

Whole Farm Organism



by ABIGAIL PORTER

The Hack family emigrated from Germany to Canada in 1982, and their farm became Demeter certified in 1986. The “farm organism” or whole farm, closed-loop system provides all the fertility and nutritional needs for the farm. Multiple income streams, including value-added products, have comfortably supported the members of the Hack families. Most of the family’s food needs are supplied by their gardens, orchards, cattle herd and grain farm. Their collaborative two-family farm serves as a model of the resilience, success and profitability of biodynamics.

Ulrich (Uli) Hack and his brother Martin, who now run the farm, moved with their parents and four

sisters to the 532-acre conventional corn farm in Kincardine, Ontario, more than 30 years ago. They immediately began converting it to biodynamics through the use of biodynamic (BD) preparations, obtaining cattle for soil fertility and planting legumes for green manure and cover crops. The family planted more than 20,000 trees to create hedgerows to mitigate wind erosion, provide a buffer around their farm and provide habitat and biodiversity. They use all of the biodynamic preparations including barrel compost (BC), the compost preparations (BD #502-#507), horn manure (BD #500), horn silica (BD #501) and plant silica, *Equisetum arvense* (BD #508).

The family is active in the community and with the Society for Biodynamic Farming and Gardening in Ontario, which sponsored the 2011 Fellowship of Preparation Makers Conference, hosted on the Hack Farm. In addition to making preparations, keeping to a spray schedule and running the farm, Uli is also the administrator for Demeter in Ontario, requiring a well-organized schedule that is adaptable to ever-changing weather and market conditions.

Immigrating to Canada was a big change. Why did your family decide to move to Canada?

I say fate. It was an extremely quick decision. We had never talked of going to Canada before and then one morning at the breakfast table, my father [Bernhardt] posed the question, “Should we go to Canada?” and we all said yes. He knew a farmer, Wilhelm Pfenning, who was in the process of going, and we visited him the same day. The next morning, we booked a flight and six weeks later we made the offer to purchase the farm. It went extremely fast. My sister was away when the decision was made and when she came home and was told that we were moving to Canada, she said, “Yes I know, I dreamt of it.” Later, when she came to Canada, she said that it was the same kitchen and the same garden that she had dreamt of. So, that is why I say it was fate.

What was the farm like in Germany, where you grew up?



From left, Uli and Martha Hack and their three children. At right, Marten and Elke and their five children.

We had a conventional 50-acre mixed farm with cattle, grains, orchards and a vineyard. When my dad went to his first field day on a biodynamic farm in 1967, he knew that this was what he wanted to do. From then on, he never touched any chemicals or fertilizer again. He converted to biodynamics, started to make his own preparations and became Demeter certified so he could sell into the Demeter market.

What was it about the biodynamic farm that convinced your father? There must have been something that really impressed him.

As a young farmer after World War II, my father had embraced chemicals as the new, more efficient way of doing things. He was the first one in the village with a sprayer and he did a lot of DDT spraying in the forests to kill the June bugs. They said, "DDT is harmless, you can even eat it." By the time he was 30 years old, he had heart-rhythm problems, angina and many other ailments. He realized that the chemicals had a bad downside, but he did not think that you could reasonably farm without them. His local miller, who had a biodynamic garden, always encouraged him to become biodynamic. My dad figured that for a garden it was OK – you might be able to manage the weeds, but not on a farm. So after a few years of pestering, when the miller told him of a field day on a biodynamic farm, my dad reluctantly decided to go so that he would have arguments for the future as to why it would not work on a farm-scale. While on the farm tour, he saw that the weeds were under very good control and the crops were healthy with no weed and no pest problems. He was so impressed that he figured if they could do it, then he could do it. Now, he had to convince my mother, who was also afraid of all the extra work. So he found another farm tour and took my mom along. With five small kids in tow, and not being too eager for such a big conversion, they arrived at the tail end of the tour. But what they saw was enough, and my mother also gave it the go-ahead. They have never touched any chemicals or fertilizer since. He be-

came close friends with his mentor farmer and became active in the German Biodynamic Society.

Tell us a little about your farm in Ontario, then and now, and your path to Demeter certification.

The farm was originally 532 acres and had been farmed continuously in corn. We are 5 miles east of Lake Huron so there is a strong lake effect in the local area. We have a long and very wet winter, so we can't get into the fields until May. The lake effect also keeps away the rain in summer. Fifty percent of the farm has drought-prone sandy soils and rocky soils, subject to wind erosion and fertility challenges. In the first year, we planted 8,000 trees to create hedgerows as windbreaks and a buffer around the farm. The next year, we planted another 5,000 and for several years after, we planted 1,000-3,000 trees a year. My dad brought a large amount of preparations along from Germany so we started converting the farm to biodynamics right away, and he started the process of making preparations immediately. Everyone helped out on the farm to varying degrees when they were not in school and before they got outside jobs. My dad had bees but since he is gone, we passed the bees onto a local beekeeper, who keeps about 40 to 50 hives on our land in two locations.

What did you start growing on the farm?

I apprenticed on a neighboring organic farm in 1981 and seeded winter grain in the fall before the rest of the family arrived the following April. We planted our first crops in the spring of 1982. We had a beef and cow-calf herd of 40 and were growing grains with some vegetables on the side, and we started bread baking. The first couple years were conversion years, so grains and animals were sold into the conventional wholesale market except for the bread, which was sold locally. Demeter certification was not yet available in this country, but in 1984, after the conversion was complete, we were allowed to sell oats into the Demeter market because they knew my dad's farm in Germany and trusted him. We became Demeter cer-

tified as soon as certification became available in 1986. I think it was also the first year that organic certification was available in Canada. We have to be organic certified for export and are certified by Ecocert.

What year did you and your brother take over operation of the farm?

This was very gradual and not formalized. After my mother died in 1984, my brother Martin did the books, dealings with insurance and purchases. After the Iron Curtain fell, my dad began going to Russia in 1992 as a biodynamic advisor. We asked him if he would sign over the property to us, so the farm would be more secure in case anything happened. He signed it over to us for \$1. He trusted that we would look after his needs.

Do you and your brother each focus or specialize on different tasks?

We do not divide up our work, but it happens naturally. I do preparations, Demeter certification, crop planning, managing the beef herd and a lot of tractor work. He does the books, purchases, repairs and maintenance, the combining, most of the seeding and the dairy nurse cows. We all help each other out wherever needed. Martin's wife, Elke, is the bread-maker with one of us assisting her. Mainly, the wives take care of the orchards, berries and gardens. Everyone takes part when we are picking stones from the fields. With all of the fruit trees, we give away a lot. We also make cider that gets distributed in the neighborhood.

Your family is doing a lot of different things. Do you have any employees?

We have no employees. We have one neighbor who loves to help us. He often helps with the tractor work. And in the summer, we have one or two apprentices.

Over the years, the farm has grown to over 1,000 acres. What does it look like now?

In 2000, we started renting some extra land and in 2004, we bought 370 acres with 250 tillable acres. We have since rented a few more pieces of land too. The farm used to have 410 acres

of tillable land and now our farm has over 800 acres under cultivation, including the pastured lands that are part of the rotation. We have 100 acres of permanent pasture and substantial amount of woodland. In addition to all the hedgerows that we planted, there are 165 acres in woodland and a river. We have a beef herd of 70 now and with the dairy and young stock there are 160 head in the barn this winter. With the beef herd, we leave the calves on the cows for 9 months. The dairy-type cows get nurse calves. We hand-milk a little milk away from the calves whenever we need it for the family.

That's really convenient! You don't have the time and expense of milking twice a day. What crops are you growing on the farm now?

Our farm specializes in grains with over 600 acres in production with a variety of grains. Our main crops are spelt, millet, soybeans, hay and pasture. Minor crops are oats, barley, flax, peas and clover for seed. Depending on the weather, we export about 500 tons of Demeter certified spelt, rye, soybeans, millet and flax annually. We have 150 or more acres in hay rotation, and if we have enough rain and get two cuttings, we have surplus. Sometimes we sell it to our organic neighbor and we get some manure in exchange and sometimes we sell it into the export market. Straw is usually sold only in a manure exchange. Some straw we chop with the combine and leave in the field. We try to save all of our seed except in the hayfields, where we use 10 different varieties. We buy seed when we switch varieties, or start a new crop. A few years ago, our flax seed was tested as having 0.01 percent of GMO Flax (Triffid) contamination, so we had to change the seed, and we are moving away from alfalfa, partly because of the GMO concern. We will replace it with red and sweet clover, which we can grow ourselves for seed. The price of seed is usually 50 to 100 percent more per pound than seed crop we can sell. So, it is attractive from the financial point of view to save the seed instead of purchasing it, and it is better adapted to our specific area. All of our seeds for certified export crops

have to be tested for GMO contamination.

What kind of premium above conventional crop prices do you estimate you are getting by selling your grains into the Demeter market? And do you get a premium above organic prices?

That can vary a lot, and some of our crops like spelt are non-existent in the conventional market – maybe 50 percent more on average, ranging from 30 to 100 percent. With the organic market, there are fluctuations too as we sell into the wholesale market. The price is usually between 0 and 20 percent above organic. In the last few years, the Demeter market was good to us.

Do you sell the beef into the biodynamic market as well?

We sell a little beef privately. Mostly, we sell yearlings to other organic farmers who finish them to sell into the organic market. Others are sold into the conventional market when they are over a year old.

Most of what you produce you sell wholesale. Do you sell the bread or any grain retail?

We bake 100 to 200 loaves of bread every two weeks that we sell locally to individual customers with a little going into a store. We sell a little flour and grain locally.

With the help of the sun, earth, air and cosmos, your farm is a wonderful example of a closed-loop system supplying all the fertility and nutritional needs for the farm. How do you do that?

It is through crop rotation, green manure and cover crops, compost and biodynamic preparations. We make about 1,000 tons of compost annually, which can cover about 150 to 200 acres (three or four 50-acre fields) at a rate of 5 to 7 tons per acre. So, in the crop rotation of about 800 acres, compost is applied on average every four to five years. We use green manure and cover crops to restore fertility. For green manure, we use rye, oats, peas, tillage radish, buckwheat and a couple types of clover. We under seed all of our grains with legumes for green manure, pasture or hay for the following year. Lately, we have not

received much summer rain, so the clovers did not do well. We worked up and planted some of the land to peas as a green manure; they can still grow with the fall moisture and less summer heat. The cows supply some fertility while they are grazing. With crop rotation, weeds and insect damage are not a problem.

How do you supply the nutritional needs for your herd?

In the winter, the herd gets six to eight round 4 x 4 feet bales of mixed grasses and clover hay daily. The hay is a mix of about five grasses and five legumes. In summer, they are either on permanent pasture or one of the pastures that are in rotation. We also turn the herd out into fields after grain has been harvested so they can graze on the legumes and grasses that have been under seeded. The cattle are rotated through the fields using a moveable electric fence. We don't feed extra grain to our cattle but the young stock do get the screenings from cleaning the grain. The dairy cows and piglets get a little too.

You are saving a substantial amount by not buying any outside inputs for feed, fertility and pest control. What do you estimate conventional farms in Ontario are paying for these inputs?

This is hard to quantify, but I think many conventional neighbors might use fertilizer and sprays in the range of \$50 to \$200 per acre. With feed for our cattle, the savings may not be much because the hay could be sold as a cash crop, but we save the transportation costs and we keep the fertility on the farm. Part of our success is thanks to the tough early years, with interest at 24 percent and not much income. We learned to turn around every dollar twice before spending it. We have to be careful in our area. With the lack of summer rains, yields are reduced. We do not invest much in new equipment, but are well-supplied with well-working older equipment. The average age of our tractors is about 30 years. This works well with using our own seed, as this way the annual investment is not so great, making us more resilient in difficult years.

Since you have converted several parcels over time, what are the steps you have taken and what changes did you notice after applying biodynamics?

I think the choice of crops and the biodynamic preparations work together. Usually, the full benefit of reduced weeds and improved soil structure comes after the field has gone through hay. We have found a method of conversion that works well for us and is fast, so that in the third year we get a great Demeter grain crop. We start with oats under seeded to red clover, as it does okay in a fresh conversion anyway. The oats are harvested for seed, and in the next year we harvest the clover for seed. After the clover, the soil structure is really beautiful, so much so that you can feel the difference with your first step on it compared to a conventional field. We accompanied this conversion with composted manure, Barrel Compost (BC), BD #500, BD #501 and BD #508. After that, we got some really good Demeter crops from these fields, depending a bit on the summer rains.

In the beginning of the conversions, did you apply any outside inputs on any of the parcels that you converted to BD?

The only outside inputs we used were when we converted the 250 acres that had not seen any animal manure or green manure for the last 20 years. We felt we needed to import some extra cattle manure from a neighboring organic farm in order to treat all the fields at least once in the three-year conversion. All of our manure was composted with the use of the preparations.

For someone interested in converting to biodynamics, what steps would you recommend?

I suggest that they start with the preparations right away. I would tell them to get the barrel compost on all of their land first. And then get the BD #500 and BD #501 applied early in the growing season. Start making biodynamic compost and plant green manure and cover crops in rotation.

Do you apply the biodynamic preparation sprays to the whole farm? How often?

We apply barrel compost at least once a year and the horn manure (BD #500) twice a year on most of the farm. The winter grains always get two applications of horn manure. When the grain is under seeded with clover, the grain gets the silica spray and then the clover will get another silica spray after the grain is harvested. I also use the fermented version of the plant silica (BD #508) and usually apply it with the horn silica (BD #501). I really like the fermented version because I can prepare it ahead of time before the busy time starts and just add it to the stirring machine when I am stirring the horn silica. My feeling is that it doesn't hurt the #508 to be stirred a full hour. By the time I have sprayed the entire farm once, I have done 20 sprays of horn manure and 20 sprays of horn silica. I have to manage my time but most of the fields get two applications of each in a year.

That's a lot of spraying. How large is your stirring machine? Did you build it?

We have a 100-gallon stirring machine that my wife's cousin built for us. While I am spraying, another batch is being stirred. Usually, if I have a good evening, I can do three batches and spray 150 acres with the barrel compost or horn manure. Most of the fields are about 50 acres.

How do you make your compost?

In winter, we clean out the barn once a week with the front-end loader and pile the manure and bedding in rows in the barnyard and apply compost preparations to the pile. Four to five round bales of straw are rolled out in the barn for bedding daily. Approximately every four weeks, weather permitting, we move the pile from the barnyard to windrows at the edge of a field and apply the preparations again. Since our area gets a lot of drifting snow, there are only a limited number of places that are reasonably accessible in winter, despite having a snow blower. Usually the ground is not frozen underneath the snow when we remove it to make the windrows. Every couple years, we build the compost windrows in a different field so the ground underneath doesn't become too saturated. In the beginning

of June, we turn the rows with the compost turner and apply the preparations for the third time. This time, we also spray the valerian over the windrows. With the freezing weather, it is too difficult to apply the valerian earlier with the other compost preparations. We cover the rows with a thick layer of straw so they are shaded and stay moist in our dry summers. This is mainly the way we do it in the winter. In the summer, some of the cows are on permanent pasture away from the barn and some of the cows are on pasture close to barn and have access to the barn, so the barn only needs to be cleaned out occasionally.

Do you make all of the preparations for the farm?

Yes, we have been making all of the preparations since the beginning. I took over making them when my father started to go to Russia. I knew if I didn't do it, it wouldn't get done, so I just got into it.

Are you able to grow enough of all the plants needed for the preparations?

We had to introduce stinging nettle and valerian and now there is a sufficient amount growing wild on the farm. Yarrow, I have to transplant in the garden every three to four years, otherwise it starts yielding less. I transplant chamomile every year from new seedlings growing in last year's patch. There is an abundance of dandelion. We do not have any mature oaks nearby, so either I collect while on holiday, or ask a friend to collect some for me. For grinding, I use an old hammer mill dedicated to oak bark.

What is your current role in Demeter?

I am the administrator for Ontario and run everything under Demeter Canada. They receive the fees and pay for the inspectors. I send inspectors to the farms and they provide a report that I review with a few other experienced Demeter farmers and together we make our decision for certification based on the report. There are three provinces that are active with Demeter certification: Quebec, British Columbia and Ontario. Each one has its own administrator and

Demeter Canada provides common standards for the trademark and certification. For the Demeter certification, you need to be fully organic certifiable with three years since the use of any conventional fertilizer or sprays. And, there needs to be at least two years of preparation use that includes two years of biodynamic compost and/or barrel compost, horn manure and horn silica on all the land.

How many biodynamic farms are in Ontario now?

There are 15 Demeter certified farms in Ontario, and there are a few outside Ontario that I certify. I go wherever I am needed so I review two farms in Nova Scotia and one farm in Alberta right now and work with farmers in other provinces as needed. Three of the farms export through Demeter and the rest sell in Canada and locally. There is a large dairy farm, some grain farms. Most are smaller farms specializing in vegetables. There are several more farms working with biodynamics that are not certified and there are many organic farms in our area as well.

Abigail Porter grew up on a biodynamic dairy cow and goat farm in northeastern Pennsylvania. After a career in the arts, she returned to her roots to garden biodynamically. Abigail is co-editor of *Applied Biodynamics* and serves on the board of the Josephine Porter Institute for Applied Biodynamics (JPI) in Floyd, Virginia. She gives workshops in collaboration with the Chesapeake Biodynamic Network in College Park, Maryland.

RESOURCES

Demeter is the oldest worldwide certifying organization for sustainable agricultural practices. Since 1928, it has set the standard for biodynamic certification. For more information in the United States contact: *demeterusa.org*; Canada: *demetercanada.ca* or for international *demeter.net*.

Ulrich Hack may be contacted through Society for Bio-Dynamic Farming & Gardening in Ontario: *biodynamics.on.ca* or *uhackbd@bmts.com*.

Founded in 1985, **Josephine Porter Institute for Applied Biodynamics (JPI)** is a national producer and distributor of biodynamic preparations and Pfeiffer products developed by bio-chemist E.E. Pfeiffer. As a nonprofit, JPI supports the regenerative agricultural community of North America by providing education, research and outreach activities on the use and making of biodynamic preparations; *jpibiodynamics.org*.

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