

**Energy Enhancement Activity - ENR08 – Using nitrogen provided by legumes, animal manure and compost to supply 100% of the nitrogen needs**



**Enhancement Description**

This enhancement involves using nitrogen produced by legumes and/or available from animal manure and compost to supply 100% of nitrogen nutrient needs for crops, hay and/or forages produced on the farm.

**Land Use Applicability**

Cropland and pastureland.

**Benefits**

Annually 12 million tons of nitrogen fertilizers are used to produce crops on over 90 million acres. It requires 35,000 to 40,000 cu.ft. of natural gas to produce one ton of nitrogen fertilizer accounting

for 1/3 of the energy input to crop production. Managing legumes, manures and compost properly can replace the need for additional nitrogen fertilizer and reduce the energy footprint that a farming operation might have.

**Criteria**

- A nutrient management system will be followed that utilizes nitrogen from legumes, animal manures and compost as the sole source of nitrogen for production.
- Follow LGU recommendation for legume nitrogen production when estimating available nitrogen for crop production.
- A more accurate estimate can be obtained by following the guidance in “Northeast Cover Crop Handbook” chapter 2.
- Manure and compost nutrient analysis will be used when estimating available nutrients for crop production.
- On soils where “P” levels are high or very high, manure must be applied according NRCS Nutrient Management Standard (590).
- Soils disturbed during manure application should be followed by a cover crop that will prevent erosion and trap nutrients.
- Utilize cover crops to trap N were appropriate, e.g. following manure application on soils with low residue levels or that have been tilled.
- Manure from off farm sources can be used.
- This does not include the removal of crops that require nitrogen from the rotation, e.g. eliminating corn to avoid use of nitrogen fertilizer.



United States Department of Agriculture  
Natural Resources Conservation Service

2011 Ranking Period 1

### **Documentation Requirements**

- Crop production records that include:
  - Source of organic nitrogen, e.g. cover crop, manure
  - An estimate of available nitrogen and method used to estimate
    - Lab analysis
    - Bio mass calculation
  - Amount of manure and/or compost applied per acre
  - Manure nutrient analysis
  - Listing of fields
  - Estimate of legume biomass produce each year

## Michigan Supplement

### **Enhancement Activity ENR08 - Using Nitrogen Provided By Legumes, Animal Manure and Compost to Supply 100 Percent of the Nitrogen Needs**

To document the nitrogen credits from these organic sources of nitrogen, there are two or three NRCS MI tools to help estimate the available N credits when more than one source of organic N is available.

See the Natural Resources Conservation Service (NRCS) Michigan electronic Field Office Technical Guide (eFOTG) on the web at: *NRCS/eFOTG/Section 1/General Resource References /Reference Material/Michigan Technical Notes/Agronomy*, and locate the Agronomy Technical Note #20, Plant Available Nitrogen Calculator. There is also an Excel spreadsheet, Estimating Plant Available Nitrogen in an Ideal Setting, or Pan Calculator, to help estimate plant available N from various manure and legume sources.

Also see the Michigan conservation practice Nutrient Management (590) job sheet, the Farm Nutrient Balance Excel Spreadsheet, and the Michigan State University (MSU) Nutrient Recommendation 6.0 Excel Spreadsheet, also available under Technical Tools in Section IV, Standards and Specification, of the eFOTG.