



Grass Injector Provides a Manure Management Option

By Lisa Fields

Scott Potter is involved in manure management almost every day. Potter and his brother Dan own Dairy Support Services Company, Inc. (DSSC) in Truxton, NY, a custom manure application and crop harvest business. They have 11 employees and apply some 60 million gallons of manure to crop fields each year. "Our business is pretty much split 50/50 between manure application and custom crop planting and harvesting. The manure business is equally split between truck mounted and tractor drawn liquid tank spreaders and 2 drag hose systems. Currently our customers request manure spreading on corn, hay and small grain fields," Potter explained.



The team of Dairy Support Services Company, Inc. (DSSC) in Truxton, NY. In front left to right: Scott, Kyle Fink, Molly, Dan Potter, Matt Potter. Back row left to right: Ken McCall, Roger Crow, Tyler Sampson, Al Marshall, Darrel Marshall, Shane Wilson, Kevin Reagan, Doug Potter. Not pictured Glenn Forshee, Bob Balenske.

Potter described how custom manure application has changed along with manure management practices. "We started out with tanker trucks in 1994, and introduced application of manure with a drag hose unit in the late 1990s. That gets the manure spread without the weight of a tanker or truck, which benefits the soil and crops by avoiding compaction that the heavier equipment can cause. As nutrient management practices have gotten more precise, it's often preferred to

incorporate the manure into the soil during application or soon afterwards. That captures the ammonia portion of the nitrogen so it doesn't go into the atmosphere and is available to the crop. Incorporation also reduces odors and run-off potential."

Potter noted another reason to incorporate manure beyond the economic and environmental benefits of retaining nutrients on the field. "When applying manure to growing alfalfa and grass fields it's important to avoid leaving it on the surface as it can have a burning effect on plant tissues."

DSSC can deliver manure to the field either with trucks or the drag hose. Potter described and compared the equipment. "The trucks all have splash plates for surface application so the manure gets broadcast in a swath. Splash plates can be used with the tanker or drag hose unit in addition to four other options for applying manure. On corn or sod ground, DSSC has three Aerway® units for shallow incorporation with minor soil disturbance. On corn ground, the no-till injector using Detrich points gets manure beneath the surface with minimal soil disturbance and the chisel plow gets the manure to an 8-10 inch depth with full tillage incorporation. For hay fields, the Veenhuis (pronounced as "Vain-house") grass injector gets manure beneath the growing plant and a couple inches below the soil surface without tearing up the plants."

Several factors are critical to choosing which piece of equipment to use on particular fields. Potter explained, "The soil type and recent weather, crop nutrient management plans, consistency of the manure and customer preference all determine the choice of incorporation method. Manure application to hay ground can be challenging. The goal is to capture manure nutrients without damaging crop plants, and to also avoid odors that can be objectionable to neighbors during hot summer weather. The Aerway® is the first tool we used to incorporate manure into sod. It moves across the ground with knife-like tines that cut the manure into the top few inches of

the field. The Aerway[®] works great on pastures and it's a good tool for use on wet or steep ground. It also brings up stones which can be a big problem on harvested hay fields."

The Veenhuis grass injector unit, developed and manufactured in the Netherlands by Veenhuis Machines B.V., is a fairly recent addition to DSSC's equipment line-up. In contrast to the aerator's tines, the grass injector is designed for use on sod with smooth cutting disks spaced about 7 inches apart that slice a few inches into the soil. A chopping distributor sends manure to the soil surface through hoses and rubber boots mounted directly behind each disc. And unlike the Aerway's aggressive tines, the cutting discs of the Veenhuis don't appear to damage plant crowns or alfalfa's tap roots.

Potter discussed his experiences with the Veenhuis. "I first learned about it from Quirine and her staff after they took a trip to the Netherlands where it's used quite a lot. Contacts of mine in Ontario have one and were really enthusiastic about it, so I went there to have a look. It seemed very reliable, mechanically. It's designed to incorporate manure applied on sods at lower rates of 2,000 to 6,000 gallons per acre. We generally use it for application rates of 4,000 to 6,000 gallons, but have found it also works quite well at higher rates of 10,000 gallons or more per acre."



The Veenhuis grass injector unit, developed and manufactured in the Netherlands by Veenhuis Machines B.V., is a fairly recent addition to DSSC's equipment line-up. It enables manure injection into hay fields.

Potter noted that his Ontario colleagues felt the use of the Veenhuis improved hay yields. He said, "The Veenhuis gets the manure to the root system with mechanical components that don't seem to hurt the plants. I think the way it functions and places the manure benefits the crop. It also achieves odor control and has the environmental benefit of keeping the manure where you want it to be."

Cornell's Nutrient Management Spear Program, led by Dr. Quirine Ketterings, worked with Potter to conduct initial tests in 2012 to examine the Veenhuis unit's impacts on grass and alfalfa growth and yields. Initial results showed manure application to hay stands increased yields with no yield differences between plots where manure was surface applied and those where injection was done. Ketterings added "These findings would suggest that injection can be done without damaging the hay stand and while reducing odor issues, ammonia emission and risk of phosphorus runoff." With recent funding from a USDA-CIG grant and in collaboration with the National Fish and Wildlife Foundation and Chesapeake Bay Stewardship Fund, the team is currently further evaluating the impact of manure injection with a Veenhuis unit into both grass and alfalfa stands.

One thing is certain; serving farms' manure management needs is a long term business venture. Scott and Dan Potter and the DSSC staff stay busy and plan to keep an open mind towards equipment options as technology and customer needs change. Potter concluded, "Keeping manure nutrients where they help the crop has a great economic benefit, and with public awareness about manure's potential impacts on the environment, it's an important business practice. Our job is to help farmers manage manure effectively and we're happy to be doing that."

(November 6, 2014)



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://nmisp.cals.cornell.edu>) or contact Quirine Ketterings at gmk2@cornell.edu or (607) 255-3061.