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FIRST Findings

Independent 2020 soybean/corn trial results are in

By ANDREA JOHNSON
Minnesota Farm Guide

Southern Minnesota was a big winner in the 2020 FIRST (Farmer's Independent Research of Seed Technologies) yield comparison plots. Many tests revealed record breaking yields in individual plots, and the region also produced top yields that were similar to those across the U.S.

New varieties and technologies are tested each year in the FIRST trials, dedicated to providing unbiased comparisons of innovative seed genetics for corn and soybean seed.

In southern and south central Minnesota, FIRST Manager Mark Querna said growers were pleased to learn how well the crops fared after a dry August.

"We benefitted up until now with a tremendously good growing season, and a very good harvest season. It looks like, after a break for some October snow, we'll get one more shot at finishing harvest up with good weather," said Querna on Oct. 26. His goal for himself and his brother, John Querna, was to complete the FIRST corn trials by Nov. 5-6.

Each test site is reported quickly after the harvest is completed, and those results are shared here and more in-depth at firstseedtests.com.

Soybeans

Querna conducted testing in two regions this year – Minnesota South and Minnesota South Central. He tested 48 early and 48 full-season soybean varieties at each location.

Within a region, all locations include the same seed products. Each product is replicated three times per location, with four farmers hosting plots per region, so each seed product is replicated 12 times within a region.

All FIRST test plots are a minimum of 10-feet wide by 40-feet long.

Soybean testing was completed by Oct. 18.

In the Minnesota South Central Region, (third and fourth tier of counties from the Minnesota/Iowa border), 48 early varieties (1.5-1.8 RM) averaged 72.5 bushels per acre. Forty-eight full-season varieties (1.9-2.2 RM) averaged 72.4 bushels per acre.

In the most southerly two tiers of counties, (Minnesota South Region), 48 early varieties (1.6-1.9 RM) averaged 73 bushels per acre. Forty-eight full-season (2.0-2.3) averaged 73.4 bushels per acre.

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Former agronomist adds another tool for farmers to consider before 2021

By JAGER ROBINSON
For Minnesota Farm Guide

No matter what technology is in the field, mountains of data are being collected on every farm. Information as basic as the slope of the field is stored and saved for those looking to inspect their field down to the square foot.

When all of that data is together, and seed companies compile their information for farmers to look through on their new seed varieties, a lot of helpful data can be missed.

Steven Dvorak, a veteran of the agronomic world, started Veritas Seed Data to help farmers sift through the information and find the best varieties for their farm.

While other tools exist to look at a massive amount of variety data at one time, Dvorak said pulling all commercial and university seed trail data is just another tool for farmers as they continue to expand their tool box.

The tools

Using more than 4,500 locations of seed trail data, Veritas compiles and sorts data based on what the user choses to look at for their operation. The website uses three distinct tools to help farmers.

The first tool, a wide-area corn hybrid assessment, allows the user to highlight an area. Then Veritas compiles all of the seed trail data from the area and presents it. As an added measure, Dvorak has created a monetary value per unit of seed to help users identify what the best performing trials were in that area.

Ultimately, the goal of the tool, Dvorak said, was to look at how yield and seed prices compared instead of reporting straight yield levels, as most trials do. Looking at yield and seed pricing can help farmers determine what would make them the most money in a given area.

Steven Dvorak

"This kind of information is just math, but isn't available anywhere," he said. "We're picking hybrids like we're back in the 1930s. We can do better than that."

The second tool, an agronomic trait score, sorts hybrids according to how well they perform in specific agronomic characteristics.

If a farmer needed to see how a specific variety is doing for a specific weed pressure problem, the tool helps sort and identify the best hybrids for the job.

The third tool is dubbed the local-area relative hybrid performance prediction tool. Dvorak created a scale system that will guess how the hybrid will do in a specific area based on the first tool's data, and data imputed by the producer.

"With tool number one, I give you direct access to the data, but with tool number three, I take the whole database and (sift through) it myself to look for patterns for the grower," he said.

The tool calculates hybrid performance based on four main points: planting rate, yield level, location and elevation. The user inputs this information which is then considered by the database to find the best hybrids for the operation. While this is a good start, Dvorak said it should be just that – a start of what farmers consider for their operation.

The fourth tool, which has yet to be added, involves a fairly simple formula that looks at optimum planting rates. While many varieties recommend their own planting rate based on the operation, Dvorak said that almost every rate is two to three thousand more than what it should be.

Switching sides

While Dvorak was an agronomist for several seed companies in his career, in fall 2018 he left it all behind after a stint at Mycogen Seeds.

"It must be insanity," he joked.

He said he has no ill will toward seed companies, and he believes almost all of them offer great rates to their customers. But he found that providing information that can better inform decisions of the producers he was servicing was a better cause.

"My loyalty and devotion is to growers, not the seed companies," he said.

Veritas Seed and Agronomy started as a way to sell seed and provide information all at once. He had agreements eight brands that full, but he soon shifted his focus to data.

The website launched in January and has been growing steadily. Dvorak said he hopes more farmers look at the tools offered before they make seed decisions for 2021. Even for those not willing to switch off a trusted brand, Dvorak said he already has had customers tell him they were able to negotiate better rates based on information provided by Veritas data.

In a challenging economy, Dvorak said he hopes farmers realize the value of picking the right hybrids that make the most economic sense.

"I think growers do a good job of picking hybrids. But I will tell you, there are popular brands that are not worth what they ask growers to pay for," he said.

Dvorak grew up on a small dairy farm by Geddes, S.D. While he wanted to continue to work in agriculture throughout his time at SDSU, he switched focus to agronomy and stayed with his passion ever since.

"I was not going to milk black and white animals the rest of my life," he said.

Dvorak gets that many producers hate math, as he also hated it back in high school and college. But as times have changed and precision ag and data science have become more important, he said relying on math and simple algorithms is as important as ever.

"I wish I knew how powerful math was in high school," he said.

When it comes down to it, Dvorak as the owner and manager of Veritas Seed Data said his algorithms and data sets should belong to everyone and he hopes that more people see the value in the seed data, as opposed to just yield levels.

Visit Veritas at www.veritasseeddata.com. ✻

How an accurate moisture meter can help optimize fall harvest, profitability

By DEL WILLIAMS
For Minnesota Farm Guide

After all the hard work of tilling, planting, and tending throughout the year, farmers need an accurate moisture meter to help them optimize the fall harvest, whether it involves wheat, barley, soybeans or other agricultural products.

For farmers, quickly measuring samples in fields to determine which are ready to harvest reduces uncertainty and saves time. It also reduces the risk of buyer rejection due to improper moisture content, and maximizes the sales price by enabling the optimum amount of moisture to be counted toward product weight or volume. Measuring moisture content is also essential to prepare and store grains to preserve quality and longevity while deterring spoilage.

While monitoring rainfall, irrigation, and temperature is necessary, it is not sufficient to determine the best time to harvest in order to achieve ideal water content. Inevitably, there is always some variation in water content within crops that farmers cannot estimate with any certainty. Not only do rainfall, temperature, and weather vary from year-to-year and season-to-season, but also water content varies within the crop itself. On a large farm, one crop on an adjacent lot can always be ready to harvest before another.

"Without periodic testing within various fields or plots, farmers will miss out on optimizing both quality and yield – which produces the payday that they must survive on, or ideally thrive on, for the rest of the year," says John Bogart, managing director of Kett, a manufacturer of a full range of moisture and organic composition analyzers.

Fortunately, a wide range of accurate, portable, and easy to use yet durable moisture meters are now available to farmers that will enable them to harvest at exactly the right time as well as adjust moisture content as necessary to maximize profit.

Easing moisture measurement

For farmers requiring quick moisture measurement in the field, traditional equipment has been too slow and cumbersome for frequent spot checks. One conventional test, loss on drying, measures the total material weight change after drying. The test involves taking a sample to an air oven for manual testing (weigh, oven dry, weigh), which can take 2-48 hours to complete depending on the standard. Alternately, if an automated moisture balance (an integrated weighing and heating unit) is used, testing can take up to 15 minutes. Either way, such testing can be too slow when more immediate measurements, or a high quantity of measurements are required.

As a result, secondary test methods have typically been used to deliver faster results. This type of test uses an indirect method and a single conversion to achieve accurate results. If there is a disadvantage, it is that the secondary instrument must first be calibrated to ensure accuracy. In some cases, calibration can only be performed by trained staff familiar with the equipment.

In response, many agricultural moisture meters have simplified the process, using capacitance technology. Capacitance is a measure of an electric charge separated from a given electric potential; it exists between two conductors insulated from each other.

The dielectric capacitance technology commonly used in grain moisture meters is based on the relationship between a grain's moisture content and its dielectric constant. As its moisture content increases, its dielectric constant increases. Since the rate at which the dielectric constant increases is different for individual grain types, a unique calibration is necessary for each grain type.

Moisture testing

To get the best price after harvest when growing grains such as barley and wheat, farmers often need to optimize for grain quality and consistency. This entails measuring the moisture of individual grains in different fields until the ideal statistical distribution is reached.

Today, transportable single grain moisture testers can quickly measure the moisture within each grain of barley and wheat, allowing farmers to determine the moisture content of individual seeds within a sample with the results displayed on an LCD screen. This is achieved in minutes without sample preparation.

"The number of kernels tested, the average moisture, and a histogram detailing the distribution of moisture values are displayed," Bo-

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Early snowfall slows harvest season in late October

By KENT THIESSE
Farm Management Analyst
and Senior Vice President, MinnStar Bank

The 2020 fall harvest season had been progressing at a fairly-nice pace across most of the Upper Midwest from late September until mid-October; however, since that point many areas have experienced rain, snow and cold temperatures, which have greatly slowed harvest progress. Fortunately, most of the soybeans and a significant amount of corn had been harvested by mid-October at many locations, which is two weeks or more ahead of normal. Overall, the yields and quality of this year's crop has been favorable for most producers.

Based on the USDA Crop Progress Report on Oct. 19, it was estimated that 75 percent of the soybeans in the U.S. had been harvested, which compared only 40 percent harvested by this date in 2019 and a 5-year average of 58 percent harvested. In the Upper Midwest, Minnesota lead the way with 96 percent of the soybeans harvested by Oct. 19, followed by North Dakota and Nebraska at 92 percent, with Iowa and South Dakota at 90 percent. By comparison, soybean harvest figures by this date in 2019 were Minnesota at 35 percent, Iowa at 39 percent, North Dakota at 19 percent, and South Dakota at 27 percent.

Corn harvest in Minnesota has progressed more rapidly in southwest and west central Minnesota, with many farmers completing harvest for 2020. Corn harvest in the eastern half of Minnesota, especially in southeast Minnesota, has been somewhat slower due to wetter field conditions and having crops that were a bit later maturing. The unexpected early wet snowfall has greatly slowed corn harvest in many areas during the last half of October. Earlier than normal planting dates in 2020, together with above normal growing degree units in the summer months in most areas, allowed most corn and soybeans to reach full maturity by the time of the first killing frost.

Overall, the reported soybean yields across southern and western Minnesota have been above average, with some exceptional yields reported in some areas that had more favorable growing conditions. There were reduced soybean yields reported in portions of the region that were impacted by excess rainfall or by hail and severe storms. It has not been unusual to hear of yield monitor and weigh wagon yields in some portions of the region that were well above 70 bushels per acre; however, once whole field yields were calculated, dividing the total bushels harvested by the total acres planted, most "whole-farm" soybean yields in southern Minnesota are more likely to be in the mid-50s to low 60s. For farmers in southwest and south central Minnesota, the 2020 soybean yields are 20-30 percent or more above the 2019 yields, which were greatly reduced by late planting and excess moisture.

2020 corn yields in many areas have also been above average, due to earlier than normal planting dates and favorable growing conditions throughout much of the 2020 growing season. However, just as with the soybeans, corn yields in some portions of the region have also been highly variable, depending on excessive rainfall during the growing season and impacts from late-season dry weather in some areas. There have been several "whole field" yield reports of 200 bushels per acre or higher in southern Minnesota, with somewhat lower yields further north in in Minnesota and in areas that were more severely impacted by the adverse weather situations. Farmers in some portions of the region are reporting their best corn yields in the past three or four years.

Another piece of good news for producers regarding the 2020 corn harvest has been the harvest moisture of the corn coming out of the field. Most of the corn being harvested this fall has been under 20 percent moisture, which has resulted in a reduced amount of additional drying is required before the corn is placed in on-farm bins for storage. Corn should be dried to about 15-16 percent moisture before going into the grain bin for safe storage until next spring or summer. In fact, some corn has been harvested at that level or lower and has been able to be placed in grain bins without additional drying. In 2019, much of the corn was harvested at moisture contents of 24-30 percent, resulting in very high drying costs along with the poor yields in 2019.

The test weight of the corn being harvested has also been a pleasant surprise this year, with most corn having a test weight of 56-59 pounds per bushel. The standard test weight when selling corn to market is 56 pounds per bushel. In 2019, much of the corn was harvested at a test weight of 50-54 pounds per bushel. Except for areas that were impacted by severe storms in the summer months, such as the derecho storm in central Iowa, the stalk strength of the corn has been fairly good this fall.

Fall tillage and manure applications have been occurring as soon as harvest is completed; however, those operations could be more challenging in many locations going forward, following the wet snowfall and saturated topsoil conditions. This type of soil situation can make it difficult for quality tillage and may require leaving portions of fields without fall tillage or manure applications.

Producers in some areas of the region typically apply nitrogen fertilizer for the corn crop that will be raised in the following year, once the current year's harvest is completed. It is recommended to wait until soil temperatures are 50 degrees Fahrenheit or lower to apply nitrogen in the fall in order to avoid significant losses; however, this should not be a concern this fall. Farm operators are reminded to follow the new statewide restrictions for fall nitrogen fertilizer application in their area and for the soil types on their farms. ✻

For additional information contact Kent Thiesse, farm management analyst and senior vice president, MinnStar Bank, Lake Crystal, Minn. Contact by phone at (507) 381-7960); by email at kent.thiesse@minnstarbank.com; or online at http://www.minnstarbank.com/.

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gart explains. "This allows farmers to make immediate decisions regarding product quality and homogeneity to maximize the sale price."

"When farmers reach what they consider the optimal moisture level using a single grain moisture tester, that is the time to harvest in order to get the most consistent grain with the best yield," Bogart added.

According to Bogart, such devices are simple to use. With advanced models like those from Kett, farmers select the calibration, pour a sample into a hopper and press the "measure" button. Such models are factory-calibrated for wheat, as well as naked and standard barley. The devices are versatile, capable of measuring from 10-1,000 kernels in each batch, at 150 kernels per minute.

When farmers need to test a wider range of agricultural products, some advanced portable grain and seed moisture meters using capacitance technology offer instant measurement and over 150 calibrations of the most common grain and seed types. While some agricultural devices may require grain husking and grinding, no sample preparation is required with the latest generation of portable, battery powered devices.

Tests are simple. Pour the sample into the machine, and the moisture content and density (g/l) are instantly displayed. Automatic averaging enables quick spot check measurement of samples in bulk containers. To document such tests, such units offer digital output to a computer or optional printer.

In terms of accuracy, however, Bogart offers a word of caution when selecting such a unit.

"While many moisture meters using the di-electric principle claim to provide accuracy to +/- 0.5 percent, to achieve such accuracy it is important to look for a unit that provides automatic density and temperature compensation. This is because changes in ambient, sample, or device temperature will otherwise degrade measurement reliability," he says.

When greater accuracy is needed across the widest range of grain, seed, or other agricultural product types, the most advanced moisture meters utilize near-infrared (NIR) light, a highly accurate, non-contact, secondary measurement method that can deliver immediate laboratory quality moisture readings.

"NIR moisture meters follow the principle that water absorbs certain wavelengths of light," Bogart explains. "The meter reflects light off the sample, measures how much light has been absorbed, and the result is automatically converted into a moisture content reading."

According to Bogart, such meters allow very accurate instant measurement of any agricultural product without contact or sample preparation, so there is no contamination in handheld and online models. "Once the meter has been calibrated against the lab or production standard, the calibration is stored in the device so no calibration is required in the field," he says.

Unlike air ovens or even moisture balances, portable NIR equipment is designed for ease of use. With the most advanced units, the user simply points the instrument at the grains, seeds, or agricultural product. The moisture content is instantly shown on a digital display, with results accurate to .01 percent in a 0-100 percent measurement range.

Such units, which are about the size of a camcorder and operated via user friendly menu commands, are designed for frequent spot checks wherever necessary, on both stationary and moving (i.e. conveyed into silo storage) products. Moisture measurement data can be stored in the instrument, downloaded continuously, or manually recorded.

"The goal is for farmers to be able to successfully use a moisture meter wherever and whenever it is needed. Whether out in the fields or elsewhere on the farm, this can help them determine the best time to harvest for maximum quality, consistency, yield, and storage life," Bogart concluded.

For more info, contact Kett: call 800-438-5388; e-mail support@kett.com; or visit www.kett.com. ✻