

THE MANAGER

FORAGE MANAGEMENT

By Lisa Fields

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

Double-crop triticale a hit at Van Slyke's Dairy

The Van Slyke's Dairy Farm, LLC has operated in Pike, NY for seven generations. About 10 years ago, two driving factors inspired them to implement winter cover crops on their farm. The farm owners needed to meet environmental requirements of their nutrient management plan, and cover crops made crop rotations more manageable. 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's forage needs.

"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," said Ken Van Slyke about on the farm family's early experiences. "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.

"We began to see overall improvement in soil tilth, N retention, and corn yields in the following growing season," Van Slyke said. "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.

"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," Van Slyke said. "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



FYI

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

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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).

"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 to 30% to the per acre annual field yield. It will also remove substantial amounts of N with harvest," said Quirine Ketterings, Associate Professor and NMSP leader. "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 to 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 is high.

"It's here to stay," Van Slyke said. "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 is leafier and less likely to lodge while performing as well in feeding trials.

"Our motivation is to diversify away from just corn silage as energy feed," Van Slyke said. "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," he said. "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." □

Forage analysis
on triticale at
Van Slyke's Dairy

Triticale increases forage per acre at Van Slyke farm

By Lisa Fields

Winter cereal double crops such as triticale are an efficient way to increase forage per acre dry matter production while retaining the benefits of having a living crop and ground coverage year-round. At the Van Slyke farm in western NY, yields of 1.5 to 2 tons of DM/acre were obtained in the past two years. The data from 2011 showed that by flag leaf stage, reached in the 3rd week of May in 2011, the crop accumulated 2.3 tons of dry matter per acre, increasing the total per acre forage yield of the field by 27% that year (adding yields of the 2011 corn silage plus triticale silage together). The data illustrate a 0.6 ton DM/acre increase per week for 3 to 4 weeks once the soils started to warm up. In 2012, the crop was harvested in early May, reducing overall yield but making an even higher quality forage (Table 2).

"It's here to stay. At Van Slyke's Dairy, the triticale forage was fed as 50% of the haylage dry matter of the ration from the end of May through

the end of August this past year. The cows performed well on it and the herd managers were happy with incorporating it into the feeding program."

Table 1: Forage analyses for triticale harvested at flag leaf stage at the Van Slyke's Farm in 2011 and 2012.

Variable	Harvested	
	2011	2012
Yield (100% DM)	2.3	1.6
Crude Protein (% of DM)	13.2	17.2
Acid Detergent Fiber (% of DM)	34.6	22.5
Neutral Detergent Fiber (% of DM)	57.7	41.8
NDF 30 Hr. Digestibility (% of NDF)	64.6	80.4
Crude Fat (% of DM)	2.8	3.6
Ash (% of DM)	8.8	8.3

FYI

■ Lisa Fields is a retired crop educator with Cornell Cooperative Extension.