

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
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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



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Reference: 590 – Nutrient Management

Supplemental Minnesota Criteria

- This enhancement is not applicable to crops that do not require nitrogen fertilization (e.g. alfalfa).
- Crop nitrogen needs will be determined by using University of Minnesota (UofM) or contiguous land grant university guidance. In some cases UofM guidance automatically accounts for nitrogen supplied by previous years' legume crops. In other cases, tables are presented that specify the amount of nitrogen provided by previous legume crops.
<http://www.extension.umn.edu/CommodityCrops/>
<http://www.extension.umn.edu/distribution/cropsystems/DC5886.html>
- Laboratory reports of manure nutrient content often do not define the amount of such nutrients available to the crop in the 1st, 2nd and succeeding years following the manure application(s). A calculator and/or job sheet for estimating nutrients available from manure are located at:
<http://www.mn.nrcs.usda.gov/technical/ecs/nutrient/manure/manure.htm>

Supplemental Documentation Requirements

- Calculations used to determine respective crop nitrogen needs.

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