



Natural Resources Conservation Service  
WASHINGTON

## ENR12 – Use of legume cover crops as a nitrogen source

### CSP Enhancement Washington State Supplement

**Land Use Applicability:** Cropland

January 2014

Client/Operating Unit:

Tract Number:

Farm/Ranch Location:

Farm Number:

Specifications Date:

Field Number(s):

Planned Installation Date:

Proposed Treatment Acres:

#### Enhancement Description:

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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.

#### Benefits

Approximately 35,000 cu ft of natural gas is required to produce one ton of nitrogen fertilizer; or on average, 20,000 BTU's are required to produce one pound of synthetic nitrogen; or approximately 140 BTU's are required to produce one gallon of diesel fuel. Legume cover crops can provide 50 to 100 lbs of plant available nitrogen per acre to reduce synthetic nitrogen use and fossil fuel use.

#### Conditions Where Enhancement Applies

This enhancement applies to all cropland.

#### Criteria for use of legume cover crops as a nitrogen source

1. On all acreage where this enhancement will be applied, 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.
3. The legume cover crop must be selected and managed to supply a minimum of 40 lbs N/acre credit for the following crop.
4. 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)
5. Seeding rates for the selected cover crop species shall be based on NRCS practice standards or the respective state Land Grant Universities recommendation.
6. Base additional nitrogen application rates for crops following the cover crop on guidelines from 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.

#### Layout Sketch & Drawing (Provide sketch, drawings, maps, and/or aerial photographs.)

- Geo-referenced field map with all delineated treatment areas where CSP Enhancement ENR12 is to be applied.

## Adoption Requirements

This enhancement is considered adopted when the land use acreage has been planted to a leguminous cover crop that meets or exceeds the minimum nitrogen credit from the criteria above.

## Documentation Requirements

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

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

## References\*:

Clark, A.(editor.). 2007. Managing cover crops profitably. 3<sup>rd</sup> ed. Sustainable Agriculture Network Handbook Series.

Magdoff, F. and H. van Es. Cover Crops. 2000. *In* Building soils for better crops. 2nd ed. Sustainable Agriculture Network Handbook Series. pp87-96. National Agriculture Library. Beltsville, MD.

[Liebman, M., Graef, R., Nettleton, D., Cambardella, C.A. 2011. Use of legume manures as nitrogen sources for corn production. Renewable Agriculture and Food Systems. p. 1-12. Available: http://dx.doi.org/10.1017/S1742170511000299](http://dx.doi.org/10.1017/S1742170511000299)

### Field Office Technical Guide:

eFOTG, <http://www.nrcs.usda.gov/technical/efotg/>

\* Some online documents may take several minutes to download.

## State Supplemental Information

**Follow State Land Grant University guidelines for credits.**

See documentation requirements above. A Certified Crop Advisor plan that contains each of the listed items may be submitted. Otherwise, provide documentation on the form below. Additional sheets may be used.

**Documentation Form**

Producer:

Date:

Tracts:

County:

Type of legume cover crop planted

Calculations for estimating available nitrogen

Application rates of additional nitrogen by field

Realistic yield goals for field or specialty crop grown

| Date | Field(s) | Type of legume cover crop planted | Estimate of available nitrogen | Application rate of additional nitrogen | Yield Goals |
|------|----------|-----------------------------------|--------------------------------|---|-------------|
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A map showing where the enhancement is applied

**Client's Acknowledgement** (To be signed before the Enhancement is applied.)

By signing below, I acknowledge that I:

- have reviewed and understand the site specific design, installation specifications and operation/maintenance requirements in this State Supplemental Sheet and have an understanding of the purpose(s) of this Enhancement;
- will install, operate, and maintain this Enhancement in accordance with the National Sheet, the Washington State Supplemental Sheet and the site specific specifications.
- will make no changes to the planned design and installation without prior written approval of the Natural Resources Conservation Service.
- will obtain all necessary permits and/or rights, and comply with all ordinances and laws pertaining to the installation, operation, and maintenance of this Enhancement, prior to the start of installation; and
- will assume responsibility for notifying all Utilities affected by the installation, operation and maintenance of this Enhancement.

Signature

Date

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