McMahon Family's Clear Vision Brings E-Z Acres Farm to Economic and Environmental Sustainability

By Lisa Fields

E-Z Acres Farm LLC, senior partners Mike and Pete McMahon are living proof that developing a clear vision leads to sustainable success. Mike and his wife Edie explained the farm's transformation. "We were in a tough situation in 1997 that only seemed to be getting worse. There were cow health problems and declining milk production along with high feed costs. Tom Tylutki [then Cornell Cooperative Extension Area Dairy Specialist] asked us to be a case farm for Cornell's Agriculture and the Environment class, at that time taught by Professor Danny Fox and Stuart Klausner," Edie said. "It was a leap of faith for us, but we agreed, thinking there was nothing to lose."

The students gathered soil, crop and herd data to develop a nutrient management plan (NMP) for the farm. That in-depth look at the farm's data brought Tylutki's diagnosis of the root cause of the herd health issues. "We just weren't getting enough forage into the cows," Mike noted.

"We set a goal to increase the cows' forage intake from 42 to over 50%, working with the Cornell staff and students to figure out workable changes to crops and feeding to reach that goal. That year we converted 70 acres of heavier, upland soils from rotated corn and alfalfa to Reed's canarygrass, adding a lot of tonnage. We learned that we could make a whole lot more forage than we thought and by the next year we reached our goal with the cows' diets. Purchased feed costs dropped and milk production rose, so our financial picture began to brighten," Mike explained.

Intensively managed grass forage fit well into the NMP, providing a new option for manure applications. "We began to tailor manure and fertilizer inputs based on soil tests and best timing for crop intake and to avoid run-off. We also fit the crops to the soils where they could grow best," Mike said. "Our cropland sits over the shallow, sole-source aquifer for 23,000 people in Homer and part of Cortland. The Factory Brook trout stream runs through much of our well-drained valley land where we grow corn and alfalfa, so the NMP is a critical management tool for us."

E-Z Acres conducted its first Whole Farm Nutrient Mass Balance (NMB) in 2003. In this annual assessment exports of N, P, and K are subtracted from imports, and the balance is expressed as nutrients per tillable acre (recycling opportunities) and per hundred-weight of milk (production efficiency). When both indicators are in the "feasible" range, the farm is in the optimum operational zone, commonly referred to as the 'green box'.

"The NMB is the only whole farm assessment tool we have that's easily done at the farm level. Farmers can see if they operate in the 'green box' and compare with peers," explained Professor Quirine Ketterings who leads the Cornell Nutrient Management Spear Program (NMSP) and its NMB program.

From left to right: Edie, son Neil, Pete, Ethan Supa, and Mike McMahon of E-Z Acres Farm LLC. Photo taken by Tom Tylutki.

Ketterings added, "Shortly after I started working at Cornell in 2001, Danny got me involved in his class and I met the McMahons. We used Stuart Klausner's early version of the NMB for E-Z Acres. Over time, we expanded the approach and developed a stand-alone software program that's free for anyone to use. The 'green box' was established with the

help of over 100 New York dairy farms and many farm advisors. Participating farms who submit their input sheets to us get a report that shows their farm balances in the context of the 'green box' and compared to peers (anonymously). Annual participants can also see their graphed trends over time."

E-Z Acres was among the first farms in the assessment program. In the first 4-5 years, NMBs for N, P, and K were above the 'green box' but the farm's P and K balance has been in the 'green box' ever since, and the N balance too, for all but a few years.

"It took a few years to see trends in the NMB numbers," Edie commented. "Then we began to delve into what's behind them. They reflect our progress with the goals we set for feed and crop management. The NMB is part of our annual planning, and we look forward to seeing how our NMB trends reflect the efficiency we aim to achieve. The nutrient cycle of our farm fits the concept of the slogan, "Reduce, Recycle, Re-use." She added, "The compromised herd became truly healthy and replacement numbers grew a few years after our major changes. With progress we gained some confidence, and could consider changes from a place of stability, including adding two junior partners to the business."

Mike said, "As our internal replacement numbers grew, our herd size went up to 800 cows currently, our land base expanded to 2300 acres, and we began incorporating manure to be as nutrient efficient as possible and protect water resources. In 2017 we added a satellite manure storage on the hill ground to make spreading on the grass acres more efficient. We've reduced tillage and we added cover crops to rotated ground. The improvements in soil health have led to better crop tolerance to weather extremes, and the yield increases have created available acres to grow our own grain corn."

E-Z Acres currently feeds a 67% forage diet to the milking herd, and uses multiple bunks to segregate forage by type and analysis. The rolling herd average is 29,600 pounds of milk per cow. Edie noted, "Our practices all integrate as Precision Feed Management, with high quality, high forage diets for our cows as the guiding principle. Thanks to Tom, now our nutritionist, our feeding is so precise, we can adjust for the market. That flexibility has a big impact on our financial picture."

Their dedication to water quality protection led the McMahons to monitor five wells in the watersheds of E-Z Acres' cropland for the past 21 years. Nitrate levels in those wells are all below concern, and four of the wells have showed marked improvement over time. They received the Outstanding Dairy Farm Sustainability award from the Innovation Center for US Dairy in 2018, and were featured speakers at SUNY Cobleskill's 2018 "Seventh Generation" annual meeting. The ethic of providing an environment where future generations can thrive is reflected in their 20 years as an environmental case study farm for Cornell students. The farm offers a wealth of history, with results of their changes clearly quantified, and the students offer a fresh outlook from an outside perspective.

The McMahons spoke of the pivotal role Cornell has played in their farm business. "Working with Cornell really pointed us in the right direction," Edie stated. "Since that time, forward progress has been steady. When we hit a bump in the road we have the tools to find a solution." Mike added "In any system, whether a suburb or a factory complex, taking a hard look at the nutrient cycle could bring cleaner, healthier water and soil for all of us. The biggest hurdle to overcome is people's fear of change."

For E-Z Acres Farm, that willingness brought them an economically and environmentally sustainable livelihood with a bright future.

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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://nmsp.cals.cornell.edu) or contact Quirine Ketterings at qmk2@cornell.edu or (607) 255-3061.