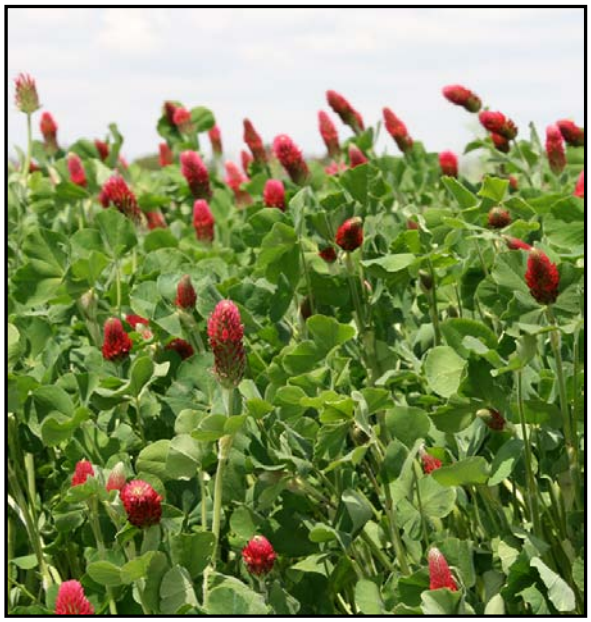
United States Department of Agriculture
Natural Resources Conservation Service

2011 Ranking Period 1

Water Quality Enhancement Activity – WQL16 – Use of legume cover crops as a nitrogen source



Enhancement Description
This enhancement is for the use of legume cover crops as a primary source of nitrogen in a cropping system. Use of legume cover crops is applicable to conventional, specialty and organic crop production systems.

Land Use Applicability
Cropland.

Benefits
Approximately 35,000 cu ft natural gas is required to produce one ton of nitrogen fertilizer. Legume cover crops can provide 50 to 100 lbs of plant available nitrogen per acre to reduce off-farm energy requirements.

Criteria

1. Plant and manage legume cover crops prior to all field or specialty crops raised that require the use of commercial nitrogen.
2. Estimate nitrogen credits from the leguminous crop. The legume cover crop must be selected and managed to supply a significant amount of N for the following crop. Nitrogen credit estimate should consider:
    a. The amount of biomass produced (plant height and maturity)
    b. The nutrient composition of the cover crop (for example, clover vs. vetch)
    c. The decomposition rate of the cover crop during the cash crop growing season based on incorporation of the residue or being left on the soil surface after planting. Note: An example procedure is outlined in "***Managing Cover Crops Profitably, 3rd Edition***" (Sarrantonio, 1998)
3. NRCS State Offices should work with their state Land Grant Universities to establish the minimum N credit that will be required from legume cover crops.
4. Base additional nitrogen application rates for crops following the cover crop on guidelines of the state Land Grant University. Reduce nitrogen application rates by at least the amount credited in #3 above to account for the nitrogen available from the legume cover crop.

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

1. A map showing where the enhancement is applied
2. Type of legume cover crop planted

3. Calculations for estimating available nitrogen
4. Application rates of additional nitrogen by field
5. Realistic yield goals for field or specialty crop grown

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Legume cover crop <6" growth and 25 stems/sq.ft. = 40 lbs/ac. N credit

Alfalfa, Red Clover, Hairy Vetch, Berseem Clover, and similar crops >6" growth = 60 lbs/ac. N credit

Document cover crop seeding rates, establishment and termination methods.