



From Cover Crop to Double Crop at the Van Slyke's Dairy Farm in Pike, NY

By Lisa Fields

The Van Slyke's Dairy Farm, LLC has been operating in Pike, NY for seven generations. About 10 years ago, two driving factors inspired them to implement winter cover crops on their farm. There was the need to meet the environmental requirements of their nutrient management plan along with the fact that cover crops meant more manageable crop rotations. The soil protection that cover crops provide meant that certain fields could be kept in corn for another year or two, making a good fit with herd forage needs.



Van Slyke's Dairy Farm in Pike, NY started experimenting with cover crops to meet the environmental requirements of their nutrient management plan but also explored more manageable crop rotations.

Ken Van Slyke commented on the farm's early experiences. "After the first year of cover cropping our corn ground we were convinced there were benefits for the soil that would pay off in the long term. The seed purchase, extra tillage and herbicide in the spring were added operating expenses, so the soil improvement and extended years to grow corn in our rotation were critical factors for us."

Van Slyke fall-planted various cover crops, starting with winter wheat and rye alone and mixed and then shifting to oats on some ground with minor use of tillage radishes. Tillage is done with a chisel plow. Cover crop seedings are applied with an air-flow seeder followed by a roller-packer to enable a mowing rate of 16 mph. Liquid manure is applied at a

rate of 5000 gallons per acre in the fall and a range of 7 to 15 thousand gallons in the spring depending on field-by field NMP guidelines. Fall manure applications on cover crops are followed by a pass with an AerWay for surface incorporation and to break up crusting.

Van Slyke elaborated, "We began to see overall improvement in soil tilth, N retention, and corn yields in the following growing season. The organic matter the cover crops helped to build up made the ground more resilient to droughty conditions. The benefits seemed intangible early on, but soil resource protection is worth the cost inputs when you see the corn crop results under weather stress compared to ground left bare all winter. We have also found that we can start tillage much earlier in the spring on the ground that has a live cover crop, due to the moisture uptake of the crop. Cost control motivated us to plant oats after corn harvest, as they grew enough before frost to protect the soil, then died over winter, so we didn't have the extra tillage or herbicide expenses before planting corn the following spring. That helped the expense side of the ledger, but we questioned if we could go a step further and gain an economic return. We decided to try to achieve that by harvesting an over-wintering cover crop as forage. Tom Kilcer (Advanced Ag Systems) had data from triticale forage that convinced us to give it a try in 2010. It looked like a good fit, as we've been growing shorter season corn, up to 90 day maturity on most of our acres, to fit with our growing degree days and timely harvest of high quality silage for the cows. We explored the use of BMR corn for its nutritional benefits, but became convinced that it has too great of a yield drag in our particular microclimate to fit with our forage goals."

Van Slyke planted 200 acres of triticale in 2010 and 2011 and found that fall planting and spring harvest timing coordinated well enough with the timing of corn silage planting and harvest. He noted "In the spring, as soon as the triticale starts to "green-up" (break

dormancy) we apply urea at a rate of 100 pounds of actual N per acre. There's always a learning curve when you try something new. In 2012 we applied the springtime liquid N with a stream bar which worked quite well to provide a uniform application of fertilizer to the crop. We've adjusted our seeding rate from 100 to 120 pounds per acre, and increased the acreage to 420 this year."

In 2013, Van Slyke plans to participate in a statewide on-farm trial to evaluate the need for N fertilizer at green-up. This project is led by the Cornell Nutrient Management Spear Program (NMSP). Quirine Ketterings, Associate Professor and NMSP leader added: "The work that we did with triticale at the Van Slyke farm and measurements at other farms these past two years showed that triticale managed as a double crop can add 20-30% to the per acre annual field yield. It will also remove substantial amounts of N with harvest. The benefits of the extra forage yield while keeping ground covered are obvious but questions remain related to the N management of the new rotation. In 2013 we hope to establish 15-20 on-farm trials to determine appropriate N rates at green-up across a diversity of soil types, field histories, and weather."

Triticale for forage has been a success story at the Van Slyke's. Yields have ranged from 3.5 to 5.5 tons per acre (expressed as corn silage equivalents so on a 35% dry matter basis) and forage quality has been high. Van Slyke added, "It's here to stay. It's fed as 50% of the haylage dry matter of the ration from the end of May until the inventory runs out. The cows perform well on it and the herd managers are happy with incorporating it into the feeding program."

Van Slyke commented on their next innovation, a new crop venture started in 2012. "Although workable, with the unstable weather we have, timing spring triticale harvest to match the corn planting window can be a challenge. To address this, in 2012 we followed some of the triticale with a variety of Brown Midrib Forage Sorghum that has a

brachytic dwarf gene." Research in Pennsylvania and Virginia has shown the BMR 6 brachytic dwarf variety to be leafier and less likely to lodge while performing as well in feeding trials. Van Slyke added, "Our motivation is to diversify away from just corn silage as energy feed. The BMR sorghum is far more flexible as to planting date because it grows so quickly once the soil is warm. BMR sorghum and sorghum-sudangrass have a mixed track record in NY because they're problematic to harvest in wet weather. Forage harvest has to be done at the right moisture within the day it's mowed to retain the sugars in the crop. We feel we can accomplish that critical dry-down through wide-swathing. Planting it after spring triticale harvest gives us a wider time window than if we planted corn. We'll see how it performs as a feed this winter. If it works out well we can shift some of the triticale-corn acres into the triticale-BMR sorghum double-crop, freeing acres for production of longer season corn varieties."

Van Slyke stressed the importance of having a responsive Extension field research program. "Over the last several years the NMSP has been a key partner in our experimental cropping initiatives. We work together with Quirine and Karl to decide what we want to learn from the projects for our farm and what they need for the research work. Their suggestions and feedback have been a tremendous help to us. We feel they have done a lot for the NYS dairy industry and they deserve our support in return."

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To learn about the statewide cover crop and/or double crop projects, see the NY On-Farm Research Partnership: <http://nmssp.cals.cornell.edu/NYOnFarmResearchPartnership/index.html>. Specifics for the double crop nitrogen rate studies planned for 2013 can be found at: <http://nmssp.cals.cornell.edu/NYOnFarmResearchPartnership/DoubleCrops.html>.



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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 or (607) 255-3061.