

Tri State Seed Co. LLC Newsletter December 2018

Observations

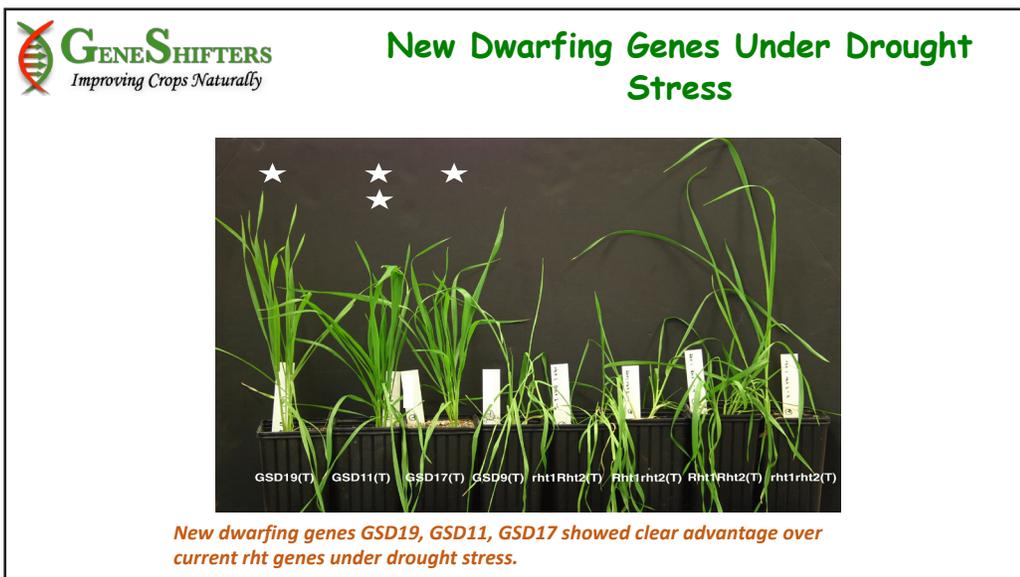
I was in the presence of greatness today. On December 7, 2018, the family of Dr. James Cook and a small group of wheat industry friends and WSU faculty met for breakfast to honor and visit with Jim. Tomorrow, December 8th, Jim will receive the highest honorary doctoral degree the university has to offer in recognition of his many accomplishments. He came to WSU in 1964 as an ARS scientist to study soil borne diseases and pathogens. In the process, he taught a lot of farmers how to be farmers. His work on projects like solving the green bridge issues and *Rhizoctonia solani*, identifying the take all decline syndrome from growing continuous wheat, and identifying so many other soil borne pathogens adversely affecting wheat crops in the region have had immeasurable benefits to our industry.

Even today at age 82, Jim is so passionate about his work he still has a group of farmers around him wherever he goes. His personality is magnetic; you just cannot come away from a conversation with Jim without feeling you have a better understanding about what you were visiting about. He never tells you what to do, but somehow, he makes the inevitable solution so clear in your mind, that you feel enlightened. Jim's selflessness and humility are what make him my hero. He has inspired many to accomplish great things. He sets the bar so high, it's hard to see. R. James Cook didn't discover all the scientifically novel things or earn the advanced degrees and honors for the accolades that come with success, he did it for the right reason. To advance science for the benefit of his fellow man. He certainly didn't do it for the money either. He woke up every day excited for the challenge and the love of the science. What I treasure most about Jim is the way he treats his fellow man. Today, I was in the presence of greatness.

New Semi-Dwarfing Genes

Dr. Kulvinder Gill is a research geneticist at Washington State University. One of the projects he has been working on is finding another semi-dwarfing strategy without using our current semi-dwarfing genes. Why, you ask? Because his speculation is although these genes do the job alright, they come with a price! That price is not only reduced yield capacity but also heat and drought intolerance. His estimation is the current genes cost farmers between 10 and 15% of their ultimate yield.

He identified the new genes using mutagenesis and has experimental results showing plants using the new genes in place of the older Rht_1 , Rht_2 , genes, resist both heat and drought stress much better than the older ones. The results are amazing. This is truly fascinating. We need semi-dwarf wheats to support the increases in yield we expect from newer varieties. But to have both shorter wheat and heat and drought tolerance is, well, pretty awesome. In a nut shell, the older genes apparently block the plant's ability to access gibberellic acid, or at least suppress it, enough so the plant reacts with a shorter coleoptile, indeterminate subcrown internode length, and apparently less tolerance to both heat and drought stress. I have seen both sets of plants compared under artificial stress. This is the real show! Stay tuned because although this is a longer-term breeding strategy, the impact for dryland producers will be substantial. By longer term I mean it takes several generations to do the swap. It's not easy, it takes a lot of marker assisted selection and knowledge to remove the older genes, then introgress the new genes, then increase the seed, etc., so, five years hopefully! Dr. Gill and his scientists are probably the best speed breeders for doing transformations in the world. I'm 68 years old this month and I have seen a lot of cool stuff...but this, makes my heart beat faster! If you have interest in knowing more or seeing the pictures, email me and I will forward you the presentation I made for him at the National Wheat Improvement Committee meeting in St. Louis this week.



Streaming

Streaming? What do you mean streaming, like watching a movie on your phone? No, no, I mean applying liquid fertilizer with your own sprayer in a stream, with stream jet nozzles? “What?” He replied. “Like, squirting stuff out on the ground?” “Yep, squirting stuff out on the ground,” so went my conversation last week with a grower in Franklin County. “Why on earth would I do that?” he says.

So... the real reason is simple. Margins in dryland farming are thin, so why would you put into the ground, all of your fertilizer at one time, 15 months in advance of when you have any chance of seeing a return on that investment???? Poor decision? Poor decision indeed! The cash flow advantages alone should be obvious by now. Why spend all that money 15-16 months in advance of harvesting the crop? Do you know how much fertilizer the crop will ultimately need? NO! Are you confident that the fertilizer will be positioned in the right place when the crop needs it? NO! Are you positive the fertilizer won't volatilize or leach in 15 months? NO! These questions should give you pause to consider a different timing regime. Streaming lets you split apply your fertilizer and allows the early application to move into position and the later one to help fulfill the ultimate need of the crop. We have just finished doing several streaming jobs during this last rain, absolutely perfect timing. It was actually raining during the application, no volatilization here boy!

How much loss of available Nitrogen do you think there is from applying NH_3 that far in advance of planting? That, I can answer. The research was done at Oregon State University by Drs. Don Wysocki and Don Horning at the Pendleton station about 10 years ago. They measured the N loss from seven sites, five in Oregon and two in Washington using lasers and telemetry. They recorded the Nitrogen loss from “flagging” using multiple passes of an NH_3 machine traveling between the lasers. This experiment lasted five years, encompassed 35 site years of data, so the empirical evidence is statistically very sound. The results show the average loss in a summer fallow field application to be 22%. Let me ask a question, “Is that what you want?” 78% efficiency on a fertilizer that you only get 80% utility from in a perfect situation? If you have to do NH_3 , then do it early, do it slow, do it in wet dirt, do it deep, and seal it up fast. Wait until June or July to do NH_3 , and you stand a great chance of getting a return on your investment of about 62.4% (.80 X .78 efficiency). So that NH_3 is pretty cheap huh?

What should I do? Well, one strategy is to put down a base amount in the same fashion you normally do at the normal time. Then, when you have a reasonable idea of how much moisture we are getting over the winter, make your play! The following spring, add what you think you will need using either UAN 32 or 25-0-0-3. We prefer the latter because of the ratio of sulfur to nitrogen is about the perfect ratio to optimize plant uptake. Most of the nitrogen in 25-0-0-3 is nitrate nitrogen, and all of the sulfur is sulfate sulfur, so it is available to the plant immediately. Remember, you always have the option of adding a bit more during the herbicide timing. Yes, streaming is a second application. Just remember you can cover 65 acres per hour with a 90' sprayer at 6 MPH. We have one customer that streams at 18 MPH, he is covering well over 200 acres per hour with his Vector Ag Truck. Pretty efficient. The down side, if you think about it, is not having to fertilize in the spring at all because of an extended drought etc. In this case you spend no money on fertilizer in the spring. We love the increased flexibility this gives you in crop management. Common sense, yes! Smart business, yes!



Caliente Mustard Update

I wanted to give you a brief update on the newest Caliente Mustard for biofumigation use prior to growing potatoes. The newest variety recently released from High Performance Seeds is called Caliente Rojo. In the picture below, you can see the relative size of the leaves of this plant in comparison to my lovely wife's hand. This leaf is easily 7 inches across and 10 inches long. This is important because the bigger the leaves are the more glucosinolates, they contain. The active ingredient that really does the fumigation should be familiar to you, it is Allele Isothiocyanate (AITC) this is Mother Nature's version of MITC, the commercial version called Methyl Isothiocyanate or Vapam.

The first mustard we put in the family garden was Caliente 199, the precursor to the Rojo variety. We incorporated it in the first week of July. We then waited until the first week of August and planted the Rojo. This picture is 60 days after planting the Rojo. We incorporated this green manure crop the same day this picture was taken. This example of double fumigation is impractical for commercial use in most cases. The point of the discussion is if you are interested in reducing the interval between potato rotations without the risk of catastrophic Verticillium wilt damage, it can be done. The

key to making this rotation work is to have your first cash crop off by August 1st. This allows you to plant the mustard on time for incorporation roughly 60 days later, October 1st. Most processors seem to think the only answer is a four- or five-year rotation in order to foil the effects of Verticillium and controlling nematodes. Not true. Yes, this is the easy way out! Developing Vert Wilt suppressive soils can be done cost effectively without waiting for the soil to adjust naturally. The problem is it takes planning and execution to speed the process along. Ok, it may not be for everyone! So, I guess you just keep on using 50 plus gallons of Metam per acre, right? You bet, let's see how long your soil lasts. This research has already been done by WSU, like 20 years ago. Andy McGuire has had the replicated studies published for years. Look them up...

Here's the short version of Andy's research—The extremely high populations of beneficial micro-organisms from incorporating Caliente mustard, fed a sustainable food source like wheat stubble, will maintain viable populations for a long time in the soil. These beneficials occupy root sites on the potato plant that would, under normal conditions be infected by Verticillium Wilt. Have you heard the term competitive exclusion? This is it. Is the potato free of the disease? No! The plants almost always continue to test positive for Vert, but it is almost never lethal. Using Caliente mustard over time will allow you to reduce the amount of chemical fumigants and in many cases eliminate them all together. I have seen the fields that have been in potato production for eight out of the last sixteen years with no ill effects from Vert, and they have maintained high gravities and excellent production. Because we now have some inertia for a "soil health initiative" it looks like Andy will get to do his experiments all over! Hmmm. Phenomenal use of money.

Sorghum Sudan Results Are In

The picture on the right is Sweet Six BMR sorghum sudan grass grown at the BB Cattle operation by Jay Bennett. This field had only marginal water available, so the first crop was fall planted forage triticale, Trical 102 actually. He took off green chop and ensiled it in his pit. After watering the field up, he planted the BMR Sweet Six product direct seeding it into the standing stubble. Since we had the coolest June in 49 years, the crop was slow to start but finished well. Jay is about six foot two and the crop is at least that tall. It was just beginning to head, which is a little late but still in the correct window for max nutrition. The bottom picture is 50 days after planting. Notice the brown mid rib in the leaves on top. This is the called event 7 in the sorghum world, and means simply that the lignin in this plant is more digestible in the rumen than non-BMR types of sorghum sudan. Higher fiber solubility in the rumen is what this is all about, because it means more of the silage gets converted into prime rib and less goes out the other end. The Sweet Six takes only about 1/3 the water compared to a crop of alfalfa or corn, so it met Jay's requirement well and he had a successful result. After swathing and chopping, Jay put the cattle to the task of cleaning up the residue and they stayed on the field about a month and a half. As you all know the first killing frost on a crop of sorghum sudan will create prussic acid in the leaves and for a period of about fourteen days it will be toxic, too toxic to feed. But after that the active ingredient volatilizes off and the crop is safe again to consume. Jay avoided any risk by grazing the field completely out before the first killing frost thereby avoiding that risk factor. All in all, smart management for a poor field with limited water.



Lavina Forage Barley

If I had to recommend the next crop for Jay to grow, since his primary occupation is registered cattle, it would be Lavina Forage Barley. Lavina is the latest release from Montana State University's barley program, one of the very few forage barley programs still active in the US. I have visited their program in Bozeman, they do great work. Montana does have a few cattle, right? I guess that is why they have a forage barley program! Interesting correlation. Here is another interesting thing about barley, it's a diploid, that means two genomes, A and C. Wheat is a hexaploid, it has the A, B and D genomes. All of the salt tolerance in cereals is on the C genome, which only barley has. It will grow on ground so saline that wheat or triticale flounder



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badly. The other cool thing about forage barley is the solubility of its fiber. It is extremely soluble in the rumen, just like BMR sorghum sudan. A cattleman's dream? Yes, it is. Lavina is a two-row barley that grows tall. I have seen it plug a 900 horse Claas chopper so tight that it took an entire day to unplug. This will produce forage, on pretty tough ground. Look it up on the internet, go to Montana State University's website and you will see that it was designed to replace Haybet, Hayes and most all the other forage barleys in existence. The other cool thing is it comes off early and will set you up for the next crop with time to spare. Well, that may be a stretch, there is no such thing as time to spare, right? Not if you are an independent business person. Notice my PC correctness! My wife says there is hope for me yet.

Walk a Little Farther

I was reading a blog from one of my agronomy mentors recently and he said one of his pet peeves was field men that make recommendations based on what they see after walking only 200 feet into the field. Well, unless your field is only 300 feet across you may have missed the point. You certainly risk not being able to accurately assess the whole field. This begs the question, "What did I miss?" If I had walked a little farther would I have a clearer picture of the issues in the field?

During this season leading up to Christmas, why don't you consider walking a little more than 200 feet into the field of Christmas? Do you risk not being able to accurately assess the whole field! Does this beg the question, "What did I miss?" If I had walked just a little farther, would I have a clearer picture... of Jesus?

From our families to yours, may you have a Christ filled Christmas with the ones you love!

Dana Herron Craig Teel Stacy Kniveton Kevin Starring Margaret Krug