GS1 US

The Global Language of Business

Case Study

Union Farms

How a Leading Pork Producer Achieves Carbon Neutrality in the Name of Sustainability

Challenge

When one considers collecting data to measure environmental impact, it is rare to find the data-capturing mechanisms in an agricultural setting. Although farming is as close to the earth as one can get, sustainability does not always enter the equation because of the challenge of capturing, measuring, analyzing, and aggregating data into an accurate picture within an ever-changing landscape. Farms that raise animals for food have added matters to consider – food safety, public health, potential recalls, increasing consumer interest in food sources – that add to the complexity of capturing evidentiary data on "live" subjects.

Solution

Unions Farms in Nebraska has embraced the challenge by putting GS1 Standards at the center of its operations to measure every product and process that occurs in its grain and pork operations. To produce its grain products, the farm delves deeply into carbon sequestration practices and maintains careful stewardship of water, energy, and fertilizer usage. GS1 Standards aid in capturing, aggregating, analyzing, and evaluating the data the farm collects. As a result of its efforts, the medium-sized family farming operation is setting an example for the 66,000 pork producers in the U.S.

Benefits

- **Carbon Neutrality.** Union Farms can boast carbon neutrality for certain years due to the science of environmentally responsible practices it has put into place.
- **Increased profit and productivity.** Through carbon credits, Union Farms has seen on average an additional profit of $10-$15 ton of carbon per acre from different farming practices.
- **Future-proofing.** By instituting forward-thinking practices and improving output, Unions Farms expects to sustain and improve its family farm for future generations.

A Union of Ideals

The Fricke brothers may not fit the stereotypical profile of environmental activists, but they clearly can claim the mantle as a result of the work they're doing on their family farm – Union Farms – in Ulysses, Nebraska.

"People outside the farmgate are curious and ask questions about how their food purchases make a difference in the world," says Lukas Fricke, a graduate of the University of Nebraska with agribusiness and animal science degrees. "Carbon neutrality is one of the many things that our farm is focusing on to make a positive verified impact on the environment. The biggest bottleneck to sharing verified information is the supply chain language itself: information sharing can come at a much quicker pace when GS1 Standards are in place."

Two different but symbiotic agricultural operations at Union Farms – growing crops and raising pigs – are equally facilitated by the use of GS1 Standards. Each group of animals is identified by a Global Trade Item Number® (GTIN®) and their locations are identified with GS1 Global Location Numbers (GLNs). These data points provide the foundation for end-to-end tracking from farm to table.

Pork producers with sustainability initiatives like Union Farms have the unwavering support of the National Pork Board (NPB), the association of the 66,000 pork producers in the U.S. The NPB has implemented a campaign called PorkCares to report progress on the environmental footprint of the industry with data. (PorkCares.org)

"PorkCares offers the means for producers to share information that we can aggregate and report on an industry level. Metrics are collected on water, energy, air and land – it covers the gamut of environmental sustainability," says Jamie Burr, chief sustainability officer for the NPB. This allows NPB to share the pork industry's story with data.

"GS1 Standards have been the underlying factor allowing us to create a trusted pipeline of information that flows from the farm to the consumer."

Lukas Fricke
Owner, Union Farms

Closer to Home

Fricke points to several drivers in Union Farms' push toward greater carbon neutrality, including tradition: "Our family has been lucky to grow and raise food in Nebraska for nearly six generations; environmental responsibility is core to continuing our way of life for future generations."

But it's not "all in the family" when it comes to sustainability. Like many foodservice operators today, the consumer connection is being made more and more often, even with smaller producers like Union Farms. Union Farms reports seeing a wide range of sustainability demands that require a conscious effort by retailers and end-users to work with suppliers to outline the data that's important to them.

Connectivity on the Farm

Sensors monitor both crop and protein production at Union Farms. In grain production, for example, sensors measure water usage for irrigation, soil moisture content for efficient watering, as well as inputs such as fertilizers, while in animal husbandry they measure water usage, temperature, humidity, feed and input levels, as well as human interaction. Connectivity provided by standards intertwines both crop and protein production.

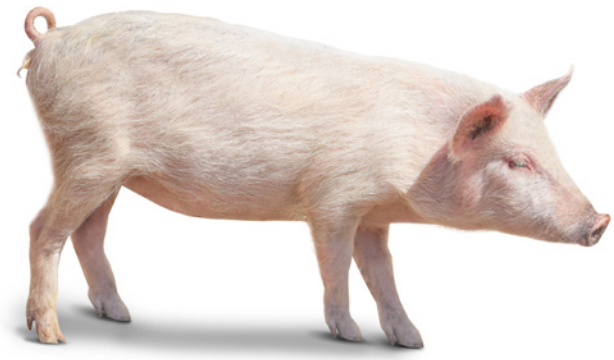
Diary of a Pig

Fricke collects and stores data matched to the appropriate GS1 identifiers on a group basis, such as:

- How many times did a person check on the animals?
- What training did the farm worker receive?
- How many and what pharmaceuticals were administered?
- What quantity of water was used for feeding and cleaning?
- What amount of feed was consumed? What amount of power was used?
- What number of fuels (propane or other fuels) were used?
- What were the temperatures and humidity readings?

Once these attributes are properly calculated, an accurate account emerges on the animals' impact on the environment as they move into the supply chain. The animals are eating corn and soybeans – carbon negative grains – that offset carbon positive outputs like the use of fuel and electricity.

As an animal goes through its life cycle, data is collected and stored that, once aggregated and calculated, provides an accurate representation of its environmental impact as it moves into the supply chain. *[See box.]*



"Consumers are increasingly asking questions about the origins and the climate impact of their food. The biggest bottleneck to sharing verified information is the supply chain language itself: information sharing can come at a much quicker pace when GS1 Standards are in place."

Lukas Fricke
Owner, Union Farms

Standards Support Granularity

Without GS1 Standards, the level of detail Union Farms seeks to capture would be impossible. Union Farms is capturing every equipment pass, product and process used in its grain and pork operations. To produce its grain products, the farm delves deeply into carbon sequestration practices: strip tilling, crop cover, manure usage and more, while minimizing potential erosion, maximizing fertilizer efficiencies and maintaining careful stewardship of water and energy usage. Likewise, within its pork production business, Union Farms tracks energy and water usage as well as feed consumption. Because pork production involves living creatures, additional procedures are followed for the humane handling of animals, judicious use of pharmaceuticals for animal health, and the impact the animals make outside the barn door.

"GS1 Standards have been the underlying factor allowing us to create a trusted pipeline of information that flows from the farm to the consumer," Fricke says. "Working with technology partners and trading partners – using standards as our common language – helps us realize the benefits of our sustainability efforts up and down the supply chain. By allowing sustainability information to flow with the supply chain, downstream producers can help show what they are doing on the farm to make a better environment and world."

Carbon by the Pound

GS1 Standards can help the Frickes accurately and effectively keep track of animals and their transformation as they go from piglets in the barnyard to pork products in the grocery case. They will be using Electronic Product Code Information Services 2.0 (EPCIS 2.0), the global GS1 Standard for creating and sharing visibility event data, both within and across their enterprise.

"Using EPCIS 2.0 means we can quantify the carbon impact per pound of pork!" Fricke says. "By measuring key data elements (KDEs) at every stage of our crop and pork raising processes, we capture data needed to meet our carbon neutrality goals."

The NPB supports such interoperability: "It's important in most industries for systems to talk and to ensure antitrust rules are followed. The ability for standards, platforms, and systems to share information gives the producer a competitive advantage," Burr says. "At the same time, it gives the industry the ability to aggregate data at a higher level."

Putting Money Where the Metric Is

Historically, the share of the product on which farmers are paid shrinks year after year. According to industry advocates, farmers are getting cut out of the profitability of the industry and don't have the necessary funds to invest in sustainable infrastructure and technology.

"We small and medium farmers might be forced to consolidate or sell out to larger operations. By adding value-added data to the supply chain, farmers can help diversify their bottom line," Fricke says.

In addition to enhanced soil structure, more productive crops, and an enhanced protein product – Union Farms has gained a deeper understanding and appreciation for everyone involved in turning its pork into a meal. Through carbon credits, Union Farms has seen on average an additional profit of $10-$15 ton of carbon per acre.

"We focus on how we can incorporate even better practices and more data collection activities in our operation. We use past data to better understand the return-on-investment (ROI) and the impact that products and practices have already delivered," Fricke says.

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Owner, Union Farms

Data Saves the Family Farm

Union Farms is working to increase its microbiome and carbon-sequestered soil structure and adopt even more cost-effective sustainability technologies. It aims to increase the productivity of its soil by adopting new tillage practices, synthetic fertilizer alternatives, and microbiome-promoting additives.

"When it comes to technology, our approach is focused on real-time data collection using GS1 Standards on which to base our farm decisions for profitability and sustainability," Fricke says. "We also use technologies to create, collect, and validate the metrics to convey our story to others in the supply chain."

"What Union Farms is doing — employing technology and pulling comprehensive data together — is leading edge," Burr says. "Pork producers are doing it; we're just not always capturing it or quantifying it."

"When it comes to technology, our approach is focused on real-time data collection using GS1 Standards on which to base our farm decisions for economics and efficiency, two important measures of sustainability. We also use technologies to create, collect, and validate the metrics of all six WeCare ethical principles to convey our story to others in the supply chain."

Lukas Fricke
Owner, Union Farms

Communications is often the critical piece that is missing. Many pork producers have used the research and recommendations supplied by the NPB but do not report their improvements to the organization, because they see it as normal business. And without a common language by which to communicate, such as global standards established by GS1 that help producers measure and verify their progress, the true level of success cannot be known – or improved further ... yet.

Pork producers that share data, using the same language as that supplied by GS1 Standards, have a greater likelihood of preserving their way of life – and livelihood – in the years ahead.

About the Organizations

UNION FARMS

About Union Farms

Union Farms is a six-generation family pork and crop producing operation run today by brothers and mother Brenden, Lukas and Lori, along with long time employee Mike Batenhorst, in Ulysses, Nebraska. The Frickes are experienced in areas of raising pigs in comfortable and safe housing, and conventional row crop production as well as functions associated with any small business. In addition, they have introduced sustainability and the drive for carbon neutrality in their pork production that is the model for the industry.

About the National Pork Board

The National Pork Board was established legislatively by the Pork Act and Order and is funded by America's pork producers through a mandatory commodity checkoff program that requires hog producers to pay a small percentage-based fee each time an animal is sold. NPB's purpose is to execute programs and projects that provide consumer information, perform industry-related research and promote pork as a food product. For more information, go to porkcheckoff.org.

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