United States Department of Agriculture
Natural Resources Conservation Service

2014 Ranking Period 1

Energy Enhancement Activity - ENR11 – Improving energy feedstock production using alley cropping systems with short rotation woody crops

Enhancement Description
This enhancement involves the use of short rotation woody plants that produce energy feedstock planted in multiple rows with crops or forages produced in the alleyways between the woody rows.

Land Use Applicability
Crop, Pasture

Benefits
The strategic integration of woody biomass species within agricultural landscapes will assist in meeting society's and on-farm energy demands while improving agro-ecosystem health and function. Woody feedstock can be harvested year round (with proper planning and design) and the resulting solid chips can be handled, stored and converted to energy. See Alley Cropping (311) conservation practice standard for further guidance.

Conditions Where Enhancement Applies
This enhancement applies to all acres of the selected land use.

Criteria
1. Identify short rotation woody crops to be planted. (Lists of woody plants suitable for energy feedstock production will be developed by NRCS at the state level.)
2. Account for potential local energy markets and personal needs when selecting species. Use native species wherever possible.
3. Plant woody species in multi-row (minimum of two-rows/set) sets.
4. The alleyway distance between woody row sets will be determined by the following:
   a. Tree or shrub management objectives
   b. Type (s) of woody plant used
   c. Light requirements and growth period of the crops or forages in the alleyways
   d. Erosion control needs
   e. Machinery widths and turning areas
5. Maximum distance of the alleyways between woody row sets will be determined by states.

Adoption Requirements
This enhancement is considered adopted once the short rotation woody crops have been planted.

Documentation Requirements
1. List of short rotation woody crops planted.
2. Type of woody feedstock material (e.g. chips, pellets, rounds)

3. Brief written description of the activities (criteria) completed with dates of application and receipts for planting stock, herbicides, etc.
4. Acreage of the enhancement activity.
5. Delineations on a map or aerial photo of alley cropping layout and placement.

References

Garrett, H.E. (editor). 2009. Alley Cropping Practices – Chapter 7. *In* North American Agroforestry: An Integrated Science and Practice. American Society of Agronomy, Inc.

State University of New York College of Environmental Science and Forestry. 2010. Short Rotation Woody Crops in a Renewable Energy Future: Challenges and Opportunities. 8th Biennial Short Rotation Woody Crops Operations Working Group Conference. Syracuse, NY.

USDA National Agroforestry Center. 1999. Alley Cropping: An Agroforestry Practice.. Agroforestry Notes – AF Note 12. Lincoln, NE.

USDA National Agroforestry Center. 1998. Opportunities for Growing Short-Rotation Woody Crops in Agroforestry Practices. Agroforestry Notes – AF Note 10. Lincoln, NE.

ENR11 – Improving energy feedstock production using alley cropping systems with short rotation woody crops:

1. Suitable species include:

   Alder species
   Populus species
   Salix species
   American Sycamore
   Black Locust

2. Maximum distance between tree/shrub row-sets will be 200 feet except for fields that are less than 200 feet can be enrolled but must contain a minimum of two tree/shrub row-sets.

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