

## The Proof is in the Soil

*Fox Demo Farm Thrives Through  
Use of Cover Crops and No-Till*

*Above: (L to R) Barry Bubolz, NRCS District Conservationist and GLRI Coordinator, with Derek Van De Hey, New Horizon's Dairy, viewing giant cover crop radishes in a mixed cover crop field with sunflowers, peas, tillage radishes, clovers and turnips.*

In Wisconsin's Great Lakes Region, Dave and his three sons, Matthew, Ross and Derek, manage New Horizons Dairy. The farm has been in the Van De Hey family since 1899 and they strive to continue the farm legacy Dave's great-grandfather first built. Matthew and Ross work closely with the cattle and Derek works closely with his father to explore cropping opportunities on over 2,500 acres. Over the years, the farm has grown in acreage and cattle, from 40 to 750 animals. In 1996, a milking parlor was added. Derek also manages dry cows and heifers on-site. The three brothers work together to ensure their farm continues to thrive, focusing on conservation that is environmentally sound and profitable.

The Van De Heys grow alfalfa, winter wheat, soybeans and corn, diversifying their crop rotations yearly. Dave and Derek also practice no-till and plant cover crops on many of the farm's acres. "We started using cover crops in 2007 for extra heifer feed; that evolved into using cover crops for effective cover and soil health once we realized the multiple benefits," said Derek. In 2007, the Van De Heys also started no-tilling many of their acres to build an effective soil health system, improving their soil's quality and infiltration. "We started by no-tilling around 5–10% of our acres a year; every year, we increase the percentage as we learn what works and adjust our seeding rates and mixes accordingly," added Derek. In 2017, the Van De Heys planted all 1,760 acres in cover crops and plan to no-till all those acres in 2018.

Through USDA Natural Resources Conservation Service (NRCS), Great Lakes Restoration Initiative assistance, the Van De Heys are able to try different multi-species cover crop seed mixes to maximize their soil health benefits. Initially, they grew covers to use as feed for their heifers and reached their goal of maximizing yields on one field. Double cropping opened the door to a host of other benefits. After a few years of cover crops, they noticed improvement in soil structure and infiltration. "The cover crops fields are significantly more stable than the conventional fields," said Derek. In 2017, for example, a large field was planted with a multi-species cover crop mix containing sunflowers, tillage radish, red crimson clover, berseem clover, winter peas and

turnips. The cover crops established well, water infiltrates and soil is held in place over winter. As an added bonus, the covers attract honey bees, monarchs and other beneficial insects. "If we can keep farming and also help the wildlife on top of that, it's a bonus; instead of having bare fields, doing cover crops and having flowering tillage radish and sunflowers really attract bees, butterflies and other pollinators. We see many more wildlife and beneficial insects around," said Derek.

"One of the biggest changes we've seen since implementing cover crops is that the process is easier and quicker, with the same or better results on the fields for yields. We don't have to work the fields near as much, so it's cheaper too; the fields are also firmer and more stable after rains," said Derek. "Cover crops give you that live root advantage, increase water holding capacity and nutrient uptake" added Barry Bubolz, NRCS-GLRI Coordinator. NRCS also works with the Van De Heys to provide technical expertise and assistance in experimenting with different cover crops mixes and seeding rates for individual fields. "We're getting the right planting rates down now. Every year, I used to fix ditches in fields because spots didn't drain; with cover crops in those areas, ditches no longer form and water is infiltrating instead," said Derek. Cover crops are a time saver, a money saver and a soil saver. "Derek has really been proactive in getting cover crops established just as soon as the silage or winter wheat gets taken off; giving those plants as much time to grow, so we get the most benefit of that cover crop," added Bubolz.

Conventional farming in the Midwest provides a very short window of opportunity to work the land and plant. Applying spring manure is rarely an option. However, applying manure in the spring provides a higher likelihood for nutrient uptake and restores the risk of nutrient loss due to surface water runoff. Derek plants winter wheat in August and chops corn in September. He also surface applies manure onto covers in the fall and after the corn is planted. Due to increased soil health, Derek distributes manure in the spring, alleviating pressure on fall applications and allowing more time to plant covers after harvest. Improved soil health and better infiltration rates due to cover crops and





Left: (L to R) Derek and Barry inspecting cover crop root growth.



Right: A turnip cover crop on a multi-species cover crop plot.

no-till also help reduce stress related to unpredictable weather patterns.

Cover crops also help the Van De Heys improve nutrient uptake and drastically reduce their need for the use of commercial fertilizer and weed control; a huge cost savings. "One thing we like about doing cover crops and no-till are less weeds. Once you get all the cover crop going in the fall, no weeds can compete with it in the spring. You know what you are doing with it in the spring because you planted it there," added Derek. "We found if we do no-till in the fall, the fields are much firmer in the spring. With a live cover crop, I can no-till and surface apply manure and the sediment doesn't leave the field; the nutrient is taken up immediately by the live roots," explains Derek.

In 2014, the Van De Heys were introduced to a partnership network called the Lower Fox Demonstration Farms Network (Fox Demo Farms). Fox Demo Farms is a Great Lakes Restoration Initiative (GLRI) project designed to showcase and demonstrate leading edge conservation practices that improve Great Lakes water quality by reducing phosphorus from entering Green Bay and Lake Michigan. The partnership is the first of its kind in the Great Lakes region and it consists of six producers within the Fox River Basin, their crop consultants, Brown and Outagamie County Land and Water Departments, University of Wisconsin-Extension and NRCS.

"We were introduced to the Fox Demo Farms when the partnering organizations were looking for good locations to install U.S. Geological Survey edge-of-field monitoring stations," said Derek. Edge-of-field monitoring is an effort to help farmers improve and verify the effectiveness of agricultural conservation practices and systems installed on their farm. Monitoring equipment is installed at the edge of a farm field to evaluate the quality of water draining from the field. Collaboration with producers in edge-of-field monitoring demonstrates the effectiveness of system-wide conservation approaches and their effect on overall water quality.

The Van De Heys have two edge-of-field monitoring stations located on two 4-acre fields, side by side. The Van De Heys farmed both 4-acre fields the same, conventionally, for the past three years. The monitoring

stations quantify the amount of sediment that leaves their land. For Dave and Derek, the results have been eye-opening. Preliminary data shows high losses of sediment in surface runoff, averaging approximately 4,000 pounds per acre annually on edge-of-field monitoring Fox Demo Farm sites, including the Van De Hey's sites.

As responsible farmers, the Van De Heys recognize the importance of addressing erosion and reducing their impact on our local waterways. Now that baseline data is established, Derek is starting to farm one of the 4-acre fields with no-till and cover crops and the other will stay farmed conventionally. This will help show the real difference soil health practices make on the ground. "In 2018 and 2019, we plan to plant corn on both fields using the different methods; we're excited to see the results," explained Derek.

Being an active participant in the Fox Demo Farms has given the Van De Heys a network of resources to figure out what works in the Great Lakes area. "I am very happy to be able to collaborate with NRCS and other farmers who are interested in soil health and other conservation practices, sharing information and resources to make conservation work and to see direct impacts on Great Lakes water quality," said Derek. As part of the network, the Van De Heys host and participate in field days for information sharing. They enjoy learning locally, applying new techniques and building and adapting them to meet their individual farm's goals.

The Van De Heys love farming; Derek grew up on the farm and has never thought about doing anything else. They started their conservation work on a small scale and have worked their way up to where they are today. Derek plans to stay at the current acre and cattle size and his goal is to get every field planted in cover crops and continue to decrease their tilled acres. "The Van De Heys, through the Fox Demo Farms collaboration, continue to work on more surface applied manure onto growing crops and covers," said Bubolz. He explains, "The farm sits on the banks of Apple Creek, which flows into the Fox River; by embracing these conservation practices on their farm, they are taking big steps to protect and improve water quality."



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