NURTURING DEEP ROOTS IN SUSTAINABILITY

By Anne-Marie Hardie on March 5, 2018

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Sunrise Potato Storage Ltd. focuses on soil health and the impact on agriculture.

The VanderZaag family has been growing potatoes for generations, initially in the Netherlands, and then immigrating to Alliston, Ont. For founder of Sunrise Potato Storage Ltd., Peter VanderZaag, it is not just about producing a marketable crop but returning life to the depleted soils around the world.

Today, the family farm consists of over 1,000 acres of potatoes, and a state-of-the-art storage facility that can hold 400,000 cwt (18,000 tonnes) of potatoes.

The story of Sunrise Potato begins not with the farm itself, but through VanderZaag’s research on how to return health back to the soil. With a Bachelors Degree from Cornell in Vegetable Crops and Economics, and a PhD in Tropical Agronomy and Soil Science from the University of Hawaii, VanderZaag had developed a detailed understanding about soil health and the impact on agriculture. His education led him abroad, working with Bangladeshi farmers to improve their potato production.

“I worked with potatoes all over the world,” said VanderZaag. “I went over as a scientist, researching soil health, but I always wanted to be a farmer, it’s in my DNA.” Committed to improving both soil health and farmers livelihoods, VanderZaag and his wife Carla worked with potato farmers across the globe, including in Rwanda, Uganda, China and Vietnam.

And so, in 1990, the couple returned to Alliston with the intent of starting their own potato farm where they would raise their children and create a sustainable livelihood. Through VanderZaag’s travels, he discovered how badly degraded and mismanaged farms were in many parts of the world, including back home in Canada. As the new kid on the block, VanderZaag embraced the challenge of reinfusing life back into the heavily depleted soil in the region. This vision was embodied in the name of his company,

Sunrise (sustainability research involving systems), a company that's focused on producing viable potatoes while adopting sustainable methods and technology.

Over the years, this family has invested in research, innovation and technology, paving the way to a sustainable future. This includes 250 kW feed in tariff (FIT) solar panels, provided by solar company EthoEnergy from Barrie, Ont., that has the capability of generating over 342,000 kWh's of solar energy annually. The energy is then sold to the province of Ontario providing an additional source of revenue for Sunrise Potato. Harvesting this renewable energy source is just one way that Sunrise Potato cultivates a sustainable future, both for their farm and for their local community. Back on the ground, Sunrise Potato is focused on integrating methods that will bring life back to the land.

Returning Life to Soil

In practical terms, one tablespoon of topsoil should contain seven billion microorganisms. "Most soils today don't have this," said VanderZaag. "This could be due to a variety of factors including heavy use of fertilizers, mismanagement of soils, not applying organic matter and lack of crop rotation."

Any kind of inorganic fertilizers, in large amounts, will eventually have a negative impact on the microbial levels in the soil; this is particularly true in the case of potassium chloride, which is a salt. Conversely, if you use organic matter, including manure, there is no negative effect on the living organisms within the soil.

For Sunrise Potato, the initial step when acquiring a piece of land is evaluating the soil. "We had one farm that wouldn't even grow barley, which is one of the least needy crops that you can plant," said VanderZaag. "There was a huge variability in both the potassium and pH levels; our first job was to get the levels right."

Cattle manure and carbon-based plant life, whether it's corn stalk, wheat straw or millet, is then added to the soil to bring back the microbial life. The process can take years, stated VanderZaag, but it is the key to developing a thriving farm. "Eventually you will begin to see earthworms in the field, the seagulls will return, and the soil will be nice and soft in your hands," said VanderZaag. "The soil is alive again."

Once the soil is in good health, crops are planted in a two- to three-year rotation, alternating between cereal and potato crops. The stover from the cereal is often left to continue to grow the organic matter of the soil. Soil health needs to be a long-term commitment; this includes evaluating both the leaf and tissue of the plants during the season to gauge their nutrient level.

One of the interesting findings that VanderZaag has been confronted with in recent years is the lack of sulphur in the

soil. “Our clean air agenda has dramatically reduced the amount of acid rain,” said VanderZaag. “However, this has resulted in sulphur no longer being deposited in the soil, and since it is missing in the soil, it is also not found in the plants.” Sulphur is an essential nutrient, and so in the areas that are sulphur deprived, Sunrise Potato adds gypsum to return the missing sulphur to the soil.

The farm strives to grow crops as close to nature’s way as possible. This means minimal use of chemicals, supplementing with organic matter and simply returning to a more natural way of farming. The results of these methods have long-lasting benefits including an increase in the overall crop yields.

“Last year I was asked to speak at a congress in China; during the lecture I shared the results of organic matter from one of our good farms,” said VanderZaag. “Initially there was barely 15 centimetres of organic matter; however, it now measures at 30 centimetres, nearly double what it was 30 years ago.”

This is a testament of the impact of the family’s conscientious farming practices, focused on continually improving the soil and crop management. Proper soil management has increased the overall soil fertility, resulting in both healthier plants and higher yields.

VanderZaag stresses Sunrise Potato is focused on ensuring the methods used always keeps sustainability top of mind. And so the farm’s goal is not to obtain the maximum yield from its potatoes, but instead the optimal yield where the return does not diminish the health of the land and the plant. “We are supposed to be stewards of the land,” said VanderZaag. “And now, that it is being restored, our goal is to ensure the farming methods that we use remain sustainable.”

Increased Demand for Sustainable Practices

Today, businesses at all levels are striving to integrate processes that consider economical, environmental and social impacts. This has resulted in large buyers creating partnerships with producers and processors that have integrated sustainable processes within their facilities.

The integration of solar panels, supplied by EthoEnergy, not only reduces Sunrise Potato’s carbon footprint, it provides economical sustainability to the farm. The system currently generates over 300 kilowatts of solar energy a year, which is sold back to the province of Ontario. Harvesting solar energy is the perfect complement crop to potatoes. In fact, during drought years where potato production may be lower, the production from the solar panels is higher; conversely, a low solar year typically coincides with a better potato year.

As part of Ontario’s FIT program, Sunrise Potato has committed to a contract where the energy is sold to the province for profit. Upon contract expiration, the solar energy will be used directly on their farm, net metering, to reduce their energy bill. “Right now, we are selling the power. When the FIT program ends,

we will do net metering," said VanderZaag. "We are very fortunate to have had this program in Ontario."

Harvesting solar energy into their facility is just one way Sunrise Potato strives towards developing a sustainable company. VanderZaag is continually involved with developing new technologies, techniques and even strains of potatoes that will alleviate the challenges of today. A hobby potato breeder, VanderZaag has been in collaboration with scientists at Cornell University to develop several new strains of potatoes that will reduce the amount of chemical intervention required. One such research project includes selecting and, in turn, breeding parental lines with scab resistance.

Scab infestation is devastating for potato producers, essentially making their produce unmarketable. The current method to address this concern is fumigating the soil in the fall. This method kills all the microbial life in the soil, both good and bad, where the potato will grow. "It is not the best long-term solution to create a sustainable system, but until a scab resistant potato is developed, fumigation is a necessity," said VanderZaag. The hope is that research will lead to developing strains of potatoes that are naturally resistant, eliminating the need for chemical intervention.

However, a conversation about sustainability wouldn't be complete without discussing employees and the viability of the farm to sustain the next generation. Although Sunrise Potato has been fortunate with a loyal team of employees, finding labour has become increasingly more challenging in the farming industry. Automation and the adoption of new technology not only reduces the amount of labour required but also makes farming more appealing for the younger generation to enter the field. Sunrise Potato embraces technology and automation, integrating several labour-saving devices into their facility including GPS tracking, a wash water management system and the recent installation of the automatic grading system, TOMRA autosort, which sorts the potato according to the specification the processor requires. "It reads better than the naked eye while also saving both time and labour," said VanderZaag.

VanderZaag stresses that no matter which tools and techniques the farmer integrates into his facility, if the farmer fails to release control, the children will leave, and the farm will inevitably die. The most critical factor of sustainability needs to be good succession planning. VanderZaag's daughter Ruth and son-in-law Nick are very keen on being involved in the next generation of farming.

"New technology and innovation makes farming very attractive for the young person," said VanderZaag. "It is very important that the older generation let go, and let the younger generation do things differently. My wife and I have always been very pro technology and pro succession planning. This opens the door for the next generation to become involved in the operation."