

Plant Enhancement Activity – PLT02 – Monitoring key grazing areas to improve grazing management



Enhancement Description

Adjust grazing management based on monitoring data. Monitor key grazing areas to determine if current grazing management is meeting management goals and objectives. A key grazing area is a small area of a grazed field that is identified as being representative of the entire field.

Land Use Applicability

Pastureland, Rangeland, Forestland

Benefits

Proper grazing management will maintain and improve vegetation and soil conditions, improve water quality, and enhance wildlife habitat. Monitoring can be utilized to determine if current grazing management actions are having the desired effect on natural resources. Monitoring enables managers to make decisions and adjust management strategies as needed.

Conditions Where Enhancement Applies

This enhancement applies to all acres in the operation for the selected land use.

Criteria

1. Key grazing areas will be established for each grazed field
2. Each key grazing area will be monitored based on the frequency of grazing once established (i.e., more than annually if grazed multiple time per year)
3. Monitoring will include a photo for each pasture of key grazing area and use of one or more of the following techniques:
 - a. Plant productivity determinations
 - b. Measurements of key forage plant heights (before and after grazing) at least once per period
 - c. Locally applicable methods such as those described in “Monitoring for Grasslands, Shrublands and Savanna Ecosystems” available at <http://jornada.nmsu.edu/monitor-assess/manuals/monitoring>.
4. Each grazed field will follow a written grazing plan which meets NRCS requirements

Adoption Requirements

This enhancement is considered adopted when there is documentation that monitoring data has been collected and used to adjust the objectives in a grazing management plan.



Documentation Requirements

1. A written grazing plan which meets NRCS requirements,
2. A map showing the location of each key grazing area,
3. Photographs from the fixed photo location points for each monitoring time,
4. Written documentation of the monitoring data collected, and
5. Written documentation of how monitoring data was used to adjust grazing management plans including modifications and objectives.

References

BLM Technical Reference 1734-3. 1999. Utilization Studies and Residual Measurements. Interagency Technical Reference.

BLM Technical Reference 1734-4. 1999. Sampling Vegetation Attributes. Interagency Technical Reference.

Herrick, J. E., J.W. Van Zee, K.M. Havstad, L.M. Burkett and W.G. Whitford. 2005. Monitoring Manual for Grassland, Shrubland, and Savanna Ecosystems, Vol II. 2005. USDA-ARS Jornada Experimental Range. http://usda-ars.nmsu.edu/monit_assess/monitoring.php

Rayburn, E. B. (editor). 2007. Forage Utilization for Pasture Based Livestock Production. NRAES – Book 173; Chapter 1 – Assessing Species Composition and Forage Quality, Chapter 2 – Assessing Forage Mass and Forage Budgeting. PALS Publishing, Ithaca, New York.

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Follow Wisconsin NRCS Conservation Practice Standard 528 (Prescribed Grazing) and Pasture Condition Score Sheet:

<http://efotg.nrcs.usda.gov/references/public/WI/528.pdf>
<ftp://ftp-fc.sc.egov.usda.gov/WI/grazing/pasture-score-sheet.pdf>

Completing the Pasture Condition Score Sheet shall satisfy the Criteria #3 requirement.

Document the occupancy date, length and number of animals for each paddock being monitored.

Complete a Pasture Condition Score Sheet once a year.

This is a 'System' type enhancement. This enhancement shall be performed on the areas (i.e. fields) identified in the Conservation Stewardship Plan each year when appropriate to do so..

Plant Enhancement Activity – PLT05 - Multi-story cropping, sustainable management of nontimber forest plants



Enhancement Description

This activity involves the manipulation of forest species composition, structure, and canopy cover to achieve or maintain a desired native plant community to facilitate the sustainable management of native non-timber forest plant(s) (e.g., goldenseal, ramps, mushrooms, ginseng, ferns, “sugarbush”, etc.).

Land Use Applicability

Cropland, Forestland

Conditions Where Enhancement Applies

This enhancement applies to forestland and cropland (sugar bush) where the forest is managed for harvestable non-timber plants in addition or instead of timber.

Benefits

Implementation of this enhancement activity can result in increased plant health and vigor, decreased intensity of pest outbreaks, decreased spread of diseases, decreased use of pesticides and improved water quality.

Criteria

Multi-Story Cropping can cover a wide variety and types of plants and products. Multi-Story Cropping requires the development and implementation of a plan for the manipulation of forest growth through management of the competition for light, nutrients, moisture and control of allelopathic (toxic) effects to promote the production of a nontimber forest plant complex while maintaining a healthy forest ecosystem. The plan will include the following components as a minimum:

1. The objectives of the multi-story cropping enhancement.
2. Maps, images and/or descriptions of the proposed multi-story area.
3. An inventory appropriate to the targeted species of the area to identify trees and understory species necessary to achieve the desired purposes.
4. Listing of management activities that will be used to complete the multi-story cropping such as, but are not limited to, pruning, selective thinning and the introduction of new species to achieve plant diversity or to re-establish native plants.
5. Identification of specific canopy and plant densities in the overstory and understory to achieve the intended purpose(s)



6. The plant community will be diverse to avoid species-specific pests and to enhance wildlife food and habitat.

Adoption Criteria

This enhancement is considered adopted when the developed plan for forest growth manipulation has been implemented according to plan's criteria.

Documentation Requirements

1. Brief written description of the actions taken to enhance the multi-story cropping,
2. Delineations on a map or aerial photo of the areas being treated with multi-story cropping, and
3. Representative digital pictures of the overstory and understory plant community following multi-story cropping management activities.

References

Association for Temperate Agroforestry. 2012. Forest Farming Creates Profit Niches, Conserves Endangered Plants. University of Missouri. Columbia, MO. http://www.aftaweb.org/forest_farming.php

USDA National Agroforestry Center. 1997. Forest Farming: An Agroforestry Practice. Lincoln, NE. <http://nac.unl.edu/agroforestrynotes/an07ff01.pdf>

USDA National Agroforestry Center. 2012. Working Trees Info-What is Forest Farming. Lincoln, NE. <http://nac.unl.edu/Working%20Trees%20Info%20Sheets/WT%20Info%20forest%20farming.pdf>

Virginia Polytechnic Institute and State University. 2009. Non-Timber Forest Products. Blacksburg, VA. <http://www.sfp.forprod.vt.edu/>

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The following plants species are eligible native non-timber forest products for this enhancement: American hazelnut, huckleberries, currants, elderberries, fern fiddleheads, mushrooms, raspberries, blackberries, serviceberry species, wild leeks, ginseng, goldenseal, Labrador tea, partridge berry, Solomon's seal, wintergreen, witch hazel, "sugarbush".

Other species may be eligible with prior approval from the WI NRCS State Forester.

Only species native to Wisconsin are eligible.

This is a 'System' type enhancement. This enhancement shall be performed on the areas (i.e. fields) identified in the Conservation Stewardship Plan each year when appropriate to do so.

Plant Enhancement Activity – PLT06 – Renovation of a windbreak, shelterbelt or hedgerow for wildlife habitat



Enhancement Description

This enhancement is for the renovation of existing sites that are declining in vigor, need additional woody plants (trees or shrubs) or otherwise no longer provide wildlife habitat benefits. Existing rows of woody plants may be thinned, removed or replaced with new plantings. Existing woody plants may be pruned, either branches or roots or both, to improve windbreak function, health and vigor.

Land Use Applicability

Cropland, Pastureland, Rangeland

Benefits

Renovation restores the function of existing windbreaks, shelterbelts or hedgerows to provide wildlife habitat benefits as well as other benefits such as reduced wind erosion, pesticide drift, mitigation of odor and noise and controlled snow deposition. Species composition may be upgraded by adding trees or shrubs that produce wildlife food and shelter as well as wood products and visual quality, such as spring blossoms or fall colors. Woody species threatened by pests such as emerald ash borer can be replaced with more resilient species that provide wildlife habitat benefits.

Conditions Where Enhancement Applies

This enhancement applies only to the acres of existing windbreaks or shelterbelts in the crop or pasture land use.

Criteria

1. Identify wildlife species to be benefited by the renovation,
2. Develop a plan for new trees and/or shrubs that will provide the desired habitat and windbreak or shelter belt functions,
3. Remove dead or dying trees that do not provide the desired habitat unless habitat for cavity nesting wildlife is desired,
4. Remove other trees or invasives that do not provide the desired habitat,
5. Replace removed trees by planting new trees or shrubs that will provide the desired habitat while serving the required windbreak or shelter belt function, and
6. Prune or thin less desirable trees to encourage the growth of trees that will provide wildlife habitat and windbreak or shelter belt functions.

Adoption Requirements

This enhancement is considered adopted when all six criteria above have been implemented.



United States Department of Agriculture
Natural Resources Conservation Service

2013 Ranking Period 1

Documentation Requirements

1. Brief written description of the tasks completed with dates and any receipts for planting stock, herbicides, etc.,
2. Delineations on a map or aerial photo of renovated windbreak, and
3. Photos of before and after renovation.

References

USDA-NRCS and Xerces Society. 2008. Using Farm Bill Programs for Pollinator Conservation. Technical Note No. 78. Washington, D.C. <http://directives.nrcs.usda.gov/OpenNonWebContent.aspx?content=24993.wba>

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Written documentation shall include a summary of the target wildlife species, the soil moisture regime of the site, the type of plants established and establishment methods and an annual summary of any management or weed control activities. Windbreaks shall include an interior row of shrubs which produce nuts or berries usable by wildlife such as species listed in Table 2 of Wisconsin NRCS 645 Wildlife Upland Habitat Management Practice Standard.

<http://efotg.sc.egov.usda.gov/references/public/WI/645.pdf>

This is an 'Actual' type enhancement. Actual type enhancements must be installed in the year(s) scheduled in the contract and maintained for the duration of the contract.

Plant Enhancement Activity – PLT15 – Establish pollinator and/or beneficial insect habitat



Enhancement Description

Seed or plug nectar and pollen producing plants in non-cropped areas such as field borders, vegetative barriers, contour buffer strips, grassed waterways, shelterbelts, hedgerows, windbreaks, conservation cover, and riparian forest and herbaceous buffers.

Land Use Applicability

Cropland, Pastureland, Rangeland, Forestland

Benefits

Increased habitat for pollinators will improve fruit set, size and quality, productivity per acre, biodiversity, beneficial insect populations, and the food base for many

wildlife species. The increased plant diversity of pollinator habitat will enhance wildlife habitat and may increase populations of other beneficial insects, reducing the need for pesticides.

Conditions Where Enhancement Applies

This enhancement applies to all crop, pasture, range or forest land use acres.

Habitat areas must be at least 0.5 acres for each 40 acres of the selected land use. Where the selected land use is less than 40 acres, the required amount of habitat will be reduced according to the ratio of 0.5 acres to 40 acres. Where the selected land use is greater than 40 acres, the 0.5 acre habitat area(s) may be a single site or interspersed sites in the larger land use area as agreed to by the NRCS State Biologist.

Criteria

Establish habitat for pollinators (A) and beneficial insects (B) as described below:

A. Pollinators

1. Lists of plants suitable for pollinator habitat will be developed by NRCS at the state level. The lists must emphasize as many native species as practical.
2. The habitat planting will include (as a minimum) three early, three mid, and three late flowering species from the NRCS state list including forbs, legumes, vines, shrubs, and/or trees. Plants that produce toxic nectar will not be planted.
3. Any other use of the pollinator habitat area must not compromise its intended purpose.

B. Beneficial insects

1. Identify pest species and associated beneficial insects targeted for control.
2. Inventory existing conditions on the farm to determine habitat needs of selected beneficial insects, including:
 - a. Permanent insectary sites,



- b. Augmentation of existing hedgerows, field borders or other odd areas adjacent to fields, and/or
 - c. Trap crop areas .
 3. Plant selection should be matched to attract identified beneficial insects.
 4. Beneficial insect habitat may include either annual or perennial cover. If annual cover is used, the cover must be replanted each year during the life of the contract.
 5. Lists of plants suitable for beneficial insect habitat will be developed by NRCS at the state level. The lists must emphasize as many native species as practical.
- C. Planting Criteria for both pollinators and beneficial insects
 1. Site selection should consider existing weed pressures and available methods of control, delay planting if high weed pressure requires aggressive treatment.
 2. Site preparation and plant establishment shall be accomplished according to the appropriate NRCS conservation practice and specifications.
 3. Successful establishment is when the planting is providing at least 80% soil cover, visually estimated, and that the resultant cover consists primarily of the early, mid, and late blooming species planted for pollinators and/or other beneficial insects.
 4. Insecticides should not be used in the habitat planting area.
 5. Herbicides are allowed during site preparation (prior to planting) when it is necessary to eliminate competing weeds from a planting area in order for nectar and pollen producing plants to establish.
 6. After a pollinator enhancement has been planted, herbicides may be spot-sprayed to remove broad-leaf weeds, or grass-selective herbicides may be applied to larger areas to eliminate persistent weedy grasses. Similarly, the entire site may be mowed in the first year post-planting to reduce annual or biennial weeds that persist (site should be mowed just before dominant annual weeds flower).
- D. Operation and Maintenance for both pollinators and beneficial insects
 1. Management and/or maintenance activities such as mowing, haying, burning, or grazing must be conducted outside of the growing season or bloom period. Maintenance should be done on less than 1/3 of the acreage during any given year, except during the first year post-planting.
 2. Insecticides should not be used in the habitat planting area. Even non-synthetic botanical insecticides can harm beneficial insects. If adjacent crop areas are treated with insecticides use one or more of the following actions to limit insecticides in the pollinator habitat area:
 - a. Create insecticide free buffers in the first 25 feet of crop area,
 - b. Use application methods that minimize drift to the adjacent habitat,
 - c. Apply active ingredients in the evening when most insect pollinators are not active.
 3. The planted habitat areas must be regularly inspected for invasive and/or noxious plants or other plants that may compromise the purpose of this enhancement. Undesirable species should be controlled using the method least damaging method, for example, spot-spraying with herbicide or physical removal.
 4. If habitat is part of an organic farming operation, only materials allowed according to the USDA National Organic Program's National List of Allowed and Prohibited Substances may be used.



Adoption Requirements

This enhancement is considered adopted when pollinator or beneficial habitat has been established that meet or exceed the above criteria, respectively, and the established habitat is maintained and functioning as intended.

Documentation Requirements

1. A map showing the location and dimension of the habitat areas
2. A list of pollinator or beneficial species planted
3. List of maintenance activities carried out to manage the habitat areas

References

Mader, E., M.D. Shepherd, M.Vaughan, S.H. Black and G. LeBuhn. 2011. Attracting Native Pollinators: Protecting North America's Bees and Butterflies. Storey Publishing. North Adams, MA. pp 372.

Winston, M. 1987. The Biology of the Honey Bee. Harvard University Press. Cambridge, MA. pp 281.

Spivak, M., E. Mader, M. Vaughan, N.H. Euliss Jr. 2010. The plight of bees. Feature Article. Environmental Science & Technology. 10.1021/es101468w

Mader, E, M. Vaughan, M. Shepherd and S. Hoffman-Black. 2010. Alternative Pollinators: Native Bees. ATTRA. IP126.

Delaplane, K.S. and D.F. Mayer. 2000. Crop Pollination By Bees. CABI Publishing. New York, NY. 344 pp.

Reidl, H., E. Johansen, L. Brewer and J. Barbour. 2006. How to Reduce Bee Poisoning from Pesticides. Pacific Northwest Extension Publication 591. Oregon State University. Corvallis, OR. pp 28.
<http://extension.oregonstate.edu/catalog/pdf/pnw/pnw591.pdf>

National Research Council – Committee on Status of Pollinators in North America. 2007. Status of Pollinators in North America. Washington, D.C.: The National Academies Press. pp 307.

Society for Range Management. 2011. Pollinators in Rangelands. Special Issue. Rangelands. Society for Range Management. Volume 33. Number 3 (June).

Mader, E., M. Spivak and E. Evans. 2010. Managing Alternative Pollinators: A guide for growers, beekeepers, and conservationists. Sustainable Agriculture Research and Education. Handbook 11. Beltsville, MD.

USDA-NRCS Plant Materials Program. Plants for Pollinators.
http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/plantsanimals/pollinate/?cid=nrcs143_022326

Xerces Society Pollinator Conservation Program. Pollinator Conservation Resource Center.
<http://www.xerces.org/pollinator-resource-center/>

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Follow Wisconsin NRCS Conservation Practice Standard 327 (Conservation Cover) and Wisconsin Biology Technical Note 8:

<http://efotg.nrcs.usda.gov/references/public/WI/327.pdf>
<ftp://ftp-fc.sc.egov.usda.gov/WI/technotes/biology-tn8.pdf>

Written documentation shall include a summary of the soil moisture regime of the site, plant species established and method of establishment. An annual written summary of the site management and weed control activities implemented shall be provided.

Reference: Biological Control of Insects and Mites: An introduction to beneficial natural enemies and their use in pest management (UW Extension publication A3842)

<http://learningstore.uwex.edu/assets/pdfs/A3842.pdf>

This is an 'Actual' type enhancement. Actual type enhancements must be installed in the year(s) scheduled in the contract and maintained for the duration of the contract.

Plant Enhancement Activity – PLT16 – Intensive management of rotational grazing



Enhancement Description

This enhancement is for the harvest efficiency of grazing livestock to increase forage harvest, and to improve forage quality and livestock health. The grazing system is managed to produce high quality, nutritious forage and maintain plants with sufficient energy reserves to recover quickly when adequate soil moisture is available for regrowth. Generally, livestock are rotated through pastures in the grazing system based on the physiological growth and nutritional stage of the forage plants and the daily dry matter intake and nutritional

requirements of the animal. This enhancement is for: rotational grazing systems with increased numbers of pastures or paddocks, the accompanying required infrastructure, shorter grazing periods, and increased stock density. Selection of this enhancement requires the activity to be planned concurrently on all eligible land use acres.

Land Use Applicability

Pastureland, Rangeland, Forestland

Benefits

The main benefits of Intensive Management of Rotational Grazing are efficient resource use with increased forage utilization, improved manure distribution, and nutrient cycling throughout the grazing acreage, and increased carbon sequestration resulting from greater forage harvest. Optimal environmental conditions are achieved by maintaining healthy, actively growing forage plants that improve the quantity and quality of cover available for wildlife and protect the soil surface from erosion, thereby reducing risks to ground or surface water quality.

Conditions Where Enhancement Applies

This enhancement applies to all grazed acres designed as pasture, range or forest land use acres on the entire operation.

Note: the grazing acres of the operation must have a defined rotation before selecting this enhancement. A single grazed field/pasture does not constitute a rotation. The minimum number of grazed fields/pastures shall be determined by each state.

Criteria

A prescribed grazing plan is developed that increases harvest efficiency by utilizing a 75% increase in the number of pastures/paddocks per movement group (herd). See the attached “Supplement” for specifics on harvest efficiency.



Adoption Requirements

This enhancement is considered adopted when a prescribed grazing plan is complete, and implementation of the plan has begun, that incorporates a 75% increase in the number of pastures/paddocks, including the necessary infrastructure (fences/water/etc.)

Documentation Requirements

1. Copy of signed “National Supplement to Plant Enhancement Activity – PLT 16 – Intensive management of rotational grazing” certifying that a grazing plan has been implemented with a 75% increase in the number of paddocks/pastures for the herd (movement group) increasing the harvest efficiency resulting from greater stock density and reduced grazing time per pasture/paddock .
2. A map or aerial photo showing the pastures/paddocks making up the rotational grazing system. The layout of the pastures/paddocks both before implementation and after implementation shall be delineated on the map or photo.

References

Bertelsen, B.S., D.B. Faulkner, D. . Buskirk and J.W. Castree. 1993. Beef Cattle Performance and Forage Characteristics of Continuous, 6-paddock, and 11-paddock Grazing Systems. *Journal of Animal Science* 71:1381-1389.

Jacobo, E.J., A.M. Rodríguez, N. Bartoloni and V.A. Deregibus. 2006. Rotational Grazing Effects on Rangeland Vegetation at a Farm Scale. *Rangeland Ecology & Management* 59(3): 249-257.

McKown, C.D., J.W. Walker, J.W. Stuth and R.K. Heitschmidt. 1991. Nutrient intake of Cattle on Rotational and Continuous Grazing Treatments. *Journal of Range Management* 44(6).

Rayburn, E.B. (editor). 2007. Forage Utilization for Pasture Based Livestock Production. NRAES – Book 173. PALS Publishing, Ithaca, New York.

Smart, A.J., J.D. Derner, J.R. Hendrickson, R.L. Gillen, B.H. Dunn, E.M. Mousel, P.S. Johnson, R.N. Gates, K.K. Sedivec, K.R. Harmony, J.D. Volesky and K.C. Olson. 2010. Effects of Grazing Pressure on Efficiency of Grazing on North American Great Plains Rangelands. *Rangeland Ecology and Management* 63(4): 397-406.

Teague, W.R. and S.L. Dowhower. 2003. Patch Dynamics under Rotational and Continuous Grazing Management in Large, Heterogeneous Paddocks. *Journal of Arid Ecology* 55: 211-229.

USDA-NRCS. 2010. Conservation Practice Standard: Prescribed Grazing-Code 528.

Wisconsin Supplement 4/22/2013 (PLT16: 2013 Ranking Period 1)

Follow Wisconsin NRCS Conservation Practice Standard 528 (Prescribed Grazing):

<http://efotg.nrcs.usda.gov/references/public/WI/528.pdf>

This is a 'System' type enhancement. This enhancement shall be performed on the areas (i.e. fields) identified in the Conservation Stewardship Plan each year when appropriate to do so.



National Supplement to Plant Enhancement Activity – PLT 16 – Intensive management of rotational grazing

State: _____

Participant: _____

Increase harvest efficiency resulting from greater stock density and reduced grazing time per pasture/paddock

Change the current grazing system to allow for an increased number of pastures or paddocks, including the necessary infrastructure (fences/water/etc.), shorter grazing periods, and increased stock density. The grazing plan should document the planned length of grazing periods in pastures and length of time between grazing periods for an overall reduction in total grazing activity per pasture and an increased harvest efficiency resulting from greater stock density and reduced grazing time per pasture/paddock because of the 75% increase in the number of paddocks/pastures for the herd (movement group).

Criteria: Use the following formula for documentation, and attach a plan map showing the location of the grazing system design. The following example is provided.

EXAMPLE:

- A. Current # of Pastures/Paddocks 6
- B. Planned # of Pastures/Paddocks 11
- C. % Increase= ((B/A)-1)100% ((11/6)-1)100 = ((1.83)-1)100 = (.83)100% = **83%**

Grazing Plan:

- A. Current # of Pastures/Paddocks _____
- B. Planned # of Pasture/Paddocks _____
- C. % Increase= ((B/A)-1)100 _____

Operation and Maintenance:

Operation: Livestock grazing plans should accommodate increased rest of grazing units, particularly during the active growing season of desirable rangeland and pasture species. Planned grazing use should not exceed 60% of annual production. Additional practices and inputs such as cross fences and water facility development may be required to facilitate adequate rest periods and increased harvest efficiency.

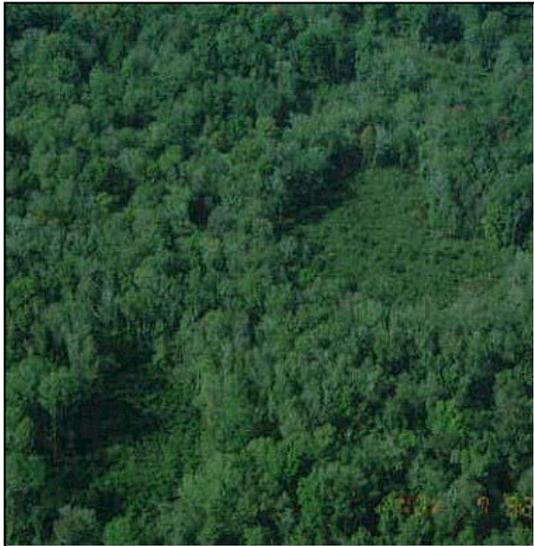
Maintenance: Grazing unit rotation of livestock should be accomplished annually, alternating the planned rotation sequence of grazing units each subsequent year, or specifically providing growing-season rest periods based on individual pasture condition.

Certification:

I certify that I have applied the grazing management system as explained in the narrative in the field(s) and listed in the table above.

Name: _____ Date: _____

Plant Enhancement Activity – PLT17 – Creating forest openings to improve hardwood stands



Enhancement Description

Creating forest openings or patches is a silvicultural practice used to naturally regenerate over-mature and/or degraded hardwood stands while providing added cover and browse for several game and non-game species of wildlife.

Land Use Applicability

Forestland

Benefits

Years of harvesting high quality hardwood trees have left many forested acres with degraded, low quality trees. Creating a forest opening promotes the regeneration of a new, younger stand of desirable tree species by removing all standing trees in selected

areas (patches) within the forest. Patch areas are chosen based on their lack of acceptable growing stock (AGS), presence of desirable trees to regenerate the stand and presence of advanced regeneration. Wildlife habitat is increased by the amount of edge, cover and diversity of the tract created during the clearing.

Conditions Where Enhancement Applies

This enhancement applies to forest land use acres with conifers, hardwoods or mixed stands that have a forest management plan that recommends thinning within the next 3 years.

Criteria

1. Forested acres planned for this enhancement must be cleared during the contract period.
2. Forested acres that meet the “Conditions Where Enhancement Applies” must have an “acceptable growing stock” level below 50 sq. ft. of basal area per acre.
3. Site condition must be of medium or higher quality.
4. Forested acres targeted for patch development must contain species for regeneration from the NRCS state list. Species on this list were selected based on their abilities to regenerate from seed, sprouts or other natural regeneration sources.
5. For oaks, advance regeneration must be present or developed prior to the timber removal in order to be competitive with other faster growing species.
6. Size of patches to be treated can vary from 1 to 10 acres, be distributed throughout the forest and cannot total more than 50% of the acres meeting Criteria 2.
7. Trees removed during patch development having marketable quality can be sold.
8. Slash and cull trees must be managed to allow for natural regeneration to occur. This can be accomplished by:



- a. Windrowing
 - b. Wildlife piles
 - c. Chipping
 - d. Cutting for firewood
9. Burning of slash is prohibited.

This enhancement is not for normal thinning or other forest stand improvement activities conducted on non-degraded sites.

Adoption Requirements

This enhancement is considered adopted when forest openings have been created that meet the nine above criteria.

Documentation Requirements

1. Site suitability and acceptable growing stock evaluation for each patch,
2. Identify the desired species to be regenerated and evidence they are present,
3. Map show where patches are located, and
4. Documentation that patch cut activities were completed, e.g. photo's, sale receipt.

References

Healy, W. 2011. Central Hardwood Notes - Wildlife Openings. U.S. Forest Service. North Central Forest Experiment Station. Amherst, MA. http://www.ncrs.fs.fed.us/pubs/ch/ch_9_11.pdf

Leak, W.B., 2003. Regeneration of Patch Harvests in Even-Aged Northern Hardwoods in New England. Northern Journal of Applied Forestry. 20(4):188-189.
http://www.fs.fed.us/ne/newtown_square/publications/other_publishers/OCR/ne_2003_leak001.pdf

Tubbs, C.H., L.J. Verme and R.M. Godman. 2001. Northern Hardwood Notes -Making Wildlife Openings. U.S. Forest Service. North Central Forest Experiment Station. http://www.ncrs.fs.fed.us/pubs/nh/nh_8_01.pdf

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Forest openings which are 0.5 acres in size may performed. The Forest Management Plan will be used to determine the distribution, size, and number of openings per stand.

Written documentation shall show a history of "high-grading"; or the existing stand is even-aged and the desire is to move to unevenaged management with the stand and shall identify that the acceptable growing stock is less than 50 sq.ft. of basal area/ac.

Management plan shall target Aspen, Oak, Bottomland Hardwood, Central Hardwood, Northern Hardwood or White Birch types.

Sites with high potential for invasive species encroachment are not eligible.

This is a 'System' type enhancement. This enhancement shall be performed on the areas (i.e. fields) identified in the Conservation Stewardship Plan each year when appropriate to do so.

Plant Enhancement Activity - PLT18 – Increasing on-farm food production with edible woody buffer landscapes



Enhancement Description

This enhancement is for the enhancing of windbreaks, alley cropping, silvopasture, or riparian forest buffer systems with trees and shrubs that produce edible products for human or wildlife consumption.

Land Use Applicability

Cropland, Pastureland

Benefits

An edible landscape is special in that it is planted with trees and shrubs that produce foods that we can eat/sell or that are beneficial

for wildlife. Trees and shrubs can be used to provide shade, to improve microenvironments or to protect crops, or to mitigate challenging environmental issues. In an edible landscape they provide more than just a protective structure, they become sources of food that produce home grown and nutritious fruits and nuts, increase household food security, and create sites that provide critical habitat for pollinators and wildlife.

Conditions Where Enhancement Applies

This enhancement applies to all crop or pasture land use acres.

Criteria

1. Follow appropriate standard for basic agroforestry practice design.
2. Plant tree, shrub and bramble species that produce food and/or culinary items to create an edible landscape. Lists of suitable woody plants will be available at your local NRCS field office.
3. Maximize planting space by creating vertical structure with varying plant heights and plant sizes.
4. Use all of the following methods to improve edible food production:
 - a. Add at least one edible food producing row to existing agroforestry practices or incorporate at least one edible food producing row into new planting designs.
 - b. Adding planting masses in scattered clusters is encouraged.
 - c. Plant a variety of tree, shrub and bramble species (3 or more; use native species whenever possible) with varying flowering times to favor pollinator species and to add a longer harvest time frame. Choosing several fruit bearing cultivars can provide an extended period of seasonal production.



- d. Minimize herbicide use. Use spot weed treatments and avoid spraying when flowers are present.

Adoption Requirements

This enhancement is considered adopted when each selected acre has been planted to the desired tree, shrub and bramble species that produce food or culinary item.

Documentation requirements

1. List of edible food producing trees, shrubs and brambles.
2. Brief written description of the activities (criteria) completed with dates of application and receipts for planting stock, herbicides, etc.
3. Acreage of the enhancement activity.
4. Delineations on a map or aerial photo of landscape layout and placement.

References

Dana, M.N. 2001. Fruits and Nuts for Edible Landscaping. Purdue University Cooperative Extension Service. Landscape Horticulture, HO-190-W. <http://www.hort.purdue.edu/ext/HO-190.pdf>

Josiah, S.J. and J. Lackey. 2001. Edible Woody Landscapes for People and Wildlife. University of Nebraska Cooperative Extension. Lincoln, NE. <http://www.unl.edu/nac/brochures/sfp/sfp3.pdf>

USDA-NAC. 2008. Working Trees for Agriculture. USDA National Agroforestry Center, Lincoln, NE. <http://www.unl.edu/nac/workingtrees/wta.pdf>

USDA-NAC. 2006. Agroforestry: Sustaining Native Bee habitat for Crop Production. Agroforestry Notes – AF Note 32. USDA National Agroforestry Center. Lincoln, NE. http://plants.usda.gov/pollinators/Agroforestry_Sustaining_Native_Bee_Habitat_for_Crop_Pollination.pdf

USDA-NAC. 2006. Improving Forage for native Bee Crop Pollinators. Agroforestry Notes – AF Note 33. USDA National Agroforestry Center. Lincoln, NE. http://plants.usda.gov/pollinators/Improving_Forage_for_Native_Bee_Crop_Pollinators.pdf

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For establishment recommendations follow Wisconsin Forestry Technical Note 1:

<ftp://ftp-fc.sc.egov.usda.gov/WI/technotes/forestry-tn1.pdf>

Suitable species include: American Hazelnut, Black Raspberry, Butternut, Common Blackberry, Elderberry, Juneberry, Hawthorn, Highbush Cranberry, Nannyberry, Shagbark Hickory, Sugar Maple, Walnut, Wild Plum; or others as approved by NRCS State Biologist.

This is an 'Actual' type enhancement. Actual type enhancements must be installed in the year(s) scheduled in the contract and maintained for the duration of the contract.

Plant Enhancement Activity – PLT19 –Herbicide resistant weed management



Enhancement Description

Adoption of multiple agronomic principles to manage herbicide resistant weeds in annually planted crop fields.

Land Use Applicability

Cropland

Benefits

The number of weed species becoming herbicide resistant is increasing at an alarming rate and other weed species are evolving to possibly become resistant. Without a comprehensive management strategy to control the weeds that have already become herbicide resistant and to mitigate the evolution of potentially resistant weeds, many acres of conservation tilled land may be converted back to conventional tillage. This conversion will reverse the gains achieved over the years by conservation tillage leading to diminished soil health and greater erosion rates. By implementing this enhancement, the identified resource concerns (i.e., soil quality, soil erosion, plants and water quality) will be improved and sustained at a high level by the recommended management system.

Conditions Where Enhancement Applies

This enhancement applies to all acres of annually planted cropland. These acres can be organic, transitioning to organic, or non-organic.

Criteria

1. Develop a crop rotation for each enrolled acre that prevents back to back growing seasons of the same or similar crops on the enrolled acre, or crops grown back to back that utilized the same herbicide chemistry for weed control. If the current crop rotation only contains two crops, an additional crop different from the original two must be added. Exceptions to the crops grown back to back limitation: crops grown using flooded conditions for weed control (i.e., rice, lotus or taro) or new crop rotations developed as a result of this enhancement that utilize a sod base rotation.
2. The crop rotation developed as a result of Criteria #1 must be grown in a manner to maintain a Soil Tillage Intensity Rating (STIR) as determined by RUSLE2 that is lower than the previous rotation/system.
3. Develop a herbicide rotation for each enrolled acre that avoids repeated use of herbicides with the same mode of action (MOA). The same herbicide used independently shall not be used in more than two consecutive applications (i.e., two split applications in a growing season, or two consecutive single applications in two years). An herbicide with the same MOA may be used in tank mixed, prepackaged, or sequential mixtures that include multiple MOAs with substantial control of the potentially resistant weed(s).



4. When herbicides are used for weed control, a pre-plant residual shall be used with any pre-plant burn down herbicide used. Residuals shall be also be used with post-plant burn downs, early post-emerge applications and lay-by applications.
5. Scout the enrolled acreage to facilitate early weed identification, weed mapping of the problems areas, and a more timely response to weed pressures.
6. In the event of herbicide resistant weed escapes on the enrolled acres pre-harvest but after lay-by treatments, hand weed or hoe the escaped weeds prior to flowering.
7. For organic or transitioning to organic systems where a plant ecotype becomes resistant to a NOP approved herbicide, hand weeding or hoeing of the enrolled acres at least 3 times during the growing season shall be accomplished before the weeds reach maturity (i.e., flowering).
8. Post-harvest, where fields will be temporarily fallow and adequate growing conditions exist for weed growth (i.e., pre-frost), the fields shall be mechanically (this does not include tillage) or chemically treated to prevent adding seed to the weed seed bank and weed spread.

Note: If the use of a high residue cover crop or mixtures of high residue cover crops is desired as an additional management option for weed management, refer to “PLT20-High Residue Cover Crop or Mixtures of High Residue Cover Crops for Weed Suppression and Soil Health.” This enhancement and PLT20 are complementary.

Adoption Requirements

This enhancement is considered adopted when all of the criteria have been met on the land use acre.

Documentation Requirements

Written documentation for each year of this enhancement describing the following items:

1. Crop rotation
2. Crop planting system used to manage residue
3. Scouting reports
4. Herbicides used- their MOA and date of application
5. Dates of hand weeding or hoeing, if applicable
6. Dates of post-harvest chemical or mechanical treatment, if applicable

References

Boerboom, C., and M. Owen. 2006. Facts about Glyphosate-Resistant Weeds. The Glyphosate, Weeds, and Crop Series. GWC-1. Purdue University.

Campbell, J., C. Mallory-Smith, A. Hulting, and D. Thill. 2011. Herbicide-Resistant Weeds and Their Management. PNW 437. University of Idaho.

Gunsolus, J.L. 2008. Herbicide Resistant Weeds. University of Minnesota-Extension. WW-06077. <http://www.extension.umn.edu/distribution/cropsystems/dc6077.html>.

Price, A.J., K.S. Balkcom, L.M. Duzy and J.A. Keltron. 2012. Herbicide and Cover Crop Residue Integration for *Amaranthus* Control in Conservation Agriculture Cotton and Implications for Resistance Management. Weed Technology. In press.



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Price, A.J., K.S. Balkcom, R.L. Raper, C.D. Monks, R.M. Barentine, and K.V. Iversen. 2008. Controlling Glyphosate-Resistant Pigweed in Conservation Tillage Cotton Systems. Conservation Systems Research. Special Publication No. 09. USDA-ARS-NSDL, Auburn, AL.

Sustainable Agriculture Research and Education (SARE). 2010. Managing Cover Crops Profitably. 3rd ed. Handbook #9. College Park, MD.

Whitaker, J.R., A.C. York, D.L. Jordan, A.S. Culpepper, and L.M. Sosnoskie. 2011. Residual Herbicides for Palmer Amaranth Control. The Journal of Cotton Science. 15:89-99.

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For a list of herbicide mode of action for Corn and Soybeans:

http://www.glyphosateweedscrops.org/Info/MOA_060807.pdf

This is a 'System' type enhancement. This enhancement shall be performed on the areas (i.e. fields) identified in the Conservation Stewardship Plan each year when appropriate to do so.

Plant Enhancement Activity – PLT20 –High residue cover crop or mixtures of high residue cover crops for weed suppression and soil health



Enhancement Description

Utilize biomass from a cover crop or cover crop mixture as a living or killed mulch to suppress weed seed germination and to add carbon to the terrestrial carbon pool.

Land Use Applicability

Cropland

Benefits

Cover crop or cover crop mixtures when managed properly can physically and/or chemically control weeds. Physically, a live cover crop competes with weeds for water, nutrients and sunlight. A killed cover crop physically prevents the germination of weed seed by changing the micro environment around the weed seed (temperature and light). Chemically, certain legume, cereal or brassica cover crops suppress weed seed germination and seedling development via plant-produced natural herbicides upon decomposition (i.e., allelopathy). By implementing this enhancement, the major resource concerns of soil quality, soil erosion, plants and water quality will be improved and maintained to a high level.

Conditions Where Enhancement Applies

This enhancement applies to all acres of annually planted cropland. These acres can be organic, transitioning to organic, or non-organic.

Criteria

1. Between each crop in the rotation, except double cropped situations, seed a high residue cover crop or mixture of high residue cover crops. Each cover crop or mixture shall meet the following requirements:
 - a. Seed a cover crop or cover crop mixture at a rate and within a planting date range as determined or agreed to by the NRCS State Agronomist.
 - b. Cereal grain cover crops or mixtures shall be top dressed with nitrogen at rates determined or agreed to by the NRCS State Agronomist.
 - c. The cover crop or mixture shall reach a maturity level (i.e., growth stage) to ensure 100% soil coverage in the row middles for 3 months of the growing season. For example, cereal rye shall reach the soft dough stage before termination. The NRCS State Agronomist can determine a specified maturity level or desired residue quantity (dry matter basis) for the selected cover crop cultivar.
 - d. Termination of all cover crops shall be accomplished by chemical methods, non-chemical methods (such as flail mowing or roller crimper), or a combination of both.



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2. The crop rotation must be grown in a manner to maintain a minimum Soil Tillage Intensity Rating (STIR) ≤ 10 as determined by RUSLE2.

Adoption Requirements

This enhancement is considered adopted when all of the criteria have been met on the land use acre.

Documentation Requirements

Written documentation for each year of this enhancement describing the following items:

1. Cover crop or mixture used
2. Cover crop or mixture seeding rate and seeding date
3. If applicable, nitrogen top dress rate and date for the cover crop or mixture
4. Cover crop or mixture termination stage
5. Method used to terminate cover crop or mixture and date of termination

References

Price, A.J., K.S. Balkcom, L.M. Duzy and J.A. Keltron. 2012. Herbicide and Cover Crop Residue Integration for *Amaranthus* Control in Conservation Agriculture Cotton and Implications for Resistance Management. Weed Technology. In press.

Price, A.J., K.S. Balkcom, R.L. Raper, C.D. Monks, R.M. Barentine, and K.V. Iversen. 2008. Controlling Glyphosate-Resistant Pigweed in Conservation Tillage Cotton Systems. Conservation Systems Research. Special Publication No. 09. USDA-ARS-NSDL, Auburn, AL.

Sustainable Agriculture Research and Education (SARE). 2010. Managing Cover Crops Profitably. 3rd ed. Handbook #9. College Park, MD.

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Approved cover crop species include: Alfalfa, Annual Ryegrass, Barley (Spring/Wheat), Berseem Clover, Buckwheat, Canola/Rape, Cereal Rye (Winter), Chicory, Cowpea, Crimson Clover, Field Pea, Forage Turnips, Forage/Oilseed Radish, Hairy Vetch, Japanese Millet, Oats, Pea (Winter), Pearl Millet, Red Clover, Sorghum-Sudangrass, Sudangrass, Sunflower, Triticale (Winter), Wheat (Spring/Winter), White Clover; or other species as approved by the NRCS Area Resource Conservationist.

See Wisconsin Agronomy Technical Note 7 for seeding information:

<ftp://ftp-fc.sc.egov.usda.gov/WI/technotes/agronomy-tn7.pdf>

Criteria #1b is optional. For nutrient recommendations see A2809 "Nutrient Application Guidance for Field, Vegetable, and Fruit Crops in Wisconsin"

<http://learningstore.uwex.edu/assets/pdfs/A2809.pdf>

This is a 'System' type enhancement. This enhancement shall be performed on the areas (i.e. fields) identified in the Conservation Stewardship Plan each year when appropriate to do so.

Plant Enhancement Activity – PLT21 – Forest stand improvement pre-treating vegetation and fuels preceding a prescribed fire



Enhancement Description

This enhancement is to manage the vegetation and fuels in a forested area with mechanical or manual methods in advance of a prescribed fire **AND** to complete one or more treatments with prescribed fire during the contract period to restore native forest conditions.

Land Use Applicability

Forestland

Credit: John D. Hodges, Mississippi State University, Bugwood.org

Benefits

Prescribed burning is a useful tool in the restoration and maintenance of native forest plant communities. However, certain sites preclude the application of prescribed fire due to unsafe conditions caused by excessive amounts and types of fuel present on the site. The implementation of this enhancement will make it possible to safely conduct a controlled burn by mechanically or manually treating this condition prior to a planned burn followed by a prescribed fire to allow regeneration of native forest plants. Other benefits include reduced wildfire risk, improved access, improved wildlife habitat, and enhanced visual quality.

Conditions Where Enhancement Applies

This enhancement applies to forest land use acres with conifers or mixed stands that have a forest management plan that recommends a prescribed burn within the next 3 years.

Criteria

Develop and implement a prescribed burning plan written and carried out by a certified prescribed burner.

1. The plan must include a thorough assessment of both the existing fuel load and the desired fuel load. See the “References” section for guidance to make these determinations.
2. This enhancement also requires implementation of one or more of the following measures:
 - a. Excessive volatile live vegetation pretreatment –When volatile, live grasses and shrubs are present in the area where this enhancement applies in excess of that needed to safely conduct a prescribed burn, reduction of these fuels may be accomplished by shredding, cutting, chipping, mulching, crushing, scattering, removing from the site or any combination of these methods. If this vegetation represents the primary fuel needed to carry a controlled burn in the area, the timing of this measure will be important. Depending on the vegetation, time the reduction to allow for adequate re-growth to supply the amount and continuity needed. If invasive plants are present, utilize methods and timing that will prevent or control their spread.



- b. Excessive debris and dead fuels –When excessive amounts of debris and dead fuel exist in the area where this enhancement applies, remove the material from the area by chipping, crushing, shredding, scattering or any combination of these methods.
- c. Closed canopy – When the trees within the area where this enhancement applies form a continuous, closed canopy, thin the stand to allow for heat escape and control of prescribed burns. Conduct thinning to space crowns at least 10 – 15 feet apart. Prune flammable limbs to a height of at least 10 feet. Remove slash from the area, scatter or reduce in size by crushing or chipping.
- d. Ladder fuels – When ladder fuels form connections between the ground and the higher levels of the canopy in the area where this enhancement applies that make it possible for a fire to spread into the upper canopy, break the continuity of fuel between the ground and the upper canopy position by cutting or snagging. Complete removal is not required as long as the continuity is broken. If excessive amounts of slash are created, remove it from the area, scatter or reduce in size by crushing or chipping.

Adoption Requirements

The enhancement is considered adopted when at least one prescribed fire has been implemented on the forest land use acre.

Documentation Requirements

1. Brief written documentation detailing the pre-treatment conditions and the post-treatment conditions.
2. Representative digital images of the area showing before and after photos.

References

Barrett, S., D. Havlina, J. Jones, W. Hann, C. Frame, D. Hamilton, K. Schon, T. Demeo, L. Hutter and J. Menakis. 2010. Interagency Fire Regime Condition Class Guidebook. Version 3.0. <http://www.frcc.gov/>

Global Learning and Observations to Benefit the Environment (GLOBE). www.globe.gov.

Fire Fuel Protocol: http://www.globe.gov/documents/355050/355099/land_prot_firefuel.pdf ;

Transect Measurements Field Guide: http://www.globe.gov/documents/355050/355097/lc_fg_firetransect.pdf ;

Transect Measurements Data Sheet: http://www.globe.gov/documents/355050/355096/lc_ds_firetransect.pdf

Napper, C. 2010. Useful Tools for Identifying Surface Fuels and Biomass. 1019 1802P. San Dimas, CA: U.S. Department of Agriculture, Forest Service, San Dimas Technology and Development Center. pp 28. <http://www.fs.fed.us/t-d/pubs/pdf/10191802.pdf>

Outcalt, K.W., and D.D. Wade. 2004. Fuels Management Reduces Tree Mortality from Wildfires in Southeastern United States. Journal of Applied Forestry 28(1): 28-34. http://www.srs.fs.usda.gov/pubs/ja/uncaptured/ja_outcalt008.pdf

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Fire dependent habitat include Oak stands or Jack Pine Barrens.

Follow Wisconsin Conservation Practice 338 (Prescribed Burning):

<http://efotg.sc.egov.usda.gov/references/public/WI/338.pdf>

Written documentation shall include the name and credentials of the individual who developed the prescribed burn plan and documentation of the fuel/weather conditions at the time of burn.

This is a 'System' type enhancement. This enhancement shall be performed on the areas (i.e. fields) identified in the Conservation Stewardship Plan each year when appropriate to do so.