

# Cornell University, Pro-Dairy and NYSP2I Evaluate Sunnyside Farms Manure Recycling Process



## Sunnyside Farms

Located in Scipio Center, New York, Sunnyside Farms recycles the manure produced on their dairy farm to supplement soil health and nutrient demand while also reducing the impact to off-site water quality and greenhouse gas emissions. In addition to the environmental benefits, there are economic benefits to on-site manure recycling, such as minimizing waste hauling and disposal, and producing value added products such as compost and pelletized fertilizer made from the waste manure.

## Challenge

Sunnyside Farms is evaluating various post processing equipment for their manure recycling process to determine the effectiveness of post processing the manure constituents to provide value added products. The company sited an aerobic composter as a potential post processing option and requested an evaluation of the effectiveness of the composter.

## Solutions

The New York State Pollution Prevention Institute (NYSP2I) partnered with Cornell University's College of Agriculture and Life Sciences (CALs) and Cornell's Pro-Dairy program to characterize the material from the manure recovery process and evaluate the aerobic composter equipment. CALs / Pro-Dairy evaluated the aerobic composter by collecting and analyzing samples for input and output nutrients. NYSP2I supported the lab sample analysis by utilizing test services provided by Certified Environmental Services, Inc. (CES).

## Results

The results from the analysis suggest:

- The moisture reduction, and therefore mass reduction, was significant using the aerobic composter system, however the heat energy required by the composter made this prototype uneconomical to operate.
- The inoculant was also ineffective in contributing to aerobic composting activity.

## Challenge

- Sunnyside Farms is evaluating the effectiveness of post processing liquid and solid wastes from their manure recycling process.
- Goal: Produce value added products derived from waste manure while minimizing environmental impacts.

## Solution

- NYSP2I supported Cornell (CALs) and Pro-Dairy to characterize the material from the manure recovery process and evaluate aerobic composter post processing equipment. CALs / Pro-Dairy evaluated the aerobic composter by collecting and analyzing samples for input and output nutrients.

## Results

- The moisture reduction and mass reduction was significant using the aerobic composter system.
- The heat energy required by the composter made this prototype uneconomical to operate.
- Sunnyside Farms plans to evaluate additional post processing equipment to improve their manure recycling process while maintaining energy efficiency and minimizing environmental impacts.

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- The nutrient concentrations varied in both the inputs and outputs of the process.
  - Phosphorus and potassium were retained while a significant amount of nitrogen was lost.
  - The nitrogen loss (nitrogen is needed for forage growth on the farm) could be mitigated by the reduction in mass (enabling the phosphorus to be exported or marketed).

Moving forward, Sunnyside Farms plans to evaluate additional post processing equipment for their potential to improve their manure recycling process while maintaining energy efficiency.

### Partners



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