

Earth Smart *“Farming for the Future”*

Manure Management

The primary direct GHG emissions related to manure are methane and nitrous oxide. Methane is generated from enteric fermentation by ruminants and from anaerobic decomposition when manure is stored. Nitrous oxide is emitted when manure is stored and/or spread. Emissions are affected by temperature, moisture, nutrient source, and oxygen level, which in turn are affected by manure type, storage and handling, application method and livestock diet. Stored liquid waste (lagoons) generates considerably more methane than solid and untreated solids generate more than composted solids. Spreading increases generation of nitrous oxide emissions through the denitrification process. Application of manure to crop and pasture land utilizing best management practices will generally increase or maintain soil organic matter and carbon sequestration.

This certification program does not currently address management practices to reduce enteric fermentation-however there is research that shows changing the diet of ruminants to include more easily digested feed and/or feed that has a high polyunsaturated fatty acid content can reduce methane emissions, as can improving production efficiency through improved grazing management, improving genetics and other practices.

Manure management in Maine is regulated by the 7 M.R.S.A. Chapter 747, Nutrient Management Act and a nutrient management plan is required under certain conditions, including confining and feeding 50 or more animal units, utilizing or storing more than 100 tons of manure or compost per year not generated on the farm and storing or utilizing regulated residuals.

Manure Management Certification Goals

- Decrease methane production
- Decrease nitrous oxide production
- Increase carbon sequestration
- Reduce fertilizer nitrogen use
- Maintain or increase crop productivity
- Maintain resource nutrient levels available for crops
- Decrease potential impact on water quality

Requirements

- Whole Farm GHG Assessment
- Whole Farm GHG Management Plan
- Landscape Energy Audit, if available
- Nutrient Management Plan
- Current soil tests done within three years prior to the assessment and every two years thereafter throughout the certification period. Standard soil tests must include organic matter.
- Current manure tests done within one year prior to the assessment, every year thereafter and when there is a change in feed or other management that would affect manure composition.
- Crop Nutrient Requirements
- Field Soil Map (soil tests, manure tests, crop nutrient requirements and soil maps are included in NMPs)

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- Allow regular on-site verification of practices to maintain certification.
- Keep annual records of use, amount and date of application.

Performance Standards

All Practices

- All acreage included in NMP is enrolled.
- All manure management practices must meet established management criteria
- Historical average annual average crop yields maintained or increased (no net decrease in yield resulting from change in manure management).

Points required for Manure Management Certification: 15

If a qualifying practice has been implemented on a farm within ten years prior to the assessment, it may be used for certification points if the practice is uncommon for the county in which the farm site is located. An "uncommon practice" is defined as one that is implemented on less than 25% of the same type of farm in the county. If a qualifying practice is classified as "common", in use by more than 25% of same type farm within the county, certification points can be awarded only if additional greenhouse gas reductions are made, such as extended rotations, change in crop, etc.

Certification Period: Five years, renewable

Verification Period: Annual

Opt out: None

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Accepted Management Practices

Practice	GHG Benefit	Co-Benefit	Cost, Payback	Certification Period	Verification	Points
Methane Digester	Reduction of methane, can incorporate liquid manure, increase in carbon dioxide emissions is offset by decrease in methane	Possible use as energy source, decrease of pathogens, effluent retains nutrients	High, long payback can be reduced by using as energy source and/or sale of offsets	5 years	Annual	15
Composting-product spread or incorporated according to NMP and BMP's.	Reduction of methane, best used for solids	Reduction of volume, more usable form of nutrients, decrease of pathogens, increases organic matter, odor control	Low to moderate. Payback depends on equipment purchased versus less transportation costs related to lower volume and reduction of commercial fertilizer use.	5 years	Annual	10
Injection into root zone	Reduction of nitrous oxide	Nutrient availability, increased organic matter, increased carbon sequestration, odor control	Moderate-requires equipment. Payback depends on equipment cost and reduction of commercial fertilizers.	5 years	Annual	10
Cover existing lagoons	Reduction of methane emitted via collection/flaring	Odor control, reduction of rain entering system, less volume, methane removal	Moderate to high depending of method of removing gases and cost of cover	5 years	Annual	15
Improved Distribution (banded manure spread-according to BMP)	Reduction of nitrous oxide	Availability of nutrients, increased organic matter	Low to moderate depending on equipment purchased. Payback depends on equipment cost and commercial fertilizer reduced.	5 years	Annual	5
Total Points						