



## Manure Rate Research Partnership with NMSP Proves Valuable to Southview Farm

By Lisa Fields

The dairy industry's viewpoint about manure has evolved significantly over the past twenty years. Dave Russell, a senior consultant with the Linwood Management Group has experienced that progression firsthand. Russell manages Southview Farms' 2800 acres of crops in Wyoming County, New York. He also works part-time for Agrinetix, LLC, precision agriculture technology consultants.

Russell commented, "Twenty years ago manure was mostly viewed as a waste product. Now we view it as a resource that not only can save fertilizer expense, but can potentially help us be profitable."

That outlook is reflected in Southview Farm's participation in the 2013 Manure Application Method and Rate Study with Cornell's Nutrient Management Spear Program (NMSP). Dr. Quirine Ketterings, director of the NMSP explained, "The idea for this project came from earlier work we did with Willard DeGolyer and the farm crew of Table Rock Farm in western New York. The farm crew questioned whether or not manure application methods affected corn yields and if higher or lower rates made a difference in yield. These questions were raised by others as well, so we approached the New York Farm Viability Institute (NYFVI) for funding for the study."

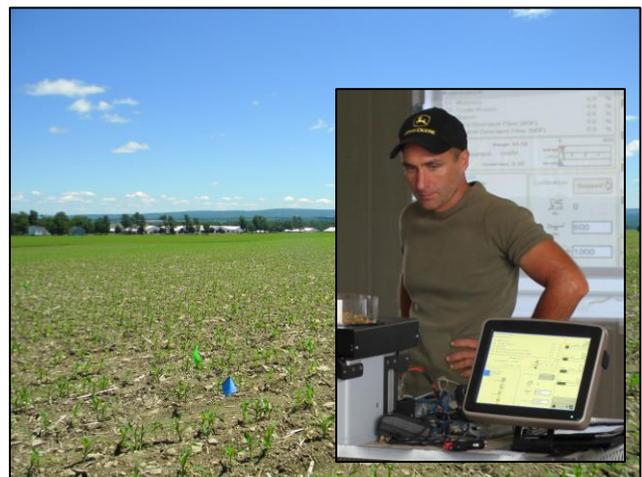
The manure application methods compared were injection and tillage-incorporation with a separate component examining the effects of different rates of manure. The study evaluated the impact on both yield and forage quality. Economics of the two manure application methods were evaluated by John Hanchar, Farm Business Management Specialist with the North West New York Dairy, Livestock and Field Crops Extension Team.

Russell commented on Southview's participation in the manure rate segment of the project. "It fit our continual goal to spread manure in an environmentally friendly manner and to get the most from it as a nutrient source. Our predominant method of applying

manure has been by injecting it in the spring through a tractor pulled tanker before planting the corn crop. With injection we capture the ammonia-N and as a result, have cut nitrogen fertilizer by at least 30% compared to the past practice of surface spreading manure. The question we asked of the NMSP study was whether our rates of application gave the most efficient use of nutrients and met our manure management needs."

Ketterings added, "We were able to conduct rate studies at four farms across the state and were happy to work with Dave at Southview on this project. The farm's investment in yield monitoring equipment allowed us to compare labor and time involved in doing these on-farm trials."

The trial was a collaboration between the research team and the farm crew. "The NMSP team set up the plots and our field crew applied the injected manure in four replications each at three rates of 9,000, 12,000 and 15,000 gallons per acre. It went really smoothly and required no extra time on our part," Russell explained. "Harvest was a little slower than usual because of the individual plots, but it was well worth the effort."



Dave Russell, senior consultant with Linwood Management Group, crop manager of Southview Farms, and part-time employee of Agrinetix, LLC, participated in a manure application rate and yield monitor evaluation study.

The results showed that in Southview's study plots the lowest rate met the corn crop's N needs, with no significant difference in silage yields between the three treatments. Average yield in the study plots was 22.5 tons per acre at 35% dry matter. "I honestly couldn't see a difference in height or density between those three rates, and the yield monitors agreed," Russell said. He added, "The highest rate contributed more phosphorus and potassium to the soil than is ideal for long term nutrient management. We need to keep the nutrients in a range that meets crop needs without building levels of P and K too high so we can continue to apply manure to those fields."

At Southview Farms, a yield monitor was used to collect corn yield data for the manure rate trial. Russell described the current and potential role of yield monitors. "Our John Deere forage harvester has a HarvestLab® monitor that measures by-the-second as you harvest. Given weather impacts on crops, you should view 3-5 years of field data to determine any trends. With yield maps layered with soil and fertility maps, you can accurately determine whether or not yield differences are due to variations in the field. That takes much of the uncertainty out of field research results. If we upgrade our technology in the future for variable input applications, we've got the baseline field data to use it effectively."

As Southview's farm management team looks to the future, they're discussing manure injection options. Russell elaborated, "Tanker weight can lead to soil compaction, which we could avoid with a drag hose system. We have one drag-hose set-up now but we'd need a second one to make a complete shift. The advantage is protection of the soil to continue good crop performance. As the equipment is a major investment, all the pros and cons must be weighed through the team process. I sat down with John Hanchar to compare the economics of the two systems. The drag hose system looked better close to home. We're still gathering information to learn if that's true on farther away fields given the factors of travel

time and equipment set-up."

Hanchar described his work with Russell. "I met with Dave to gather data for a Partial Budget Analysis. The purpose of the analysis is to estimate the expected change in profit associated with a proposed change in the farm business. The analysis includes only the income and expense items that are expected to change. When comparing two manure handling systems, machinery and all related expenses, labor and fertilizer expenses, and possibly corn silage yield and income will typically change." The Partial budget is an analysis of those common items distilled to reflect expected differences in income and costs attributed to the proposed change in manure handling system. The economic analysis is in its final phase, so conclusions can't be stated yet. Hanchar remarked, "Economic analysis is part of a whole farm approach to decision making that involves many other factors. It's always rewarding to work with people like Dave and businesses like Southview Farms that take the initiative to seek out financial analyses for the decision making process."

Russell summarized the relevance for Southview of NMSP's manure rate study. "It gave us the opportunity to acquire sound data on crop performance under the three manure rates we typically use. Documenting the correlation between those rates and soil P and K levels at the end of the growing season was highly useful to our nutrient management program. We will definitely apply the data to deciding on field specific manure rates."

(October 25, 2014)

To learn about the statewide manure management projects, see the NY On-Farm Research Partnership: <http://nmssp.cals.cornell.edu/NYOnFarmResearchPartnership/index.html>. For specifics for the manure project, see: <http://nmssp.cals.cornell.edu/NYOnFarmResearchPartnership/ManureRateMethod.html>.



Cornell University  
Cooperative Extension



The **Nutrient Management Spear Program** (NMSP) is an applied research, teaching and extension program for field crop fertilizer and manure management on dairy and livestock farms. It is a collaboration among faculty, staff and students in the Department of Animal Science, Cornell Cooperative Extension, and PRO-DAIRY. Our vision is to assess current knowledge, identify research and educational needs, facilitate new research, technology and knowledge transfer, and aid in the on-farm implementation of strategies for field crop nutrient management including timely application of organic and inorganic nutrient sources to improve farm profitability while protecting the environment. An integrated network approach is used to address research, extension and teaching priorities in nutrient management in New York State. For more information on NMSP projects and extension/teaching activities, visit the program website (<http://nmssp.cals.cornell.edu>) or contact Quirine Ketterings at [qmk2@cornell.edu](mailto:qmk2@cornell.edu) or (607) 255-3061.