bale/swath grazing areas
- After implementation, review forage-animal balance sheet
- After implementation, review records of mowing/swathing heights
- After implementation, review modifications made to the grazing management plan

NRCS Documentation Review:

I have reviewed all required participant documentation and have determined the participant has implemented the enhancement and met all criteria and requirements.

Participant Name _____ Contract Number _____

Total Amount Applied _____ Fiscal Year Completed _____

NRCS Technical Adequacy Signature

Date

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WASHINGTON SUPPLEMENT TO CONSERVATION ENHANCEMENT ACTIVITY

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References for Washington Conservation Practice 528 (Prescribed Grazing) Enhancements

To meet criteria for the Prescribed Grazing Enhancements utilize one or more of the below references or Technical Notes:

- A list of **Certified Range Management Consultants** can be found on the Society for Range Management’s website under the Education Tab. <http://rangelands.org/>
- **NRCS Prescribed Grazing Conservation Practice Standard 528** can be found in FOTG Section 4, Practice Standards and Supporting Documents/Prescribed Grazing (AC) (528) folder, <https://efotg.sc.egov.usda.gov/#/state/WA/documents>
- **Forage Harvest Management (511)** Practice Standard and Specification Sheet can be found in the NRCS Field Office Technical Guide (FOTG) Section 4, Practice Standards and Supporting Documents/Forage Harvest Management (511) folder. <https://efotg.sc.egov.usda.gov/#/state/WA/documents>
- **Guidance on Conservation Planning for Grazing Lands** can be found in chapter 11 of the **USDA NRCS National Range and Pasture Handbook**. <https://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/landuse/rangepasture/?cid=stelprdb1043084>
- **Ecological Site Descriptions** and **Forage Suitability Groups** can be found in the **NRCS Field Office Technical Guide** <https://efotg.sc.egov.usda.gov/#/state/WA/documents> in Section 2. For planning unit ecological sites and forage suitability groups see bullet below.
- **Soils, Ecological Sites** and **Forage Suitability Groups** for planning unit can be found by using the **Web Soil Survey** <https://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm>
- **Pasture Condition Scoring** documents can be found in **NRCS Field Office Technical Guide**: in Section 1/Reference Lists/Technical Notes by Discipline/Pasture folder. <https://efotg.sc.egov.usda.gov/#/state/WA/documents> The accompanying Pasture Condition Scoresheet is located in the same folder.



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- **Prescribed Grazing (528) Western WA Feed Forage Balance** Worksheet (other 528 worksheets included) can be found in the NRCS Field Office Technical Guide, Section 4, Practice Standards and Supporting Documents/Prescribed Grazing (AC) (528) folder, <https://efotg.sc.egov.usda.gov/#/state/WA/documents>
- Information on **native and non-native grass species critical growth periods** can be found in **Range Technical Note 34**, November 2009, Range Management Guidelines. This can be found in the **NRCS Field Office Technical Guide**: Section 1/Reference Lists/Technical Notes by Discipline/Range folder. <https://efotg.sc.egov.usda.gov/#/state/WA/documents>
- Pasture Technical Note No. 105. **The Western Oregon and Washington Pasture Calendar**, A Pacific Northwest Extension Publication PNW 699. Oregon State University, University of Idaho, Washington State University. <https://catalog.extension.oregonstate.edu/sites/catalog/files/project/pdf/pnw699.pdf>
- Other **Prescribed Grazing (528) documents** (e.g. *Utilization Monitoring Worksheets, Implementation Requirements, IR's, Planning Guides, etc.*) can also be found in the **NRCS Field Office Technical Guide (FOTG)** , in Section 4 Practice Standards and Supporting Documents /Prescribed Grazing (528) folder. <https://efotg.sc.egov.usda.gov/#/state/WA/documents>
- Washington State's Wildlife Habitat Evaluation Guide (WHEG) is **Biology Technical Note 14 Wildlife Habitat Evaluation Guide (WHEG)**. It can be found in the NRCS Field Office Technical Guide in Section 1/References Lists/Technical Notes by Discipline/Biology folder. <https://efotg.sc.egov.usda.gov/#/state/WA/documents>
- **EB1870 Pasture and Hayland Renovation for Western Washington and Oregon**. Washington State University Extension. <https://pubs.extension.wsu.edu/pasture-and-hayland-renovation-for-western-washington-and-oregon>
- **Idaho Forage Handbook BUL 547 Third Edition**. Information on hay and pasture management. <https://www.extension.uidaho.edu/detail.aspx?IDnum=1274&category1=Search&category2=NULL>



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- **Pasture TN-102** Common Grasses of Western Washington.
<https://efotg.sc.egov.usda.gov/#/state/WA/documents>

Harvest Recommendations to Produce Excellent Hay Quality

(Taken from Idaho Forage Handbook, Third Edition, BUL 547. University of Idaho. Glenn E. Shewmaker, Editor)

- Quality decreases as plants mature. Schedule harvests to cut at the desired level of plant maturity.
- Consider the daily cycling of forage quality when testing forage and scheduling daily harvest.
- Hay cut in the afternoon has higher quality than morning-cut hay
- Take advantage of good weather to speed drying and harvest when you can.
- Monitor the moisture content of the forage and perform each harvest operation at the optimal time based on moisture content.
- A higher stubble height will allow faster drying from better aeration but will also significantly reduce yield.
- Increasing windrow width in heavy hay from 48 to 60 inches allows for faster dry-down, however, in light hay an increased windrow width is not necessary.
- Swathers need to be in good repair and their settings adjusted for proper conditioning of forage.
- Condition the crop during swathing (scars plant epidermis for moisture escape).
- The “super conditioner” may provide faster dry-down of alfalfa hay in some conditions.
- Rake, roll, or ted the windrowed forage (increases air movement in windrow) as necessary.
- Raking or merging swaths into larger windrows has advantages when large harvest equipment is used, such as 1-ton balers. Larger windrows allow more efficient balling because (1) hay entering the full width of the baler pickup forms a more rectangular bale, (2) fewer passes are required by the baler on the field, and (3) balers can operate at slower ground speeds.