

# New York On-Farm Research Partnership

## Value of Manure Project - Join Us!

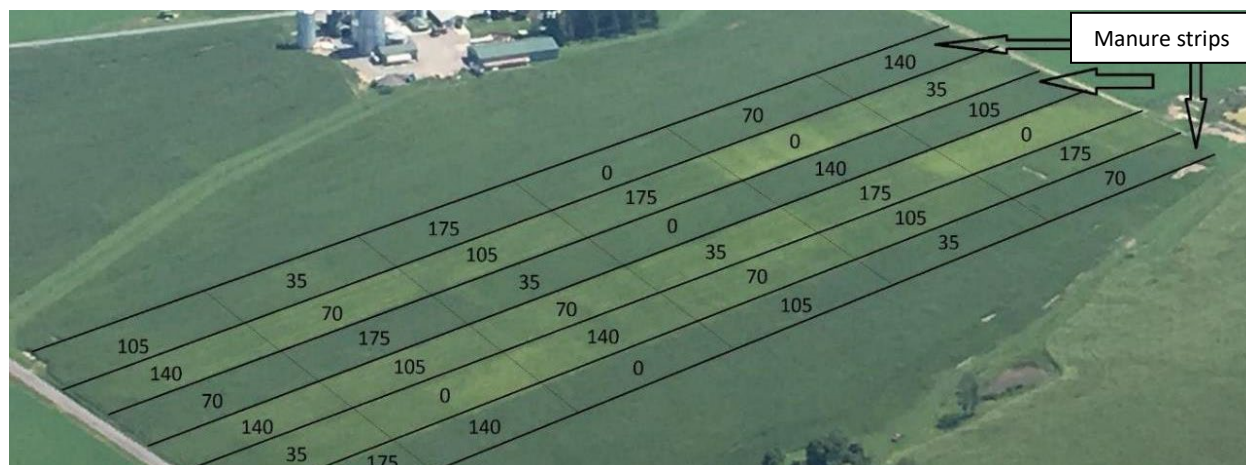
Manure has all seventeen essential nutrients and can increase crop yield beyond what can be obtained with fertilizer alone. In this project, we evaluate the nitrogen fertilizer replacement value (how much N can we credit?) and yield differences from the appropriate use of manure in grain and silage corn. This project is funded by New York Farm Viability Institute (NYFVI) and the Northern New York Agricultural Development Program (NNYADP). We are looking for farmer participants for the 2022 growing season, so let us know if you can implement this experiment on your farm. Contacts: Quirine Ketterings ([gmk2@cornell.edu](mailto:gmk2@cornell.edu)) and Kirsten Workman ([kw566@cornell.edu](mailto:kw566@cornell.edu)).

### Required for participation:

- Manure source and application equipment.
- Corn harvester (chopper or combine) with calibrated yield monitor system.
- Corn planter
- Trial plot should get 20-30 lbs N/acre *as starter only* (no broadcast fertilizer N pre-plant).
- Field size: length minimum of 1200 feet long. Width minimum: 6 x 2 harvester widths.
- Sidedress unit that can apply up to 175 lbs N/acre in 35 lbs N increments (0-35-70-105-140-175).
- Trial area should be as homogenous as possible.
- Ideally 3<sup>rd</sup> or 4<sup>th</sup> year corn where N fertilizer is expected to be needed for optimal yield but otherwise optimally fertilized (optimal pH, P, K, etc.).

### Experimental design:

The experimental design has three strips where manure is applied and three where no manure is applied this spring. The farmer selects the manure source (liquid, separated liquids, solids, digestate, etc.) and the manure application method (surface applied, incorporated, injected). Manure should be applied as uniformly as possible across each strip. Strips should be 2-3 harvester passes wide so that at harvest we have at least one clean yield pass for each plot. See aerial image below (here each plot was 300 ft long and 120 feet wide) and the plot plan with plot numbers on the next page.



Manure	No Manure	No Manure	Manure	No Manure	Manure			
Rep1		Rep 2		Rep 3				
strip 1	strip 2	strip 3	strip 4	strip 5	strip 6			
175lbs N/acre	35 lbs N/acre	140lbs N/acre	70 lbs N/acre	140lb N/acre	105 lbs N/acre			
6	7	18	19	30	31			Manure Treatment 1. Manure 2. No Manure
140 lbs N/acre	0 lb N/acre	105 lbs N/acre	175lbs N/acre	70 lbs N/acre	35 lbs N/acre			N Rate (lbs N/acre)
5	8	17	20	29	32			0 35 70 105 140 175
0 lb N/acre	140 lbs N/acre	70 lbs N/acre	35 lbs N/acre	105 lbs N/acre	175lbs N/acre			
4	9	16	21	28	33			
105 lbs N/acre	70 lbs N/acre	35 lbs N/acre	0 lbs N/acre	175lbs N/acre	0 lb N/acre			
3	10	15	22	27	34			
35 lbs N/acre	105 lbs N/acre	175lbs N/acre	140 lb N/acre	0 lbs N/acre	70 lbs N/acre			
2	11	14	23	26	35			
70 lbs N/acre	175lbs N/acre	0 lb N/acre	105 lbs N/acre	35 lbs N/acre	140 lbs N/acre			
1	12	13	24	25	36			
Manure	No Manure	No Manure	Manure	No Manure	Manure			
					2-3 chopper/ combine widths			

200-300 ft

**What you implement:**

- Three strips of manure applied homogeneously across the strips, applied before planting this spring. Please stake or GPS the corners so we can generate georeferenced plot plans.
- Sidedress as per the plot plan, ideally applied between V4-V6.
- Yield data collected with a calibrated yield monitor system.

**What you collect:**

- GPS locations or stakes on the corners of each manure strip (we will then stake the rest for guidance at sidedress time and remove the staked right after sidedressing in preparation for harvest).
- One manure sample per strip taken at application (so 3 samples; keep frozen until we pick it up).
- Yield data with a combine or chopper with calibrated yield monitor system.
- Field history information and crop management info (planting date, starter use, manure application rate and method and timing, any field crop passes for weed or pest control, timing of sidedressing, yield data).

**What the Cornell team and collaborators collect (and share with you):**

- We will send the manure to be analyzed
- Soil samples for general soil fertility and ISNT-N
- PSNT samples to be taken just before you sidedress the field
- NDVI imagery from satellite imagery (drone as well most likely)
- CSNT samples and forage quality for corn silage fields
- Final reports with yield data, crop response to manure and fertilizer, all soil and manure information, and final reporting.

Please let us know if you will participate and where the trial location will be!

Once we know who will join, we will start documenting locations and put together the specific plan for completing the trials with you this year.

Thanks!

Quirine (607 339 7240) and Kirsten (360 280 6766)

