

# LEARNING FROM ADVERSITY

The Dakota Lakes Research Farm produces information helpful to farmers and ranchers dealing with drought. *Photos by Billy Gibson*

## SDSU agriculture researcher Dwayne Beck looks for better ways to gain higher yields through crop rotations and other techniques

**Billy Gibson**

[billy.gibson@sdrea.coop](mailto:billy.gibson@sdrea.coop)

The drought conditions that gripped the state through the summer months caused difficulty for farmers and ranchers. The drought in 2012 also made it difficult to grow and harvest a productive crop.

But it's the drought that occurred in 1988 that Dwayne Beck remembers most. Beck, 70, is a researcher with SDSU who runs the Dakota Lakes research farm near Canning.

According to the National Integrated Drought Information System, as of June 23 more than 97 percent of South Dakota and all of Minnesota were categorized as "abnormally dry."

As someone who considers himself a seasoned investigator and problem solver, Beck looks at the current drought conditions as an

opportunity to learn.

So, what exactly did the farming and ranching community learn in 1988 when adverse weather conditions caused an estimated \$60 billion in agricultural damage across the U.S.?

"We learned not to do tillage," Beck responds without hesitation. "This drought is about the worse I've seen since 1988, and we learned then that in this part of the country if you till, you're screwed. No-till gives you a chance to have a decent crop and run a viable farming operation."

And the key to succeeding without tilling is proper crop rotation. That's what keeps Beck and other researchers busy.

On a recent afternoon, Melanie Caffe and her assistant Nick Paul were operating a small combine to gather their test crops laid out in strips measuring five feet wide by 20

feet long. Caffe, a native of France, is an ag professor at SDSU, while Paul is a local farmer and research technician.

The two-member team moved from section to section, cleaning out the collection bin as they went to keep the samples from being contaminated and corrupting the research data. The samples were



Dwayne Beck runs the Dakota Farms research facility near Canning.



Melanie Caffé and Nick Paul collect samples from a field at the Dakota Farms Research Station near Canning.

bagged and taken into the lab where Caffé and Paul planned to perform fertility experiments with the goal of developing varieties with higher yield, higher quality and stronger drought resistance.

Much of the research centers around maximizing yields through effective crop rotations. Beck has spent much of his career considering the ways farming was conducted 100 or more years ago and how it can be improved.

"The Natives grew crops before the Spaniards came and brought horses. They were all no-tillers because they didn't have cows and horses to pull the plows. They grew 13 different kinds of corn, beans, squash and sunflowers. They were very successful. The settlers never asked anyone how to grow crops here, they just got out their plow and started turning over the soil."

Beck has seen the wonders of crop rotation in his research. Some of his fields are rotated five ways.

"Good rotations can produce a lack of disturbance in places where you don't have a lot of water. Our research shows 99 percent of resistance issues could be solved with better crop rotations. There are fields where we haven't used insecticides for 18 years."

Beck said his methods aren't always adopted by industry but he continues to gather data and push out the information obtained through research.

"The nice about being a research guy is you always have more things to learn," he said. "The more you research, the more you don't know, but we're always looking for answers."

## HOPS GROWERS NAVIGATING THEIR WAY THROUGH CHANGING INDUSTRY

**Billy Gibson**

billy.gibson@sdrea.coop

In many ways, Ryan Heine is like the average South Dakota farmer. He frets about the weather, plans for the future, worries about finances, watches the markets and is constantly trying to find a buyer for the crop he hopes will make.

But his crop is unlike most of the others that emerge from the South Dakota soil. Heine is owner of 6th Meridian Hop Farm near Yankton. His is one of six such farms left in the state growing hops for brewers to transform into craft beer.

Heine also sees his work as different compared to most farmers – he relies on his nose a lot.

"There's a lot of experimenting with different aromas. There are so many flavor profiles and varieties of hops that are used in creating craft beer," he said. "There's a vast palette of different aromas, and the market will dictate what consumers prefer."

Ryan and his wife Michelle launched their hop operation in 2014, leaving Omaha and returning to the small family farm near Yankton in pursuit of a more grounded lifestyle for their five children.

"We wanted to get out of the city and back to our farming roots," said Ryan, who works remotely as an electrical engineer for a company out of Minneapolis.

Ryan's interest in growing the essential elements of craft beer began when he was a student at Parks College in St. Louis, Mo. He went out with his friends and found most of what was offered at bars, pubs and restaurants was bland and uninspiring. He knew he liked the flavor of beer and he knew he liked the simplicity of the farming lifestyle.

"So I started doing some home brewing and found that it was a fun hobby to pursue. Now we have one of the biggest operations in the state," he said.

Heine's time on the farm is spent fussing over flavor and aroma profiles, acid levels, yeast growth, oil content, insect invasions, disease infections and more. He and Michelle do all the growing, harvesting, processing, drying, pulverizing, preserving, pressing and packaging.

He finds markets by visiting with brewers, forging relationships across the region and even keeping in touch with his college buddies.

"There are some college roommates I've kept in touch with who are brewers and we're always talking about how to improve our products," he said. "Hops growers are down to just a handful in the state, but for those who have survived, I think the outlook is good."

