



Heartland Farms Embraces Technology & Sustainability

Taking it a step further, the venerable Wisconsin potato operation shares ideas and info

By Joe Kertzman, managing editor, *Badger Common'Tater*

Currently farming approximately 27,000 irrigated acres, Heartland Farms, Inc., of Hancock, Wisconsin, has long been dedicated to sustainability and best management practices in its day-to-day operations and for the long term.

With roots going back to 1873, when the Pavelski family emigrated from Poland and settled in Amherst Junction, the original 80-acre homestead is still farmed by the family.

Heartland Farms produces many varieties of chipping and fresh

potatoes, shipping them from August through June of the following year.

Heartland has storage capacity for over 5,500,000 cwt. (hundredweight) and can ship up to 120 truckloads per day!

In addition to potatoes, the farm grows sweet corn, canning peas, green beans and soybeans that are sold to Wisconsin food processors.

With such a sizeable operation, it pays to be technologically advanced and sustainable.

The *Badger Common'Tater* editor sat

down with Heartland Farms President Jeremie Pavelski to get his input on sustainability and technological advances in farming.

Heartland Farms stresses technology and sustainability on its website and messaging. As president of the company, why is this important in your perspective? Technology and sustainability go hand in hand in my opinion. Technology allows us to remotely monitor conditions of fields, equipment, weather, and a whole lot more.

Above: Jeremie Pavelski (left in first image), president of Heartland Farms, Inc., poses with his wife, Alicia, in front of a sign for the Farm Operations, Technology and Training Center (FOTTC). A photo taken at dusk shows the beauty of the state-of-the-art facility, which includes a training room, shown on page 17. Jeremie says, with all the technology in the building, the biggest asset is having a great facility to foster collaboration among his team members. *Images courtesy of Phil Weston*



Modern technology allows us to respond to events faster than we could have before. A simple thing such as an automated rain gauge provides invaluable insights in real time. We do not have to go to each field and check the rain gauge anymore; that information is at our fingertips wherever we are.

This means our team members can spend more time in the planning and management of the crop to ensure we are not wasting inputs, over- or under-watering crops, etc.

Monitoring equipment remotely also helps us be proactive to ensure it is running as smoothly as possible and avoid costly breakdowns during critical times.

Technology can also help us monitor storage and shipping operations, which allows us to tweak our processes to be as efficient and effective as possible. Every piece of technology is about providing and analyzing information to make actionable decisions.

Whether the information is provided in a report someone looks at or in the form of an alert that action should be taken, it helps keep a pulse on what's going on.

ON SUSTAINABILITY

Sustainability is not only about the environment, although that is a huge portion of it. Sustainability is also trying to provide as much time as feasible to our teams, who pour their

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hearts and souls into the crop, to have a more regular balance of work versus home time.

If we can utilize technology so the team doesn't have to leave their home to deal with an issue in the middle of the night, start a pivot or fertigation tank, or change settings at a storage building, the team members will enjoy working in agriculture even more.

No matter what, there are long, hard hours worked in agriculture, and if we do not adopt technology and

methods to try and strike a balance, it will be hard to get team members from the next generation.

With the talented and dedicated team that we have, we need to ensure technology is working as hard and as smart as they are. The two go hand in hand.

We can also utilize technology to help provide the best quality possible given the variable of Mother Nature. If we can respond quicker with better information, we can produce a better crop.

We are always looking at ways to increase quality and yields, reduce shrink, and do it in a sustainable way.

Does sustainability have to do with public perception? Business efficiency? Both? For me and our organization, it is about passion and the drive for efficiency. Anything we can do to become better than we were the day before is a good thing.

Having a mindset of continuous improvement is a must and incorporating new technologies and methods fit into that mindset.

While public perception is a piece of the puzzle, I believe good public perceptions come from doing things right and having the continuous improvement mindset.

Five years ago, Heartland Farms broke ground on a Farm Operations, Technology and Training Center (FOTTC), and four years ago was an open house. The facility holds offices and employee training and conference rooms, but also technology. What are the biggest

Above: Potato harvest is in full swing at Heartland Farms in Hancock, Wisconsin. Reasoning that there are long, hard hours worked in agriculture, Heartland Farms President Jeremie Pavelski says, "If we do not adopt technology and methods to try and strike a balance, it will be hard to get team members from the next generation."

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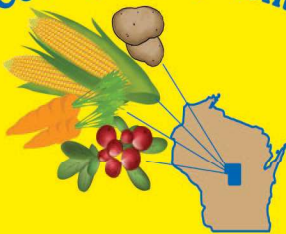
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technological aspects? With all the technology in the building, the biggest asset is having a great facility to foster collaboration. You can have all the technology in the world, but if the whole team is not on board with utilizing it and understanding how it can help, there is no point in implementing it.

Our IT team spends a lot of their time working directly with the operations teams who ultimately utilize the technology.

Whether it is an app we designed for work orders, IoT devices that allow us to control things remotely, or

countless other things, our IT team is getting down and dirty with the rest of the crew to understand how to better serve them.

I know there are 95kW of photovoltaic solar power panels on the roof—I assume this saves the company money and helps protect the environment at the same time?

Solar is a fairly good addition. It provides roughly a third to half of the power utilized at the FOTTC. I am supportive of alternative energy and the ways it can reduce the carbon footprint.

The payback on it is quite slow,

though. Without credits to offset the cost, it would probably not make economic sense in Wisconsin.

That said, new solar technologies are coming out every day that are more efficient and there will be a time when it would pay to install solar even without credits.

What I have heard referred to as the “War Room,” or what resembles one, with computer screens and television monitors on every wall in one room of the FOTTC building—I know you can monitor your tractors from that room, but what are its main purposes? The main purpose is to provide operational visibility. As teams get larger and more diverse, it is important to have information presented to collaborate on and foster critical thinking.

Above: Jeremie Pavelski says the main purpose of the technology room (or “war room” as it has affectionately been called) is to provide operational visibility. Here school-age children are given a tour and being exposed to technology used in farming more efficiently and sustainably.

Above: Heartland Farms, Inc. Vice President of Operations T.J. Kennedy checks the potato crop. Jeremie Pavelski says sustainability is not only about the environment, but also trying to provide as much time as feasible to his team members who pour their hearts and souls into the crop, to have a more regular balance of work versus home time.



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"With the talented and dedicated team that we have, we need to ensure technology is working as hard and as smart as they are. The two go hand in hand."

— Jeremie Pavelski

Any information presented in the "War Room" is also available on our team members' iPads because, well, we are still farmers and being in the fields, storages, or shipping the crop out are what make the company.

Although we showcase the "War Room" a lot, each department has information presented in locations across the whole farm, whether it be screens with crew schedules, shipping schedules, efficiency metrics, weather information, you name it.

Why is it important to keep track

of how fast the tractors are going, where they are, how many hours they have been in the field, and of breakdowns? That information is important so you can create benchmarks and goals. No two people operate a piece of equipment the same, and if one person is operating more efficiently than the other, the whole team can learn from that.

Understanding cost of production is also important. That is where the hours on tractors come in.

If we have a rocky field and it is

Above: Technology can help in monitoring storage and shipping operations, which allows operations like Heartland Farms, Inc. to tweak their processes and be as efficient and effective as possible.

always wet, it will take us more time to accomplish what needs to get done. It may not make sense to farm that field in the future.

Knowing which equipment has broken down, what the cause was and how long it was broke down is important so we can get to the root

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cause of any issues and try to prevent them from happening again.

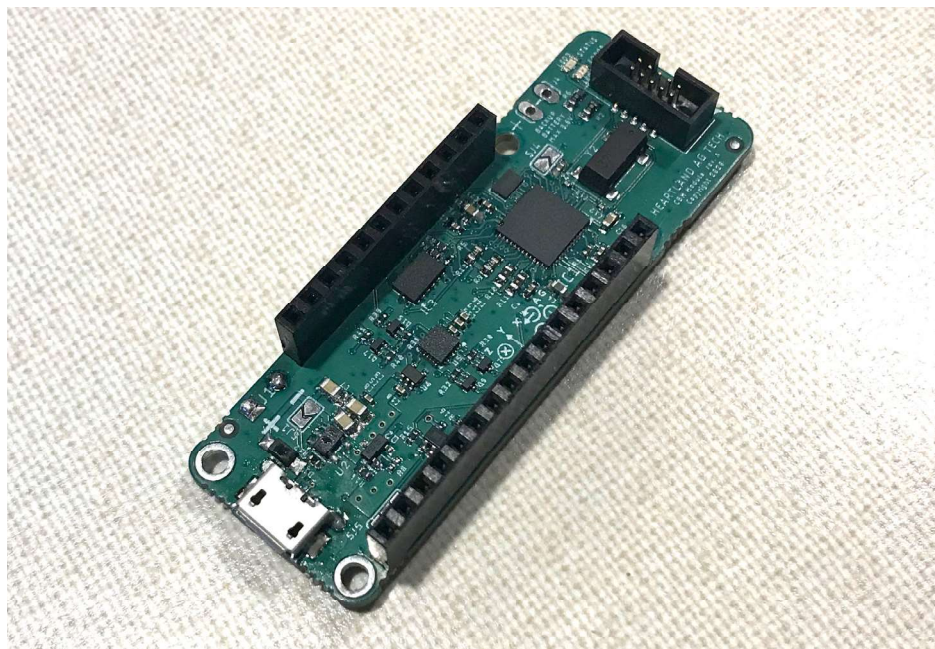
Downtime is expensive. Over the next year, we are implementing new systems to help track that better.

Can you also detect hot, dry or saturated areas of fields from that room, and thus, disease or insect infestations? This is not going to be a very straightforward answer. Yes, we can to some extent, but not on a large scale. We do have soil moisture probes in some fields. They work OK, but there is a lot to be desired with them.

In the future, we have some ideas on how to get even more granular, but that will take time and new technology will need to be developed.

We do know the temperature, rainfall, amount of irrigation applied and soil types for each field, so a lot of that can be interpolated to understand moisture in certain areas.

Like many Wisconsin potato and vegetable growers, Heartland Farms uses high-speed irrigation systems with drop nozzles, variable rate



irrigation, GPS, high-tech machinery, remote control capabilities for irrigation, data management, efficient storage and even cover crops. This all equates to efficiency, but are these technologies helping you become more of a sustainable operation? Yes, I believe this is making us more sustainable on multiple fronts:

Above: Heartland Ag Tech (HAT for short) is a new spinoff for technology development in the agriculture space. The purpose is simple, to look at the areas Heartland Farms can gain efficiencies and then either find or create technology to solve problems. Shown is an electronic module the farming operation designed.

- From an environmental sustainability viewpoint, we can turn pivots off quicker when we have received enough rainfall. With variable rate fertilizer applications, we ensure we are getting the proper nutrients to the crop without overdoing it. We have saved quite a bit of fuel over the last five years by benchmarking, adopting new practices and by reducing miles traveled.
- Variable frequency drives can also help by reducing power consumption and allow us to micro-manage irrigation, air flows in storages and much more.
- GPS has helped with quality and allowed us to utilize less inputs by applying nutrients and crop protectants only where needed. The list could go on and on.

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and if so, how? Cover crops are part of good agriculture practices. They can help ensure soil doesn't erode and can also help ensure nutrients don't move in the soil. There are other benefits but those two are the main ones.

Approximately what percent of your acreage is planted with cover crops each year? As long as weather allows it, 100 percent of the fields will have a cover crop planted after harvest.

Data management seems to be a difficult thing for growers to accomplish—the data is there, but how do they manage it? Does Heartland Farms have a secret?

I have to laugh at this question a little bit because it is so true.

As far as a secret, it really started many years ago with Dick (Pavelski) and Dave (Knights) having the mindset and determination to grow

the best crops and develop systems to accomplish that.

Dating back to the 1980's, my father (Dick) was addicted to spreadsheets and utilizing accurate data to make decisions. Take that into the '90s, and Dave had a passion and need to develop systems that would allow him to scale the organization and ensure he had a pulse on everything that went on.

Databases were the key to doing that.

Since the early days, we have developed many systems and have integrated them to provide the information the team needs and do it on a timely basis.

We have our in-house IT team that develops desktop and mobile applications, and most importantly, works with the whole organization to ensure we are getting accurate,

actionable information out of our systems.

So, the secret is having a vision, knowing what you need and having a team that can execute to those needs.

This is a story in and of itself, but Heartland Farms unveiled plans earlier this year for the "Farming for the Future Foundation." The Badger Common'Tater did a story on its launch. Is this a continuation of your dedication to sustainability and technology, or is it more about education, or both? And what do you most hope to accomplish with the Farming for the Future Foundation? Great questions. The Farming for the Future Foundation (FFTF) was formed with two main goals: being able to showcase modern agriculture and help the

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public understand what really goes on.

There is a lot of misinformation out there and we want to be the trusted source for accurate information.

We have a two-headed approach to accomplishing this. First, we want to assist in building an agriculture curriculum in the school system to help students, parents and teachers understand farming. Next, we will be building a discovery center where people can get hands-on experiences in agriculture.

All of that will showcase history, modern technology and sustainability, and get people excited about agriculture.

A side goal is getting more people interested in agriculture. Once people know what goes on and see how neat things are, they will be more inclined to join the field.

Getting out good information can

also strike up critical conversations when people have questions or ideas. It can be an amazing opportunity for farmers and the public to learn. It is a two-way street.

Jeremie, have sustainability and technology helped Heartland Farms be a better potato and vegetable grower? I believe so. By utilizing technology and information, and having amazing teams, we have had the ability to grow and continue to help support our team members and communities.

Is there anything I've missed that you'd like to add? Another neat thing that has happened over the last couple years is the advent of Heartland Ag Tech (HAT for short).

This is a new spinoff for technology development in the agriculture space. The purpose is simple, to look at the areas we can gain efficiencies and then either find or create technology to solve problems.

It is taking things to the next level. If there is something that is a hinderance or something that causes downtime, we evaluate that and see if there is something that can simplify and reduce or eliminate the problem.

The company really came about when my wife, Alicia, and I were talking with my cousin, Russ, who at the time was an engineer for Ingersoll Rand and previously helped develop sensors for the Mars Rover and some of the first iPhones.

We decided to partner up and started creating technology from the circuit board level on up.

So far, we have a couple products we are utilizing at Heartland Farms and will expand that over the next couple years. We are in the process of patenting a few new technologies as well.

It is neat building this from the ground up. **BC'T**

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