EXTENSION

Jenny Rees 1-5-2020

Winter programming is upon us and there's plenty of opportunities to attend meetings somewhere nearly every day! Below is more information regarding some January opportunities from Extension. Also, thank you to those who provided feedback to my end of the year survey! It really is short, so if you haven't provided feedback, please consider doing so at https://slido.com and enter the code 4EXT. It really helps me as we have to justify the ways that we serve our constituents in our annual reports. Thank you!

Crop Production Clinics (CPC) provide an opportunity for commercial, non-commercial, and private pesticide applicator recertification. CCA credits can also be obtained. Besides the 'traditional' track of insect, disease, and weed science information, topics at the York location (Holthus Convention Center) on Jan. 14 also include: farm bill info, financial considerations for 2020, extreme weather impacts on ag, cover crops and forage management, manure and other soil amendments, pivot performance, and sprinkler packages. Registration at: https://agronomy.unl.edu/cpc.

Nebraska Crop Management Clinic (NCMC) at the Younes Convention Center in Kearney Jan. 22-23 expands the offerings of the CPC into a 2-day conference with additional outside speakers. Commercial, non-commercial, and private recertification training are options in addition to obtaining up to 14 CCA credits (over 2 days) and chemigation training. Registration at: https://agronomy.unl.edu/ncmc.

Good Farmer, Great Manager: I'm really excited to bring this program to the area! This program isn't about teaching specific tools like Quicken, Quickbooks, or others. It's about better understanding the true financial position of the farm. Keeping good records make it possible to track an operation's true financial position. Inaccurate records can lead to misguided management decisions. Tina Barrett, Executive Director of the Nebraska Farm Business Inc., will teach this class on Jan. 23 (1-5 p.m.) and 24 (8 a.m.-Noon) at the 4-H Building in York. It is required to attend both days, cost is $50, and the class is limited to 25 participants. Topics include understanding what are good tax records, getting good tax records, moving to management records, and financial statements and ratios. You can register at: https://wia.unl.edu/GFGM. You can also hear Tina share more about this class at: https://youtu.be/LaVZRPzG1HM.

Weed Science School will be held at the Eastern Nebraska Research and Extension Center near Mead, starting at 8:30 a.m. and ending at 3.45 p.m. on January 29th. "Dr. Bryan Young, professor of weed science at the Purdue University is an invited speaker to present his research experience for dicamba off-target movement in soybean," said Amit Jhala, extension weed management specialist and program coordinator. Tim Creger, pesticide/fertilizer program manager with the Nebraska Department of Agriculture, will be discussing NDA's experience investigating dicamba complaints the last three years, including what evidence they look for, types of violations, and the regulatory action taken in response to violations. Additional topics include: Overview of Weed Control and Herbicide-Resistant

Weeds in Nebraska (Amit Jhala); Herbicide Discovery in an Era of Industry Acquisition and Merger (David Simpson, senior product development manager, Corteva); Corn Ear Formation Issues (Jenny Rees); Soybean Response to 2,4-D or Dicamba (Stevan Knezevic); Weed Identification (Ethann Barnes and Parminder Chahal Agronomy research assistant and associate); Managing Waterhemp (Chris Proctor, weed science extension educator); Nozzles, Nozzles, Nozzles: Selection and How to Use (Bob Klein, Extension western Nebraska crops specialist). There is no cost to attend; register at https://agronomy.unl.edu/weedscienceschool. Certified Crop Advisor (CCA) Continuing Education Units will be available.

EXTENSION

Jenny Rees 1-12-2020

Great to see and meet so many at the York Ag Expo last week! And, to the 156 of you who attended pesticide training, thank you again for your kindness and grace with the packed room and overflow to the hallway. Sharing this week on February upcoming ag programs and adding the flyers to https://jenreesources.com.

Jan. 28th is the Farmers and Ranchers Cow-Calf College at the US Meat Animal Research Center near Clay Center. Registration begins at 9:30 a.m. with program beginning at 9:55 a.m. Topics include: Forage Sampling, Understanding Annual Cow Costs, Questions to Ask Your Vet before Calving Season, Blockchains: Connecting Consumers with their Food (IMI Global), and Alternative Meats and Alternative Statistics: What the data says. There is no charge and meal is provided. It's best to pre-register to save time and you can do so at https://go.unl.edu/frcollegereg. You can also RSVP at (402) 759-3712.

Feb. 4 is the Hamilton County Ag Day at the fairgrounds in Aurora (Reg. at 9 a.m. with program beginning at 9:30 a.m.). Attendance at this event qualifies for UBBNRD nitrogen management training. Many have asked about nitrogen research and this event is geared towards providing that. Topics include: In-season nitrogen application, management to reduce nitrate leaching, fertigation equipment & procedures for in-season management, crop nutrients from manure, cover crops and nitrogen management, optimum irrigation application, on-farm research for evaluating N management, land rental considerations for 2020, in addition to updates from Nebraska Corn and USDA. There is no charge.

Feb. 13 is the Nebraska Cover Crop Conference near Mead with registration beginning at 8:30 a.m. and program from 9 a.m.-3:30 p.m. This year's focus is on interseeding cover crops into corn/soybean. Loran Steinlage from Iowa will share what he's doing with 60" row spacings and keeping something growing in his fields 365 days of the year. Noah Seim from Merrick County (30" rows for a few years) and Jay Goertzen from York County (36" rows for 1 year) both have interseeding projects with Nebraska on-farm research and will share their experiences. Additional Topics/Speakers include: Finding the right fit with cover crops (Abbey Wick from NDSU), Selling cover crop seed in Nebraska (Steve Knox with Nebraska Crop Improvement), Accelerating soil health adoption by quantifying economic and environmental outcomes (Brian Brandt, Ohio), Review of cover crop demonstrations in the Central Platte NRD (Dean Krull), Cover crops by helicopter: FAQ (Brent Wulf, Hexagon Helicopters, Inc.), and Soil Health (Aaron Hird, NRCS). There is no charge for this event including meal and it's a large event. Registration is required by Feb. 7. More info. and register at: https://extension.unl.edu/statewide/enre/nebraska-cover-crop-conference/ or 402-624-8030.

Nebraska On-Farm Research Updates: Believing in the value of on-farm research, these are among my favorite meetings each year! These meetings give you an opportunity to hear from your peers regarding research they're trying in cooperation with Nebraska Extension. We often wouldn't have research on topics many of you ask me about if it wasn't for our on-farm

research cooperators, so I'm grateful to them! Dates include: Feb. 18 at Holiday Inn Express in Beatrice, Feb. 19 near Mead at ENREC, Feb. 20 in Norfolk at the Extension Office, Feb. 26 in Kearney at the Extension Office, and Feb. 28 in York at the Holthus Convention Center. The Feb. 28 meeting in York will be unique focusing only on cover crop and soil health research and that meeting also qualifies for UBBNRD nitrogen management training. Each meeting runs from 9 a.m.-4 p.m. (registration at 8:30 a.m.). Meal is included and there's no cost thanks to our partnerships with Nebraska Corn, Soybean, and Dry Bean Boards and Growers' Associations. Please pre-register at least 2 days in advance for meal planning purposes to: onfarm@unl.edu or 402-624-8030.

This week was asked to share on these additional Jan./Feb. meeting opportunities. Also, **Please Save Feb. 3** for the York County Corn Growers Tour! I'm working on the tour details-will share next week.

A few times a month, I receive questions about hops or hemp. For those interested in hops, the Nebraska Brewer's Conference will be Jan. 27-28 at the Younes Convention Center in Kearney. You can learn more details here: www.growbrewnebraska.com.

Merrick Co. Ag Day is Jan. 28 at the Fairgrounds in Central City. Topics include weed control in prevent plant acres, farm bill, pivot wheel track management, understanding the hydrogeology of wells in Central Nebraska, groundwater protection/water quality sampling and testing, and domestic/farm level water treatment equipment. There is no charge and please RSVP for meal to 308-946-3843.

72nd Annual York-Hamilton Cattlemen's Banquet will be Jan. 28 at the Holthus Convention Center in York beginning with social at 6:30 p.m. and prime rib meal at 7 p.m. Entertainment will be Jay Hendren, a farmer from Ohio. Hendren uses his experiences in farming to tickle the funny bones of audience members of all walks of life. Hendren has entertained groups across the country from banquets and conventions to comedy clubs. Tickets are $25 per person. Sponsorships are also available that include two banquet tickets and recognition at the banquet for $150. Cattlemen's Banquet tickets can be purchased from any of the York-Hamilton County Cattlemen's Directors including Brian Blase of Hordville; Brock Ekhoff and Terry Ross of Aurora; Jeff Underwood of Exeter; Allen Klute and Mark Klute of Hampton; David McDonald of Phillips, Jeff Meradith, Kim Regier and Josh Chrisman of York; Kim Siebert of Henderson, plus the UNL Extension Offices in York County and Hamilton Counties.

Lambing and Kidding School Jan. 25: The closest location to this area will be in Broken Bow at the Fairgrounds. Registration begins at 10 a.m. Topics include: Keeping ewes healthy through disease control and treatment (Dr. Brian Vander Ley DVM, Great Plains Educational Center); Economical feeding programs for the doe (Dr. Steve Hart, Goat Extension Specialist OK); Economical feeding programs for the ewe (Dr. Ivan Rush, sheep producer, Scottsbluff); Treating chilled newborns, tubing lambs/kids/Q&A session (local veterinarians). The program is followed by a hands-on tour to Beth & Hannah Smith's Farm 44306 Road 786 Broken Bow. More info and pre-register at: ne.sheep.goat@gmail.com or 308-386-8378.

2020 Sorghum Symposium will be held at the NE College of Technical Ag in Curtis on Jan. 30th. I don't have details regarding the time, but program highlights include: weather (Al Dutcher); sorghum production and management (Dr. Brent Bean, Agronomist); D.C./Farm Bill Update (Jerad Reimers, Office of Congressman Smith); grain sorghum variety performance in 15" and 30" rows (Strahinja Stepanovic, UNL);

sorghum TAPS program panel; how to win an argument without arguing via social media (Nate Blum). The annual meeting will follow the program and several vendors will be present. There's no charge but please RSVP for meal count to sorghum.board@nebraska.gov or 402-471-4276.

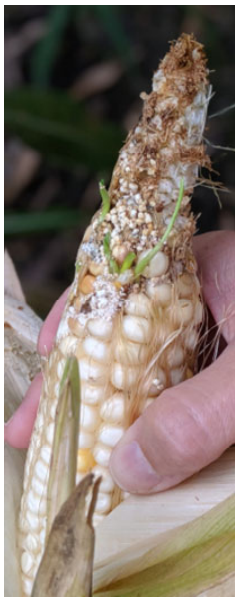
Annie's Inspired: Feb. 3rd from 6-8 p.m. is the next Annie's Inspired Workshop for women involved with agriculture. It will be held at the Library in David City. Glennis McClure will cover Farm/Ranch budgets and financials. These workshops include a light supper, plenty of networking time and hands-on learning. Cost is $5 to cover supper. Please RSVP to 402-367-7410 or 402-362-5508 if you're interested in attending!

Jenny Rees January 27, 2020

Corn Quality Concerns: The two main questions I've received: "Are you hearing others mentioning low/variable test weights on corn?" and "Are you hearing of loads being rejected (to ethanol plants) due to mycotoxins?" While I'm unsure how widespread this is, I have been receiving these questions. A reminder to check your grain quality if you haven't already been hauling or checking it.

Test Weight is a volumetric measurement (weight of corn grain per unit of volume), and as such, doesn't directly correlate with yield. Standard corn test weight is 56 lbs/bu (1 bushel is 1.24 cubic feet). The size, shape, slipperiness of surface, and density of the kernel impacts test weight. Hybrids can show differences in test weight. Test weight is different than kernel weight, and thus not directly correlated with yield. Test weight gets at how tightly packed the starch is within the kernel. Reducing kernel moisture can allow for increased test weight if the starch loses water allowing for it to be packed more tightly within that kernel. Dry kernels that slide past each other may pack better allowing for increased test weight.

Lower test weights can result with disease, insect, and environmental stresses that impact photosynthesis and the movement of nutrients to the kernel during grain fill. These can include foliar and stalk diseases, drought stress, lack of nutrients, freeze prior to physiological maturity, late planting, and below normal temps during grain fill. Rewetting of kernels in the ear can impact test weight as kernels can swell and not shrink back to the same shape as previously. We know that moisture events happened after physiological maturity causing some sprouting of kernels in some ears prior to harvest. We did have high foliar disease pressure this year and reduced stalk quality. Compromised integrity of the kernel due to insect, disease, and mechanical damage can also impact test weight. I didn't see the amount of kernel damage as I did in 2018. But there are certain hybrids that are high yielding and widely planted that I tend to see starburst patterns on kernels (due to Fusarium) and shortened husks exposing ear tips to more insect damage/ear molds. There are also hybrids that had a large amount of top dieback, husk tissue that turned brown early, or refuge in a bag plants that died early in fields. All of these may be factors potentially impacting test weight as well. Thinking about photosynthesis, we had reduced solar radiation during grain fill. I can't help but think that could also impact it but didn't easily find research that correlates solar radiation to test weight. There's research correlating solar radiation to yield and kernel weight, though.



Regarding vomitoxin levels, the starburst patterns on kernels, insect damage leading to ear molds, wet corn not properly dried or cooled in bins can all impact greater Fusarium growth and the potential for vomitoxin to be produced. If vomitoxin (also called DON) is an issue, concentrations can triple in the ethanol process of producing the distiller's grains. Hogs and poultry are more sensitive than cattle, so the end user may be a factor in addition to the vomitoxin levels. I don't know the levels being rejected so I can't speak more to this.

York County Corn Grower Tour: Corn growers and spouses are welcome to join us February 3 for a tour of ag industries in the Lincoln area. We will meet at the York Co. Extension Office at 7 a.m. and will carpool leaving at 7:15. Our first stop will be RealmFive which focuses on wireless connectivity for ag operations. We will then tour Smart Chicken in Waverly which offers retail- and foodservice-packaged organic chickens and antibiotic-free chickens from Kansas, Iowa and Nebraska. Lunch at Lazlos is next followed by learning about the UNL hops program and research using corn gluten meal and soybean meal. Possibly another stop on way home. Please RSVP to me at jrees2@unl.edu if you're interested in attending by Feb. 2nd. Hope to have a good group who can join us! Flyer at jenreesources.com.

Jenny Rees 2-3-2020

Been getting questions on the farm bill. It's really important that growers make appointments now at your local Farm Service Agency (FSA) office to complete your ARC/PLC election and enrollment forms. Deadline to enroll is Monday, March 16 for the 2019 crop year. The election can be changed up to March 16. Growers who don't get enrolled by then will be ineligible to receive ARC or PLC payments for the 2019 crop year.

If you use a decision support tool, I'm not recommending to use the Illinois tool as it takes into consideration the life of the farm bill. This is a two-year decision, thus, the potential payment numbers tend to be skewed and makes ARC-CO look more favorable than what it most likely will be. The Texas A&M tool considers a two-year decision and that's the tool Randy Pryor and I recommend. On my blog, there's step-by-step screen shots to help if you wish to use the tool. You can find it and previous blog posts at jenreesources.com. In the right-hand column under "categories" select "farm bill".

Using the tool to work through farm situations from different counties, PLC keeps beating ARC-Co for corn. There's a separation between the price it could take to trigger ARC-Co (previously around $3.18 for many counties) vs. PLC ($3.70) for corn. I've also played with the historical irrigation percentage (HIP). Everytime I've changed the HIP % for corn (0, 25, 50, 75, 100), it doesn't switch the potential payment decision from PLC to ARC-Co. However, when I look at soybean, it's tended to favor PLC for a higher irrigated percentage and ARC-Co for farms with little to no irrigation. This does vary by county, so soybean can go either way. If you're really undecided, check this for yourself. You're only making this decision for 2 years and there may not be a soybean payment for either election. Ultimately elections are your decision and the tools and info hopefully help as we can't predict what prices will do.

Pesticide, Dicamba, Chemigation Trainings: I've also received questions regarding pesticide, dicamba, and chemigation trainings. If you haven't received a postcard from NDA to pay the $25 bill within 14-17 days after training, please call the Extension Office in the county where you took the training; they can follow-up with NDA. The postcard will have a link to pay the $25 fee online. For those who don't like paying online, you can also send a $25 check to NDA and include the postcard. For those who attended my training when I ran out of materials, I now have more so you are welcome to stop at the York Co. Extension Office and get the study guide and weed guide.
If you attend a face-to-face dicamba training through Extension or Ag Industry, please bring your pesticide applicator card as a pesticide applicator number is needed for

registration. If you are a new applicator this year, you will write "pending" on the registration form. There is no charge for dicamba training, and the same training can be completed online at: https://pested.unl.edu/dicamba. Watching it at home as a group doesn't work well because only one applicator number is entered to watch the training; there's no way to add additional ones. Each person would have to be on his/her own device watching the training. Allow one week for your name to be added to NDA's dicamba certified applicators on their site at: https://nda.nebraska.gov/pesticide/dicamba.html. Download the excel spreadsheet under 'dicamba applicator training' and make sure your name is listed. Then print the spreadsheet and keep it for your records.

For those recertifying for chemigation, you are allowed to watch the modules and take the test at home this year at: https://water.unl.edu/article/agricultural-irrigation/chemigation. This is only for recertifications. Initial certifications can watch the modules from home but still need to take the test at an Extension office. Anyone seeking initial or recertification is also welcome to attend face to face training.

This week begins Nebraska Extension's On-Farm Research Update meetings. Over 100 studies were conducted in 2019! Each meeting runs from 9 a.m.-4 p.m. (registration at 8:30 a.m.). Meal is included and there's no cost thanks to our partnerships with Nebraska Corn, Soybean, and Dry Bean Boards and Growers' Associations. Please pre-register at: onfarm@unl.edu or 402-624-8030. Meetings are: Feb. 18 at Holiday Inn Express in Beatrice, Feb. 19 near Mead at ENREC, Feb. 20 in Norfolk at the Extension Office, Feb. 26 in Kearney at the Extension Office, and Feb. 28 in York at the Holthus Convention Center. At the meetings, you will receive a book of all the 2019 studies and hear from the farmers who conducted the studies if they are present at that specific location. What's powerful about that to me is that you get to hear from your peers and the discussion and questions are greater. At all locations except for York, all the studies in the book will be shared. New this year to only the York location, only the cover crop on-farm research studies will be shared followed by outside speakers sharing about cover crop/soil health topics. That meeting also qualifies for UBBNRD nitrogen credits.

On-Farm research in Nebraska has occurred the past three decades. Growers partner with Extension and sometimes other government agencies and ag industry to test questions on their own farms using their own equipment benefiting many with the information. We often don't have funding to do these studies. Thus, I'm extra grateful for our cooperating growers to research products and production practices that may not happen otherwise!

Sometimes, it's best to hear from the farmers themselves regarding why they conduct on-farm research. The following YouTube video highlights area farmers David and Doug Cast of Beaver Crossing and Ken Herz of Lawrence:

Ron Makovicka helping me take soil samples for his study.

https://youtu.be/tEy-I43CT0E.
Three York County farmers were also featured in a CropWatch article sharing their on-farm research experiences. Ron Makovicka and Jerry Stahr have conducted on-farm research since the beginning while Jay Goertzen was a first year participant. "Anytime you can get information, it's very valuable. You can always learn something," Stahr said. Goerzten shared, "There's good support provided to help set up a research plot, help you with the follow through, and collecting data in-season." All shared there was value in trying studies on your own farm with Makovicka emphasizing, "Go for it!"

This year, Makovicka and Stahr worked with me to compare areas with and without the nitrification inhibitor (N-Serve®) with their spring anhydrous ammonia applications. Nitrification inhibitors may reduce the rate at which ammonium is converted to nitrate thus helping reduce N losses through denitrification and leaching. Stahr applied 160 lbs N as anhydrous on April 8, 2019 in no-till, silt-loam soil. Makovicka applied 180 lbs N as anhydrous on April 10, 2019 in ridge-till, silt-loam soil. These locations were around 4 miles apart and the previous crop in both was soybean. At both study locations, no yield difference occurred between the check and inhibitor treatments. Soil samples were taken 2" off the anhydrous band down to three feet for both ammonium and nitrate concentrations at V7 growth stage. The results showed the nitrification inhibitor was working to slow the conversion of ammonium to nitrate in Makovicka's field but not Stahr's. We don't have a good explanation for this. However, the results are consistent with other University studies conducted in silt loam soils.

Those are two examples of on-farm research studies. If you're interested in trying a study for 2020, please contact your local Extension Educator. We work with you to set up your study in a scientifically valid way to work with your equipment. There's also an opportunity to obtain up to $300 reimbursement for water-quality related studies through the UBBNRD (there is a short application form for that through the NRD). Please also save Mar. 2 from 9-Noon for an on-farm research 'brainstorming' meeting at the 4-H Building in York. I'll share more on that and other study results next week.

Jenny Rees Feb 2, 2020

Demystifying Poultry Manure-optimizing agronomic value and minimizing environmental risks will be held Feb. 26th from 1-4 p.m. at the Hruska Memorial Library in David City. The Nebraska Extension Animal Manure Management Team wants to help crop producers and rural citizens understand why, how, when and where manure can add value to a cropping system. They also want to answer your questions about how chickens are raised, what's in poultry manure, what practices can optimize manure value while minimizing environmental risks and any other questions you have. No cost. Pre-registrations welcome by contacting Butler Co. Extension at (402) 367-7410.

Irrigated Cover Crop Conference will be held Feb. 27 at the Fairgrounds in Central City starting with donuts at 9:00 a.m. Topics include: Implementing Cover Crops to Increase Resilience & Returns in Cropping Systems, Benefits of Cover Crops for Weed Control, Crop Water Use Considerations, Does growing shorter season corn/beans, impact cover crop biomass?, Overview of Cover Crop Strategies in the Central Platte, Seeding Methods for Cover Crops, Grazing High Quality Cover Crops, Don't Waste Your Cover Crop, and Methods to get Higher Grazing Efficiencies from Cover Crops. Cost is $10. For more info., please contact Steve Melvin at (308) 946-3843.

On-Farm Research Brainstorming Meeting Mar. 2: The purpose of this meeting is to allow area growers interested in on-farm research to discuss their project ideas for 2020. I've found this meeting lends additional support for growers allowing them to bounce ideas off each other and has led to several growers trying the same studies. Any growers interested in learning more about on-farm research studies or interested in trying studies on your farms are welcome to join us Mar. 2nd from 9 a.m.-Noon at the 4-H Building in York. Please RSVP to jrees2@unl.edu.

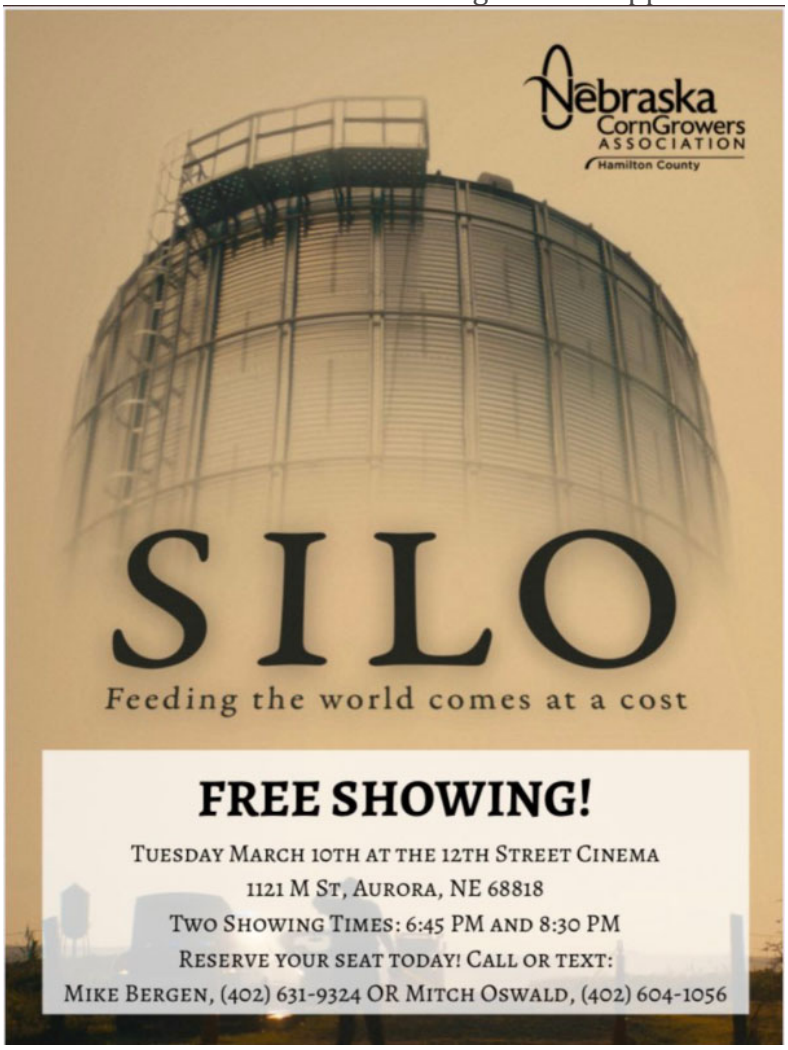
Annie's Inspired Mental Health, Stress Management and Ag Leadership class is designed to help farm and ranch women recognize stress, provide tips to care for one's mental health and learn how to be a great Ag leader. Please join us for this class taught by Brandy VanDeWalle, Fillmore Co. Extension Educator, on Monday, Mar. 2nd 6 – 8 pm at the Seward Civic Center, 616 Bradford St., Seward, NE. Cost is $5 and RSVP is required for meal (402) 367-7410.

Windbreak Workshop March 3 in Seward: Thinking about rejuvenating that old broken down windbreak? Perhaps you want to start a new windbreak? Maybe you're looking for information on what ails your windbreak and how to treat it? This FREE workshop will address all these questions (and more). Please join us Mar. 3rd from 9 a.m.-Noon (Registration begins at 8:30 a.m.) at the Seward County Extension Office. Bring your questions and learn from experts on topics including: Renovating that old windbreak; new windbreak establishment; Local NRD tree planting program, and Windbreak health issues. Please RSVP to Seward Co. Extension at: (402) 643-2981.

Southeast Nebraska Soil Health Conference Mar. 3: Soil health, cover crops, and grazing annual cover crops will be among the topics at this Conference Mar. 3rd at the Community Center in Hickman. Registration and viewing commercial displays begins at 8 a.m., with program at 9 a.m. The keynote speaker, Dr. Dwayne Beck, is the manager of the SDSU Dakota Lakes research farm. Additional speakers include: Dr. Ray

Ward speaking on nutrient cycling to build organic matter; Paul Jasa and Gary Lesoing will share on systems approach to soil health; Mary Drewnoski will talk about cow-calf grazing of cover crops. Tyler Burkey, Milford; Blake Huls, Cortland; Rodney Wiese, Wilber and Steve Mills, Greenwood will share information they have learned on ways to increase soil health. Sponsors include Nebraska Corn Board, Lancaster County Farm Bureau, and SARE. Please pre-register at: https://lancaster.unl.edu/ag. CCA credits are available.

Grain Bin Safety Week kicked off Feb. 16. In 2018, there were 30 documented grain entrapment cases-half resulting in a fatality. It's so important for farm families to understand the dangers of entering grain bins! Free Showings of SILO film (https://www.silothefilm.com/) will be March 10th in Aurora at the 12th Street Cinema. Sponsored by Hamilton Co. Corn Growers, showing times are at 6:45 p.m. and 8:30 p.m. Call or text Mike Bergen (402) 631-9324 or Mitch Oswald (402) 624-1056 to reserve your seat! Inspired by true events, SILO follows a harrowing day in an American farm town when a teenager is entrapped in a 50-foot-tall grain bin.



Jenny Rees 3-2-2020

Happy March! One question that's surfaced often is 'at what maturity of corn and soybean do we start losing yield?' There are many reasons for this question including planting a range of maturities to spread harvest load, taking advantage of marketing opportunities, and even planting shorter maturities to allow for increased cover crop biomass after harvest. The past two years, on-farm research growers in York and Seward Counties have compared Group 2 vs. Group 3 beans planted early to determine any yield differences. In 2018, combining the data from 16 reps over 3 locations planted the first week of May, the Group 2 and Group 3 beans yielded 70.2 bu/ac vs. 71.5 bu/ac respectively with no yield difference. In 2019, there were 13 reps over 3 locations. We don't have these analyzed as a group. At the first (non-irrigated) location planted April 22, the 2.1 bean significantly out-yielded the 3.1 bean (70 bu/ac vs. 67 bu/ac). At the second (irrigated) location planted May 2, the 2.4 and 2.7 beans significantly out-yielded the 3.1 and 3.3 beans (71, 73, 70, and 67 bu/ac respectively). At the third (irrigated) location planted May 16, there was no difference between the 2.7 and 3.4 beans (71 vs. 72 bu/ac respectively).

Small plot research containing 16 soybean varieties with 8 relative maturities (range from 0.3 to 4.7) in Nebraska, Ohio, and Kentucky showed that soybean yields leveled off with no differences between Group 3 and Group 4 beans. They found a 3-4 bu/ac difference between Group 2 and 3 beans across locations. Ultimately, from looking at a variety of research studies including our on-farm research studies, we would suggest that when comparing really high yielding genetics of Group 2 vs. Group 3 beans, there aren't yield differences. The small plot research also showed that there was an 11-13 day difference between R8 (full maturity) occurring in soybean from Group 3 to Group 4 and a 10 day difference between Group 2 to Group 3 occurrence of R8. What this suggests is for those seeking to plant Group 2 beans to get cover crop biomass established after harvest, one can gain an additional 10 days by following the drill behind the combine compared to planting a Group 3 bean and an additional 20 days compared to a Group 4 bean. It's estimated every 0.1 in maturity results in 1 day harvest difference. Looking at our on-farm research data in York and Seward, for the grower who harvested the different maturities based on 13% moisture, the harvest date difference between his Group 2 vs. Group 3 beans lined up pretty well with that line of thinking.

For corn, relative maturities of 95, 105, 111, and 113 days were planted in 2017 in two locations. That year showed no yield difference for the 105-113 day but it dropped off for the 95 day. In 2018, relative maturities of 95, 99, 105, 111, and 113 were compared at one location. The yield trend showed the 113 day yielding significantly higher than 111 and 105 with the 95 and 99 day yielding the least. Based on that data and data from UNL's South Central Ag Lab (SCAL), a 105 day relative maturity appears to be the cut off before seeing significant yield loss., but corn yields vs. maturity are highly dependent on hybrid and growing season. Greatest fall and spring cover crop biomass at SCAL planted after corn harvest (2015-2016) occurred after harvesting 88-105 day relative maturities.

Kiwanis Club of Seward 52nd Ag Recognition Banquet will be held March 16 at the Ag Pavilion at the Seward County Fairgrounds. The evening social begins at 5:30 p.m. with wine by James Arthur Vineyard and cheese from Jisa's Farmstead Cheese. At 6:30 p.m. will be the prime rib dinner. Greg Peterson of the Peterson Brothers (YouTube celebrities) will be the evening entertainment. Honored as the Seward Kiwanis Outstanding Farm Family of the Year is Tomes Family Farm (Bill, Patty, Andrew, and Becky). Honored as the Seward County Agribusiness of the Year is the Lawrence and Della Beckler Family (Richard, Ruth and Kris Beckler). To purchase tickets, please call Shelly at (402) 643-3636.

2018 Group 2 versus Group 3 Soybean Maturity Summary (3 locations York-Seward Co.)

	Yield (bu/acre)†	Pods/plant	Nodes/plant
Group 2	70.2 A*	60.9 A	22.0 A
Group 3	71.5 A	61.0 A	21.2 B
Site (P>F)	<0.0001	0.1098	0.0040
Treatment (P>F)	0.1351	0.9868	0.0469
Site*Treatment	0.1074	0.3434	0.0017

*Values with the same letter are not significantly different at a 90% confidence level.
†Bushels per acre corrected to 13% moisture.

- Yields were similar for both maturity groups.
- Pods per plant were not different between the group 2 and group 3 soybean.
- Nodes per plant differed with the group 2 soybeans having 0.8 more nodes per plant than the group 3 soybeans.
- 16 reps. 3 locations York and Seward Counties. Planted May 2-7, 2018.

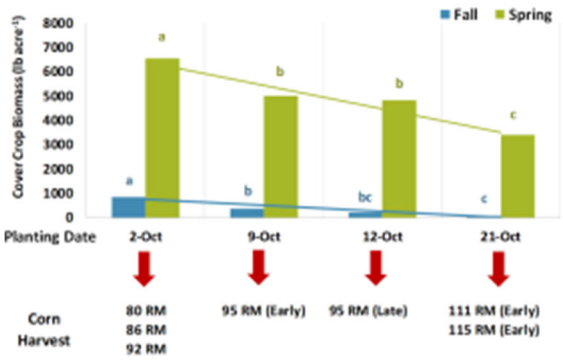
2019 Group 2 versus Group 3 Soybean Maturity Summary

Planting Dates and Varieties

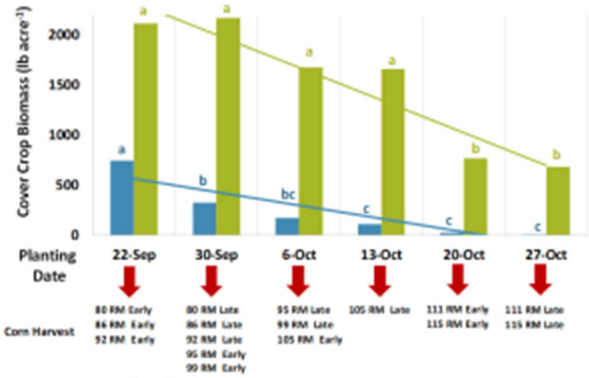
County	Planting Date	Varieties Tested	Yield (bu/ac)*
Seward Site 1 (3 reps)	4/22/19	Pioneer P21A28X Pioneer P31A22X	70 A 67 B
Seward Site 2 (4 reps)	5/2/19	Pioneer P24A99X Pioneer P27A17X Pioneer P31A22X Pioneer P33A53X	71 AB 73 A 70 BC 67 C
York (6 reps)	5/16/19	GH 2788X GH 3475X	71 A 72 A

*Values with the same letter are not significantly different at a 90% confidence level.

Cover Crop Biomass and Planting Date



SCAL: Fall biomass (12/8/2015)
Spring biomass (04/14/2016)



Fall biomass (11/15/2016)
Spring biomass (04/11/2017)

Jenny Rees 3-8-2020

This week is the anniversary of the 2019 Bomb Cyclone. Perhaps you've thought of that, perhaps you haven't. I think this event for Nebraskans will forever be etched in our minds. Some may be reflecting on last year's calving season being exceptionally difficult in February. Some lost additional animals to the blizzard/flooding in March. Some experienced flooding in our homes, fields, property. Some of us housed family/friends. Many of us found different routes with closed roads. Many of us helped others in the aftermath and/or donated money/supplies. Recovery is a process; a year later, recovery is still in process for many in our State.

Traumatic events, whether this one or others we experience in life, can conjure up a variety of feelings within us. Whether anger, sadness, fear, overwhelmed, relief, gratitude, or others, it's important to honestly acknowledge our feelings. Children may not always know how to express their feelings, but having them draw pictures and talk about them can help. Michelle Krehbiel, Extension Youth Development Specialist, shares that acknowledging feelings is part of the recovery process. She also shares a number of other things to consider in the recovery process. These include:

"Engage in healthy ways to cope with stress (exercising, reading, journaling); Being gentle with oneself (show yourself kindness, reflect on how far you've come); Accept kindness and help of others (allow others to help and show you their care and concern); Use your social support system (talk with trusted friends/family/members of faith community); and Help others (volunteering can aid healing)." You can read more at: https://disaster.unl.edu/disaster-anniversaries.

What Michelle shared regarding ways to aid in recovery is so true for me. Regardless of the traumatic or difficult things in life, it is important to acknowledge our feelings, talk with others, and find positive ways to manage the stress. I know managing stress and the feelings associated with negative stress aren't things that most in our farm community wish to talk about. Yet it's so important.

I shared some of this during pesticide trainings this winter as well. I know it's uncomfortable to talk about, yet we may not know what others are going through. I would encourage us to keep checking in with each other. If you're struggling, please reach out to someone; you do matter! If you wish to talk to someone anonymously, the Rural Response Hotline 800-464-0258 offers free counseling, financial, and legal services. The National Suicide Prevention Hotline is 800-273-8255. I'm so grateful for those who've trusted me with their stories/struggles and I'm so grateful for those who

have listened to and helped me! It takes courage, strength, and vulnerability to share and seek help; that is also being 'Nebraska Strong'.

ARC-IC: I haven't talked much about ARC-IC as an option for the farm bill. However, for those who had farms with 100% prevent plant or significant corn or soybean yield losses in 2019, it may be something to consider. I wrote a blog post sharing more at: https://jenreesources.com/2020/03/06/arc-ic-and-illinois-tool/.

Nebraska Soil Health/Cover Crop Conference Presentations: If you missed the Feb. 13th Soil Health/Cover Crop Conference or were unable to attend, the recorded presentations can be viewed at: https://go.unl.edu/n55x.

Nebraska Department of Ag (NDA) Pesticide Number: NDA no longer has an 800 or 877 phone number. If you received a post card for your $25 bill for pesticide training this year, it has an 877 number on the back. Please do not call that number as a scammer has picked it up. You can reach NDA at (402) 471-2351.

Last week I shared about how difficult events impact us. This past week, life was disrupted for many due to COVID-19. We watched numerous events being cancelled or restricted in numbers, some unprecedented. We've observed many reactions and have been inundated with information. There's times I've struggled to wrap my head around all this. Perhaps you have too? Ultimately, we're just not in control. However, we can seek to be wise in our actions and choices.

One of those choices is in the information we choose to believe. We'd recommend the CDC website and local health departments as trusted sources of information. As more is learned, information will continue to be updated and changed; we need to seek patience with this.
Another can be the choice to appreciate leaders making decisions and appreciate the difficulty surrounding those decisions. The consistent message from CDC, Med Center, and health departments on "flattening the curve" has led to many closings and cancellations of events. There's naturally many reactions to this. Those in leadership are in a difficult place with making these decisions as they're seeking the well-being of many people based on information that is continually changing.

Regarding Nebraska Extension's Response, the following is from Dean Chuck Hibberd, "Nebraska Extension is fully committed to the health and well-being of Nebraskans. In a disease situation like COVID-19, the principle of social distancing is one of the main methods that can be used to help reduce the spread of the disease.

Chancellor Ronnie Green has issued guidance that all UNL classes will move to 'remote' modes. To be consistent with that guidance, Nebraska Extension will, whenever possible, provide Extension programs remotely (video or teleconferencing) but will not provide in-person Extension programs, at least until May 9. We recognize that this practice may create some level of disruption relative to the important information we provide to Nebraskans."

Each office is working through the currently scheduled programs as to which will be cancelled, postponed, or taught remotely. There are already online options available for certification such as pesticide, chemigation, and dicamba. Please contact your local Extension Office with any questions regarding meetings or options to obtain certification. As of now, clientele are still welcome to come to the Extension office with your questions and we can still make field, lawn, garden visits. With the move to online information, there may be students and farmers who aren't able to access classes at home due to low internet connectivity. There may be an opportunity to utilize a

computer at your local Extension Office depending on room and computers available. Those details are in progress.

Ultimately, this is a difficulty we're all facing together in life. Please take care of yourselves and your families during this time!

CropWatch: This week's CropWatch at cropwatch.unl.edu has several articles regarding financial shocks and stress, the stages of recovery after a disaster, and emotional well-being after a disaster. Helpful as we get closer to planting and gardening season, soil temperature information is also available at: https://cropwatch.unl.edu/soiltemperature.

Happy Spring! With warmer weather forecasted the next few weeks, it's a great time to get outdoors! Raking leaves from lawns is a great activity this time of year for the whole family. You can also overseed bare areas of lawns right now. Don't remove leaves or mulch from landscape beds yet. Leaves and dead tops of plants protect the plants and keep them dormant as long as possible. Warm sunny weather causes plants to break dormancy early and they become more susceptible to cold temperatures. If you've already cleaned up landscape beds, be prepared to cover plants again in the event of cold weather. If you have frosted tulip/daffodil foliage like mine, just leave them be for now.

Even though grass is greening up, it's too early to apply fertilizers (ideally not till sometime in May). Mowing isn't needed until after the grass begins to grow and requires mowing. Then maintain a mowing height of 3 to 3.5″ season-long. Pre-emergence herbicides targeted at controlling crabgrass and other warm season annual weeds shouldn't be applied until soil temperatures consistently reach 50°F. It's still too early. Soil temps can be found at: https://cropwatch.unl.edu/tags/soil-temperature

Wild/Bur Cucumber: In wet seasons like last year, wild and bur cucumber were seen overtaking windbreaks. These are fast growing, warm season annual vines. They die each fall and come back from seed which germinate and begin growth typically in May. Vines can be cut at the base if there's only a few of them this spring. Many asked about chemical treatments last year. A pre-emergent control option for large shelterbelts is Simazine (Princep 4L) to kill weed seeds as they germinate. Don't apply more than 4 qt. Princep 4L per acre (4 lb. a.i./A) per calendar year. Don't apply more than twice per calendar year.

Renovating Windbreaks: Do you have a windbreak that has several dead or dying trees in it? Steve Karloff and Jay Seaton, District Foresters, shared to think 15-20 years down the road. What would be your goals for the windbreak (wind/snow protection; bloom time; fruit, nut, wood; wildlife/pollinator habitat, etc.)? Each situation will be unique, so these tips won't apply to each one. Determine whether you'd like to remove the entire existing windbreak or do a partial clearing over time. For those choosing a partial clearing, they suggest to consider leaving the north and west rows and removing the south and east side for sunlight, establishment, and protection purposes. Stumps can be left (unless Scotch or Austrian pine), or can be removed. A stump treatment listed in the UNL Weed Guide is 2 qts of low vol 2,4-D per 10 gallons of diesel. Apply to point of runoff. Don't use Tordon especially if you're cutting out and stump treating elm or hackberry trees that get intermingled in trees you wish to save as the Tordon can affect the roots of those trees too. If existing trees, such as pines, have been trimmed up due to dead branches but the remainder of the trees are ok, one could simply consider adding a row of shrubs to cut down on wind.

Also, think about diversifying species based on one's goals to ensure the windbreak isn't eliminated due to pest problems. That's something we've unfortunately had to deal with regarding Scotch and Austrian pines due to pine wilt. Conifer specie options include: cedar (most hardy), Ponderosa pine, and Norway and blue spruce. Shrubs include viburnums and hazelnuts; however, there are numerous species to consider depending on goals. Consider 3-5 rows as optimal with 1-2 rows as conifers, 1 row of hardwoods or tall conifers, and 1-2 rows of dense shrubs. However, there's not always that kind of room available and that may not fit one's goals. It's helpful to stagger plant the trees in each row and the gaps can be filled with shrubs or the shrubs can be planted in one row. Next week I'll share more on site preparation considerations.

As I write this, I'm setting outside on a beautiful sunshiny afternoon! It's been so cool to see families spending time outside together doing lawn work, playing, or eating. Some have commented it's nice not to be torn so many directions. There's way more people walking than I've seen in the past. And, several groups have found ways to help such as sewing masks for medical staff and donating various items. Those are just a few good things I'm observing right now! There's been a variety of questions Extension is receiving as a result of COVID-19, so this column will share resources to help.

Trusted Information: While the ability to access information can be good, the overabundance of misinformation can make this time challenging. When it comes to COVID-19, we recommend obtaining information from sources such as CDC, WHO, and locally the UNMC and health departments. As you see info from various sources, be aware photos and videos are being doctored and also check the date. Before sharing, right click on a link to see where the source is coming from. Does it end in '.gov, .edu, .com, .net, or .org'? Those extensions tend to be more trusted than other strange endings.

Food Preparation: There's been a renewed interest in baking bread, canning and freezing! Food.unl.edu and in particular, this website, https://food.unl.edu/article/family-food-fun-home has a number of resources based on specific questions. When prepping fruits and vegetables, it's really important that you do not use bleach, soaps, or hand sanitizing wipes on them! These products were not designed for food and can make you sick. Wash all produce thoroughly under only running water before eating, cutting or cooking. Your hands should be properly washed with soap and water when preparing food.

Youth Learning Activities: Finding yourself needing some fun activities for your kids during this time of being at home? A number of fun, hands-on learning activities are available at the https://4h.unl.edu/virtual-home-learning website! You will see activities for youth of all ages that provide both live, recorded, and self-paced learning.

Gardening: There's also been a renewed interest in growing gardens. A great resource developed by Gary Zoubek is the vegetable planting guide on when to plant found at: https://go.unl.edu/d7qk.

Windbreak Renovation: Continuing from last week, there's just too much information for me to cover adequately in my news column. Instead, we have several wonderful resources and wish to point you to them! We can also provide them for you if you don't have internet access. They contain drawings of windbreaks and photos regarding dos and don'ts.

- Windbreak Establishment: https://nfs.unl.edu/publications/downloads/ec1764.pdf

- Windbreak Renovation: http://extensionpublications.unl.edu/assets/pdf/ec1777.pdf
- Windbreaks and Wildlife: http://extensionpublications.unl.edu/assets/pdf/ec1771.pdf
- Windbreaks for Rural Living: https://nfs.unl.edu/documents/windbreakruralliving.pdf

Recertification Information: We've also received a number of questions regarding pesticide, chemigation, and dicamba certification. All in person classes have been cancelled and certification can be achieved online. We realize not everyone has access to computers or good connectivity. For private applicators who are in that situation, you can also call the pesticide office 402-472-1632 and they will mail you a lesson with test to complete instead. There is no option like that for chemigation or dicamba. We need to continue to be patient as information and rules keep changing. All certification information can be found at: https://pested.unl.edu/covid-19-information.

Youth/Family Support: Last week I shared this link for many hands-on learning activities: https://4h.unl.edu/virtual-home-learning. Two more resources that may be helpful for families right now: Helping Children Cope with stress and change: https://child.unl.edu/helping-children-cope and Reading for Resilience which helps children cope with storybooks: https://child.unl.edu/read4resilience.
Checking grain bins: A local farmer suggested to share a reminder to keep checking on grain with temps warming up and much grain in storage. It's also so important to be safe with grain handling. The following is from Dr. Ken Hellevang with North Dakota State University (full article at: https://www.ag.ndsu.edu/news/newsreleases/2020/march-23-2020/proper-spring-grain-drying-and-storage-critical). "The stored grain temperature increases in the spring not only due to an increase in outdoor temperatures but also due to solar heat gain on the bin. Solar energy produces more than twice as much heat gain on the south wall of a bin in spring as it does during the summer.

Hellevang recommends periodically running aeration fans to keep the grain temperature near or below 30 degrees until the grain is dried if it exceeds recommended storage moisture contents, and below 40 degrees as long as possible during spring and early summer if the grain is dry. Night air temperatures are near or below 30 degrees in April and 40 degrees in May. Soybean oil quality may be affected in less than four months if even 12% moisture soybeans are stored at 70 degrees.

Cover the fan when it is not operating to prevent warm air from blowing into the bin and heating the stored grain. Hellevang also recommends ventilating the top of the bin to remove the solar heat gain that warms the grain. Provide air inlets near the eaves and exhausts near the peak or use a roof exhaust fan… Grain temperature should be checked every two weeks during the spring and summer. Grain also should be examined for insect infestations. Check the moisture content of stored grain to determine if it needs to be dried. Remember to verify that the moisture content measured by the meter has been adjusted for grain temperature.

Corn needs to be dried to 13% to 14% moisture for summer storage to prevent spoilage. Soybeans should be dried to 11% to 12%, wheat to 13%. The allowable storage time for 13% moisture soybeans is less than 100 days at 70 degrees. Corn – For natural air-drying, assure that the fan's airflow rate is at least 1 cubic foot per minute per bushel (cfm/bu) and the initial corn moisture does not exceed 21%. Start the fan when the outdoor temperature averages about 40 degrees. Soybeans – Use an airflow rate of at least 1 cfm/bu to natural air-dry up to 15% to 16% moisture soybeans. Start the fan when the outdoor temperature averages about 40 degrees."

Burn down and pre-plant herbicide apps: Anticipating this week's nicer weather, I've also received several questions on burndown and pre-plant herbicide applications and weather impacts on control. Dr. Amit Jhala wrote two articles in this week's UNL CropWatch at https://cropwatch.unl.edu. Sunny days with temperatures above 40F for day and night, and even better when temps are climbing to the upper 50s and above provide better control than if it's cooler than 40F. Glyphosate works faster during sunny conditions when it is 60-75F and remains there a few hours. The articles also list rain-fast period and planting interval restrictions (as would the product labels). If you're looking for a general idea on potential residual activity of herbicides for overlapping residual, check out pages 23-24 of the 2020 Guide for Weed Management.

My colleague Dr. Nathan Mueller shared in his blog: http://croptechcafe.org/should-you-control-winter-annual-weeds-early/, "A 2007-2009 UNL study conducted in Lincoln and Clay Center found that in 5 of the 6 site-years (2 site per year for 3 years is 6 site-year) that not controlling winter annual weeds prior to corn and soybean planting resulted in greater than a 5% yield loss and a 10% loss in 4 of the 6 site years."

Happy Easter! This will truly be one to remember and hope you were able to still connect with family and friends in some way. For fruit trees and freeze temp. thresholds, please check out this resource: https://www.canr.msu.edu/uploads/files/PictureTableofFruitFreezeDamageThresholds.pdf. With planting having started for some or anticipated in the next few weeks, wanted to share some things I've been thinking about and some questions I've received.

As much as we have more physical distance in ag, it may be wise to have some plans in place in the event someone becomes sick with COVID-19 in your crop or livestock operation. Things such as disinfecting equipment and a sample 0-2 month plan with contact phone numbers are available in this week's CropWatch at cropwatch.unl.edu. There's also information on the CARES Act explaining the numbers. A series of Farm/Ranch COVID-19 free economic webinars are upcoming from UNL AgEcon. The first is this Thurs. April 16th at 3 p.m. CST. and features Nathan Kauffman, with the Federal Reserve Bank of Kansas City, presenting on COVID-19 Economic Developments and U.S. Agriculture. Details and recordings will be posted at https://go.unl.edu/manage2020.

Planting Considerations: It was nice to see equipment out in fields this past week! With tight economics, it's important to make wise decisions with the factors we can control during planting season; it sets the stage for the rest of the year. One factor to consider is planting windows instead of planting dates. While this week is mid-April, it may not provide the best opportunities for planting. Be sure to check soil temps and plant at proper depth, not mudding in seed, and plant as close to 50F soil temps as possible when there's a warming trend. Avoid planting when there's potential for a cold rain/cold snap within 48 hours for corn and at least 24 hours for soybean. It's also best to get seed in the ground 1.5-2" deep. For corn, this is critical in helping with nodal root establishment. For soybean, this aids in buffered soil moisture and temperature and helps delay emergence to aid against potential frost. Numerous research studies have proven the yield benefit to early planted soybean. Outside of the genetics, it's the top way to improve soybean yields. When we conducted these studies via on-farm research, we also had planting date X planting rate studies. Those studies showed no yield difference when planting 120K vs. 180K in April vs. May beans. All the planting date studies had an insecticide + fungicide seed treatment and I have no data without it. Our soybean planting rate studies did not always have a seed treatment and now 13 years of that data still shows 90-120K planted seeds being the most economical while 120K is what we'd recommend for yield.

In this week's CropWatch, I wrote an article with Jim Specht on soybean germination. The imbibition phase (water uptake) is the critical phase for potential seed chilling. Once the imbibition phase is complete, the soybean going through the osmotic phase

can tolerate 35-40F soil temps as long as soil is not saturated. The reason why we say at least 24 hours for soybean vs. 48 hours for corn (regarding cold snap/cold rain) is because the soybean seed imbibes water much faster than corn. You can prove this to yourself! Put a soybean seed and corn seed in water and watch what happens. When teaching youth ag literacy, I put soybean seeds in water to show them the seed coat, root and first leaves. Granted, we're not planting soybean into water, but it helps one see the difference in how the seeds imbibe water. Studies from journal articles showed the imbibition phase could complete in as little as 8-12 hours. However, it all depends on the beginning soil moisture, soil temperature, quality of the seed (no nicks in the seed coat, free of wrinkles from wet/dry cycles, higher seed moisture of 13-16%). There have also been experiments to suggest that soybean can be planted in 45F soil temps if soil moisture is stable and no cold rains occur during the imbibition period.

I've also received a few questions regarding rye rapidly growing and what to do. I have no research-only observation and talking to others. I'm still a fan of planting green. However, have noticed difficulty with residual herbicides applied to tall rye (above 12") and getting down to the canopy, thus weed escapes. So, a few thoughts. If you're concerned about the rye, you can always terminate a few weeks before planting. Otherwise, consider splitting your residual with half on when you kill rye after planting with other half later or putting on your residual in a second pass after killing rye. Would welcome others' thoughts/experiences of what's working for you!

Dicamba Webinar: The National Ag Law Center is hosting a free webinar titled 'The Deal with Dicamba: An Overview of Dicamba-Related Litigation' on April 15th at 11 a.m. CST. It will discuss various lawsuits filed in response to crop damage allegedly caused by herbicides containing dicamba. Details: https://bit.ly/3e2LvGX.

Freeze Events: With last week's cold spell, it's hard to know exactly how it will impact flowering trees, shrubs, and fruit trees. It really depends on the bud/flowering stage at the time of the freezing temperatures. I've also received a number of questions regarding wheat and how bad it looks due to frost right now. In some cases, the injury may look worse due to leaf burn from fertilizer and/or fertilizer + herbicide applications shortly before the freeze events. We need to be patient and allow time with anticipated warmer temps to watch recovery. Ultimately, wheat in the tillering stage is quite tolerant of frost with minimal yield impact expected down to 12F for 2 hours. Once the wheat begins jointing (growing point moves above ground), temperatures like what we experienced of 24F for 2 hours can moderately to significantly impact yield. While upper leaves may be burned off from frost, there's actually a micro-climate effect within the wheat canopy which is warmer closer to the ground (depending on the wheat stand). If the soil had quite a bit of moisture prior to freeze events, it also helps buffer the soil temperatures, reducing freeze injury. What I look at: is the wheat in tillering or jointing stage? Do you notice any splitting of tillers at the base of the plants? If the wheat is jointing, split the stem to look at the growing point (I use a box cutter for wheat this small). Is the growing point white and healthy or yellow/brown and mushy? Wheat can tolerate much, but I can also appreciate how many of you are trying to make decisions. You can also check out the freeze to wheat article in CropWatch and more localized to our area, Nathan Mueller's blog: http://croptechcafe.org/multiple-spring-freeze-events-impact-winter-wheat/.

Regarding alfalfa, it's another 'wait and see' situation. Please see this week's CropWatch

Check the upper-most cluster of buds to determine any affects. This is where the growing point is located. If this cluster is froze off, look at axillary buds along main stem and new buds from crown for new growth.

at cropwatch.unl.edu for more info. The more growth actually results in potential for increased damage and it also depends on the air temperature and duration of freeze. New seedlings can be pretty resilient due to being close to warm soil, protected by companion crops like oats, or due to natural seedling tolerance. Damage can range from upper stems and leaves wilting and turning brown to a hard freeze causing plants to completely wilt down and fall over. What I watch for are new buds…buds that are within the canopy that weren't exposed to frost, new axillary buds that develop from upper stems that have frozen off, and new crown buds. In 2007, some chose to remove the dead plant material from the plants to stimulate growth. Dr. Bruce Anderson found the plants reacted to the killed tops from frost the same as they would from a normal cutting. Thus, we'd recommend observing how the alfalfa responds and ultimately doing nothing for the time being. Cutting alfalfa for hay with only 6" of growth in most fields wouldn't be practical and can weaken plants. Anticipate first cutting to be delayed as a result of these multiple freeze events.

Planting: While you might not share this sentiment, I was grateful last week was so clearly not the right conditions to plant for this area of the State! It seems extra tempting when there's a couple of really nice days prior to a cold snap. Outside of 'is it ok to plant' or 'should I plant corn or beans', my main planting question is regarding soybean seeding rates. We now have 13 years of on-farm research from this part of the State in 15" (planted not drilled) and 30" rows in silt loam/clay loam soils showing no yield benefit to planting greater than 120,000 seeds/acre. These studies included a seed treatment when soybean was planted in late April/early May. Otherwise, no yield differences were achieved from 120K to 180K regardless if seed treatment was used. We share more in this week's CropWatch. With sudden death syndrome being bad in 2019, I've also received questions on seed treatments such as Ilevo® or Saltro® for it. I will share the research next week. Bottom line: economically I would only consider this if you have a history of SDS. Even so, environmental conditions don't always favor SDS. You could consider using SDS treated seed along areas with a creek or intermittent stream running through the field or lower areas of the field where water ponds and using non-SDS treated seed in the rest of the field. Early planting doesn't automatically favor SDS. Water during flowering and levels of soybean cyst nematode can favor it. Will share the data next week. And, a reminder to check your seed tag regarding proper PPE to wear when handling any treated seed. Here's wishing you a safe planting season!

Crabgrass Preventer: Warm season annual grasses such as crabgrass and foxtail germinate when soil temperature at the 0-2" depth is consistently between 60-70F. Thus, we often say that reasonably, crabgrass preventer can be applied when soil temps at the 0-2" depth are consistently around 55F. Our CropWatch soil temperatures are measured at a 0-4" depth (https://cropwatch.unl.edu/soiltemperature). Based on them, it may be time to apply or at least getting close in the York area. If you'd like to determine the soil temp of your site locally, you can use a temperature probe or a meat thermometer (that you won't use for cooking). Make a mark at 2" from the base and it will give you an idea. Remember to blow off or sweep lawn clippings and fertilizer from the sidewalks back onto lawns!

Moths: Our Extension entomologists are also starting to see black cutworm, variegated cutworm, and true armyworm moths in pheromone traps throughout Nebraska. You can see pictures and the counts (which will be updated) in CropWatch at https://go.unl.edu/jdd3.

Planting Green: Been receiving a number of questions throughout the state on this. We wrote a planting green article for CropWatch this week https://go.unl.edu/ysyi. We have minimal research but in the article, we explain more regarding herbicide considerations, what the research shows regarding allelopathy, and considerations based on growers' and our observations and experiences. We haven't found any wheat stem maggot flies in rye yet in Clay, York, or Seward counties. The flies we're getting questions on are small brown flies and also seed corn maggot flies. Having an insecticide seed treatment on corn and beans will help against seed corn maggots. More info. from Iowa State: https://crops.extension.iastate.edu/cropnews/2020/04/seedcorn-maggots-flying-iowa

Seed Treatments for SDS: Continuing from last week, the summary is that ILeVO is an effective seed treatment in fields with high sudden death syndrome (SDS) pressure. However, not all areas of the field have the same amount of pressure, making it difficult to justify the cost field-wide. Three Nebraska on-farm research studies were conducted in soybeans in 2017 with a multi-hybrid planter. Soybeans with a farmer's choice base seed treatment (check) were compared to the base seed treatment plus ILeVO. The goal was to look at site-specific application of ILeVO to reduce input costs while still effectively

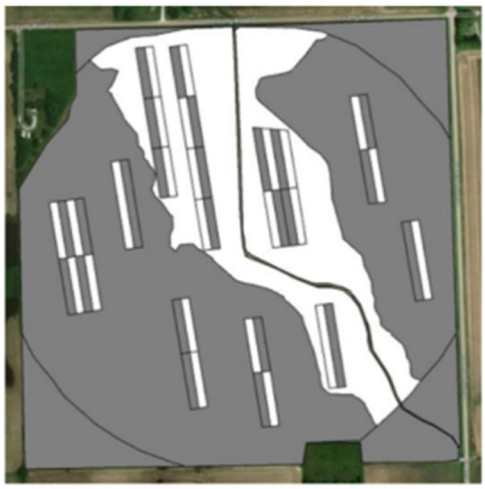


Figure 1. Zone prescription for soybean treated with standard treatment (dark grey) and ILeVO (light grey).

managing sudden death syndrome (SDS) pressure. Management zones were created using historical yield maps to show which zones were conducive to SDS pressure (SDS zone) and which weren't (standard zone). Check strips and ILeVO treated strips were compared in both zones. Two of the locations showed no difference between the base treatment and base treatment + ILeVO in the SDS or the standard zones. At one location, SDS was not present in the field. In the other, the ILeVO treatment had significantly lower disease levels than the standard treatment and overall disease incidence was considered low. At the third site, the standard + ILeVO treatment yielded higher than the standard treated seed in the SDS zone. There was no difference in treatments in the standard zone. The SDS zone was around 50 acres and along a creek that ran through the field (Figure 1). Additional ILeVO studies were conducted in 2015-2016 via on-farm research in Dodge, Clay, and Nemaha Counties where an untreated check, base seed treatment, and base + ILeVO were compared. SDS incidence ratings were taken in addition to soybean cyst nematode samples. In two of the six fields, there was a yield difference between the base + ILeVO and other treatments, even though disease incidence was low. Two sites also had a significant decrease in SDS pressure with the ILeVO treatment, but it didn't correlate in increased yield. These studies found ILeVO to be effective in reducing SDS pressure, but yield response and profitability depends on disease development and how widespread in the field. SDS pressure was found to be higher in frequently ponded soils or areas of the field with creeks or intermittent streams. We have no on-farm research data on Saltro although we have a York Co. study on it this year.

Planting season has rolled on this year with large planting progress made in short time! I'm grateful for the general warming trend with no cold snaps unlike so many recent years. Like many of you, am also praying for rain. For pre- herbicides, it is important to have 0.5-0.75" of moisture within a week of applying them for activation. That was a topic of concern I was hearing from both growers and ag industry last week, thus why it was recommended that some start pivots. I'm starting to see grass and broadleaf weeds coming through on ground that didn't receive moisture to get the herbicide activated. Corn and soybean are also emerging fairly quickly with these warmer temps. The latest in pheromone trapping cutworm counts across the State can be found at: https://go.unl.edu/jdd3.

Some have asked about interseeding covers into early vegetative corn or soybean. Perhaps the three biggest things we've learned are to make sure the seed is in the ground vs. broadcast, plan to seed between V2-V5, and think about your herbicide program before trying this. An easy to understand site for herbicide impacts to covers is at: http://interseedingcovers.com/herbicide-options/. That whole website holds good information. There's an Upper Big Blue NRD soil health project with partners of The Nature Conservancy, NRCS, and Extension where we will have 6 on-farm research studies and several other demos of interseeding this year. Growers are looking at impacts of different mixes, corn populations, row direction, and number of rows interseeded (1 vs. 3) between the corn rows. Looking forward to these additional studies to add to the research base which we talked about in this CropWatch article last year: https://go.unl.edu/4nh7.

My prayers go out to livestock and poultry producers; I just can't imagine. There are a number of resources at https://animalscience.unl.edu/swine for emergency depopulation of livestock facilities. Such a hard time all around in ag. Free farm finance and legal clinics for May can be found at: https://go.unl.edu/joos. Nebraska Farm Hotline/Rural Response Hotline: 800-464-0258.

Evergreen Tree Diseases: The wet springs the past several years have led to an increase of needle blights. Spring is the time to be spraying trees with preventive fungicides with timing depending on the disease. None of the options I list are exhaustive and not meant as endorsement. For windbreak situations of cedars and pines, some ag retailers have carried Tenn-Cop 5E or Camelot. For home-owner use for trees in landscapes, I will share what I've seen sold in our local stores. It's important to read the product label to ensure it's safe to use on the specific plant/tree you wish to treat as some copper products can harm plants. In Austrian and Ponderosa pines, tip blight (where tips die) and dothistroma needle blight (where needles turn brown and die) can be prevented with fungicide applications. Tip blight is best prevented in late April-early May with active ingredients of Propiconazole (found in Fertiloam liquid systemic fungicide), Copper Salts of Fatty & Rosin Acids (sometimes listed as copper

soap such as Bonide liquid copper fungicide and other liquid copper formulations), or Bordeaux mixture. Dothistroma needle blight can be prevented in mid-May and a second application in mid-June with Copper salts of fatty and rosin acids and Bordeaux mixture. In spruces, needle cast can cause the yellow to reddish brown color of needles in the fall that remain that way in the spring. Fungicide should be applied when the new growth is half grown with a second application 3-4 weeks later. If your tree is severely infected, it may take applications like this for 2-3 years in a row. Chlorothalonil (found in Daconil and Fung-onil) is commonly recommended. Fungicides containing azoxystrobin, mancozeb, propiconazole, copper salts of fatty acids, and copper hydroxide are also effective at controlling this disease if the product is labeled for use on spruce. You can learn more about evergreen diseases, how to identify them, and more products for management at: https://go.unl.edu/rbcc.

It's too early for bagworm control. I'll share more on what to look for next week.

The anticipated cool temps and potential for frost damage were on the minds of several towards the end of last week. The warm spring planting conditions allowed for more soybean emerged in Nebraska and the mid-west than I've ever seen before at this time-frame. From UNL small plot and on-farm research, its warm springs such as this that have provided the larger yield increases when soybean was planted early. As I'm writing this, low temperatures varied throughout the State Saturday night with more anticipated lows tonight. What should one look for in regards to frost/freeze recovery? First, we'd say to wait 3-5 days post frost to look for signs of regrowth. It may take up to 7 days depending on weather conditions following a frost event. I've provided photos in my blog at jenreesources.com to aid in what to watch for and will continue to add photos. Have learned a lot by flagging plants at different growth stages and taking pictures of their recovery. Would encourage you to do the same. One thing we're always provided is the opportunity to learn!

Survival partly depends on how low temperatures got. Air temperatures of 28°F or less for at least two hours may result in damaged tissue and even death if the growing point is affected in corn and soybean. Air temperatures around 32°F typically don't result in freeze of plant tissues. Why is this? Plant cells have solutes in the cytoplasm and just outside the cell membrane that act like a modest anti-freeze. Thus, the actual tissue temperature has to reach 28-30°F for frost damage to occur.

It also depends on stage of growth. For emerged corn, the growing point is still in the ground. Frost damage can appear as leaves discoloring and wilting due to plant cells rupturing. Eventually they will turn brown and slough off if new growth pushes through. It will be important to look at the growing point and make sure it's white/yellow and firm and not discolored and soft. Warmer temps after frost event will help in reducing disease impacts from bacterial pathogens.

Soybeans that are just emerging with the hypocotyl hook exposed at or just above ground level, can be the most at risk for damage. The hypotcotyl hook is the area of the stem below the soybean cotyledon. Anything that impacts it will result in seedling death. Watch for plants that have soft, mushy, or pinched hypocotyls. These are situations where soybean seedlings tend to die. I've seen survival in seedlings with light scarring on the hypocotyl and cotyledons where there's no pinching of the hypocotyl. Cotyledons just at the soil surface or above often will survive due to their high water content. They may have some light scarring yet they tend to survive. Look for the plumule (first true leaves from the shoot) within 7 days post-frost to ensure the growing point wasn't injured. If unifoliolates were exposed, I've seen mixed results (depending on air temperatures and location in the field). Sometimes the unifoliolates will wilt and die but if the auxiliary buds by cotyledons survive, new growth will occur.

For wheat, look for any splitting of the stems near the base of plants. Make sure the growing point looks healthy. Damage to wheat in jointing stage occur at 24°F for 2 hours and 28°F for 2 hours at boot. Impacts to wheat later on can also be seen at heading in white awns and spikelets and heads sometimes having difficulty to emerge from the boot (or being twisted). This CropWatch article shares more.

Low areas of fields, fields with coarser soil texture, and lower soil moisture contents can result in more frost damage. Fields receiving rains and wind prior to these cold temperatures may have aided in some protection. There's often things I can't explain when assessing frost damage. Sometimes a couple plants in a row will succumb while others around them at the same growth stage are fine. There's just microclimate things that can't always be explained. Here's hoping most fields in the area are ok!

It's also time to scout for alfalfa weevils and you can see more information and table of thresholds depending on growth stage in this CropWatch article: https://go.unl.edu/a7jw.

Rhubarb and Frost: If rhubarb leaves are not damaged too much and the stalks remain firm, it is still safe to eat. If the leaves are severely damaged or the stalks become soft or mushy, do not eat these stalks. Remove and discard them. New stalks can be harvested and eaten.

These are pics I took in 2019. The soybeans in the left photo had cotyledons just at the soil surface at time of frost. They survived. The upper right-hand photo shows a seedling with light scarring on the hypocotyl and cotyledons. However, the hypocotyl wasn't pinched and you can see the plumule between the cotyledons is alive and healthy. The lower right-hand photo shows the hypocotyl was damaged on these seedlings causing pinching. Thus these seedlings didn't survive.

Congratulations to all who graduated from college or high school the past few weeks! You've experienced much challenge, change, and loss. Good can come from difficulty! May this experience better equip you for the future! Also wish to congratulate and welcome three new team members to the York and Seward county offices! Tanya Crawford will begin as the 4-H Educator in York County May 18. Emily Hemphill began as the 4-H Assistant in Seward County May 1. Kara Kohel will begin as the new Learning Child Educator in Seward County June 1.

Crop Update: Grateful for the recovery experienced on many frost/freeze damaged crops throughout the State! The worst damage I saw on corn in this part of the State resulted in exposed leaf tissue dying with new growth coming out of the ground within 5 days. Soybeans fared well in the area to which I'm extra grateful with the large number of early planted soybean acres this year!

There's been some talk about uneven emergence in some fields. Most really aren't too bad, just worse in fields that were worked or extra cloddy. And most often, seedlings are still coming when digging in the gaps. They're just behind most likely due to depth or soil moisture variation. You may also want to check out an article on Early Season Insects in this week's CropWatch at cropwatch.unl.edu. Also seeing and hearing of ammonia burn to roots of corn seedlings, mostly in strip till situations, due to the dry conditions. An inch or two of rainfall or irrigation can help dilute the salt concentration in the root zone and allow for growth of roots to resume. I realize this doesn't help those without irrigation and we keep praying for rain. In a 2009 trial at UNL South Central Ag Lab near Clay Center, Dr. Richard Ferguson documented those plants being shorter in stature and appearing to have a purple color early in the growing season before later recovering.

For those asking about replanting, we have two articles to aid in decision making in this week's CropWatch at cropwatch.unl.edu. I haven't seen situations warranting this around here yet. It takes quite a stand loss. For example in corn, if there are 25,000 plants per acre and the field was initially planted on April 27 and you cannot replant until May 20, it would be better to leave your present stand, which has 95% yield potential, than to replant on May 20 when the yield potential for a stand of 30,000 would be 86%. Make sure you consider replant costs in your decision. Next week I'll address thoughts on post applications to crops.

Lawn Update: As lawns grow, it's important to not remove more than 1/3 of the height. During the spring and fall, cool season grasses such as bluegrass and fescue are also building their root reserves. Removing too much growth at once or continually mowing shorter than 3" puts more stress on the plant and doesn't allow for as deep of roots for when the summer heat comes. UNL turf research found that lawns actually grow faster when they are scalped than when they are mowed at a taller height. So, if

your lawn gets away from you like mine did last week, do your lawn a favor and raise your mowing height that one time and then go back to mowing at 3".

Youth Learning Opportunities: There are a number of virtual and self-paced fun, learning opportunities for youth and families upcoming in the month of June! Many of the activities that were provided during the school year will be continuing with new sessions. You can check them all out at: https://4h.unl.edu/virtual-home-learning.

Building Better Babysitters Virtual Training: Additional childcare may be needed this summer. Babysitting is a big responsibility and it's not for everyone. Youth ages 11 and up who are interested in building skills as a babysitter may be interested Nebraska Extension's state-wide virtual babysitting training. Register by going to https://cvent.me/d4gWeD.

Adding some pics on frost recovery:

Same growth stage but showing the environmental variability associated with frost damage.

Seedling affected by frost on 3/9/20. Leaves watersoaked and wilted two days later. Splitting open stem reveals a healthy growing point (not brown or mushy) and green, healthy tissue below the wilted tissue. Thus, plants like these will likely recover, but it's best to continue watching them for regrowth.

Same field 5 days later. A little sunshine and plants are recovering nicely! The frost-damaged tissue is now brown, dead and will typically slough off with the wind. Sometimes, it wraps around the seedling making it more difficult for new growth to push through at first, but it will.

Emerged beans were essentially unaffected in anything I looked at for this part of the State and are looking great now!

This Memorial Day will be different not gathering to honor those who have gone before us. Grateful for those who paid the ultimate sacrifice for our freedom! May we still take time to honor them.

Crop Update: Several weeks ago we were seeing large numbers of seed corn maggot flies. This past week have seen and heard reports of seed corn maggots attacking soybean seed/seedlings. Typically insecticide seed treatments provide protection; the exception is with high densities such as what we're experiencing this year. They're attracted to cover crop fields, fields with manure application, and tillage. There's several generations but we shouldn't have to worry about it again unless we experience replant situations. Fly emergence for the first three generations occurs when 354, 1080, and 1800 growing degree days have accumulated, respectively since January 1. There's an updated article in CropWatch this week sharing more. They can reduce stands, but soybeans can withstand a great deal of stand loss. We recommend to leave a stand of at least 50,000 plants per acre with fair uniformity. That goes for anything that can reduce a soybean stand such as crusting, hail, herbicide damage, insects, disease, etc. We have research showing that the early planting will out-yield a replant. I realize there's other considerations such as weed control and Dr. Shawn Conley at Wisconsin suggested putting the dollars into weed control instead of replant. They only found 2 bu/ac yield difference in stands of 50,000 plants/ac vs. optimal stands of 100,000-135,000 plants/ac. If you do consider replanting for any reason, we'd recommend going in next to the old stand with a similar maturity and proving it to yourself. Here's a protocol if you'd like to test it yourself: https://go.unl.edu/wq24.

Post-Herbicide Applications: At pesticide training, I talk about the importance of overlapping residual. Ag industry partners talk about this too. It means aiming to apply the post-herbicide before the residual from the pre wears out. Many of us have seen fields that are clean one week with a flush of weeds the next. Sometimes it then rains, delaying post-applications. Dry conditions created difficulty getting pre-herbicides activated, allowing some weed escapes. Depending on the product, soil conditions, weather conditions, Dr. Stevan Knezevic shared that pre-products can last anywhere from 4-8 weeks. Page 24 of the 2020 Weed Guide also provides guidance on potential residual (also known as persistence in the soil) of herbicides if you'd like to check that out.

Bagworms: I haven't spent time looking at evergreen trees to see if bagworm larvae

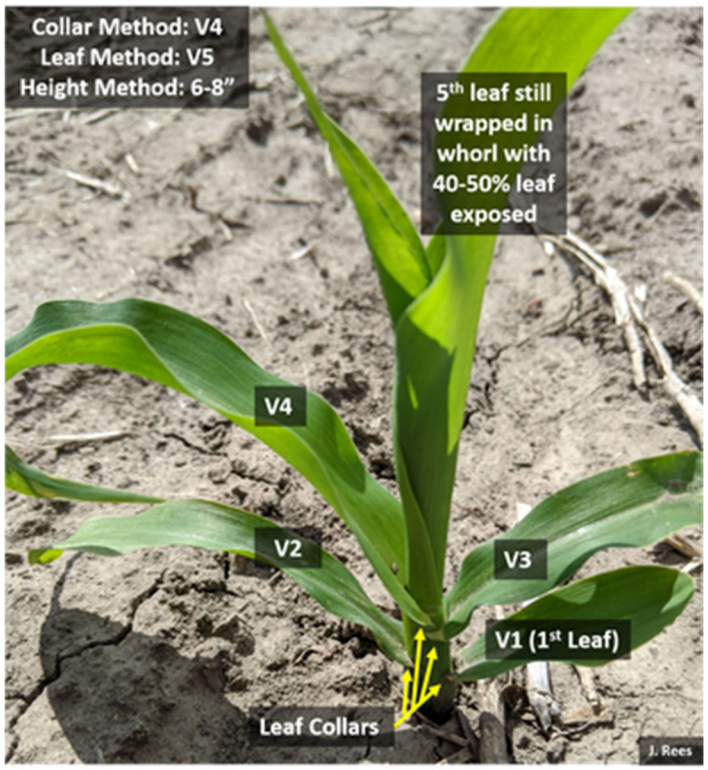
Bush with a severe bagworm infestation in 2018. Hard to see the bags in the brown part, but you can see them to the right in the green foliage.

have emerged yet or not. If you have last year's bags on your trees that are sealed (don't have an open hole at the top), you can pick off some bags, place them in a ziplock bag, and place it outdoors on the south side of your house. When you see larvae emerge, it's a good indication to start checking your trees in the next weeks. Each bag can hold 500-1000 eggs. The larvae are really small and hard to see. Stand still and watch the tree. If bagworm larvae are present, you will see very tiny movements as they begin the process of building new bags. I have pictures and a video at: https://jenreesources.com/2015/06/27/bagworms-in-evergreens/. Egg hatch is from mid-May to early June, depending on the year. Some caterpillar larvae remain on the same trees containing the bags from which they hatched. Others are blown by the wind to area trees allowing for new infestations to occur. For homeowners with small trees or only a few trees, bags can be picked from trees now and drown in soapy water or burned. In the summer, they can be squished, drowned, or burned. I have a great memory of visiting Grandma in the care center with my family. Grandma was concerned about the spruce in the courtyard. Seeing bagworms, I turned it into a science lesson for my nieces/nephews. They had a blast making quick work of picking off bags and squishing them to the delight/disgust of the residents watching (and their parents) ☺ That's not feasible for most situations though. We recommend waiting to treat trees until bags reach around 1/2" in size to ensure egg hatch is complete. Good coverage is needed when treating trees. With ground sprayers, we say to spray to the point of runoff. Bt products are effective early on. Most often I recommend a permethrin or bifenthrin product. Aerial application may also be an option for windbreaks. For more info., please see: https://go.unl.edu/rgju.

Corn: I really enjoy this stage when corn is just tall enough to give the fields a green cast when looking at them from an angle. There continues to be discussion and questions about uneven corn emergence. Like many, I wasn't anticipating seeing uneven emergence after having great soil conditions (right moisture and a warming trend of temps) for planting. Variations in soil temp, depth, and moisture can delay germination from a few days or longer. Residue blowing back over the row explained much difference in emergence this year. I wish I would've noted the days on my calendar, but there's a couple warm days in late April during planting where it just seemed like the moisture rapidly left the soil surface. And, in conversations it seems as if others noticed that too. So I think moisture around seed was another factor as was fertilizer burn in some situations. Purdue University has some research which showed yield reductions of 6-9% for plants emerging 1.5 weeks later than a uniformly emerging stand. They also found yields of uneven stands to be similar to planting the stand 1.5 weeks later.

If you're side-dressing nitrogen and interested in testing different rates, we have some on-farm research protocols available at: https://go.unl.edu/tv63.

With warmer temperatures anticipated, corn will grow rapidly. This week we wrote an article in CropWatch regarding proper growth staging of plants; this will be extra critical once we hit V6+. Remember to use the leaf collar method and this is how I explain it. A collar develops at the leaf base near the stalk after each leaf fully expands. Think about collars like the collar on a button-down shirt. The collar flares slightly at one's neck, just as a true exposed leaf collar flares at the base of the leaf at the stem. Start counting leaves at the base of the plant with the smallest rounded-tip leaf with a collar as #1. From there count every leaf with a true collar. Leaves that are still wrapped in the whorl around the main stem without exposed leaf collars are not counted. I recommend taking a picture inside the end rows to document the growth stage of your field prior to the post-application of herbicide. Next week I will share my experiences with proper growth staging to avoid ear abnormalities. Also be aware of potential off-target movement with dicamba products and higher temperatures.



Soybean: In most cases, soybeans are looking really good. There have been situations this week with herbicide damage to beans that may have been cracking when irrigation or rainfall event occurred allowing some pre-emergent herbicide to enter the row. Pre- herbicides can also rain splash onto cotyledons and first leaves making them look bad, but usually doesn't kill them unless the weather stays cold and wet. If the plants end up severely pinched below the cotyledons, they won't survive. Otherwise, keep watching them as they may continue to grow (warm weather will allow them to grow and metabolize the chemical better). I think we're also possibly seeing some environmental effects from the cold conditions that occurred after planting/emergence when we can't always explain the appearance of injury on the plant by herbicide. The 'halo' effect of ILeVo is another thing that is being mistaken as herbicide and/or environmental injury but it doesn't last past the cotyledon stage.
Coronavirus Food Assistance Program for Crop Producers Webinar: There will be a webinar on June 4th at Noon (CST) to learn more. Registration is required at the following site: https://go.unl.edu/wj0e. In the meantime, Dr. Brad Lubben has put together an article with more information at: https://go.unl.edu/h3aq. All webinars are also archived at that same web link.
Irrigation Scheduling Equipment: It's also a great time to get irrigation scheduling equipment installed! I decided to make a quick video instead of writing; it can be found at: https://youtu.be/4r5gn2pvvB4.

Sensors prepped and ready for 2020 on-farm research projects!

Gardeners: For all of you gardening for the first time, congrats! Some tips: keep soil moisture even by ensuring plants have around 1" of water/week (Best to water at base of plant; if use sprinkler, do so in early morning). Mulching gardens with leaves, grass clippings, straw, newspapers aids in conserving moisture, reducing weeds, and maintaining stable soil temperature. If herbicides were added to grass clippings, make sure to read the label for if/when they can be applied to a garden. In general, many labels will say grass clippings are safe after 4 mowings.

The York and Seward County Extension offices are now open to the public. We ask that visitors please wear a mask when entering the buildings.

This past week was interesting to say the least! For those who experienced hail and/or wind damage, the following site provides guidance via information and videos for early-season hail damage: https://go.unl.edu/u5ns. We do say to be patient and wait 4-7 days to determine recovery and warm temps can help. For home owners, there was also a great deal of tree and plant damage. Make clean pruning cuts and don't treat/paint over cuts, don't add fertilizer, and leave as much leaf area as possible.

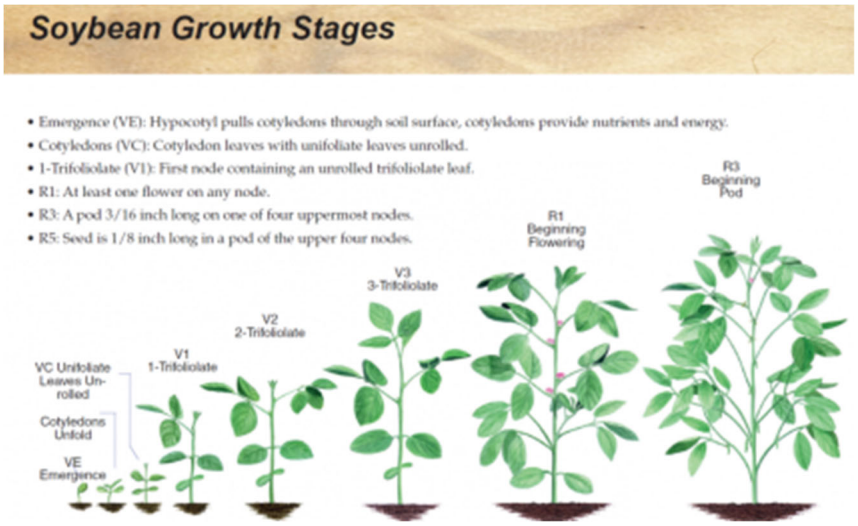
Most of this week's questions centered around soybeans. The past two weeks, the

Sensitive soybean variety to PPO-inhibitor herbicide. Notice stunting, chlorotic appearance, leaf abnormalities.

majority of my soybean questions have been around emergence problems. Two common things I'm finding: many were planted around May 18-19 and they have a great deal of PPO-inhibitor injury to hypocotyls. In touching base regarding what we were seeing, John Mick with Pioneer shared that some soybean varieties are more sensitive to PPO-inhibitor injury. 'Sensitive varieties' means later on plants appear stunted and chlorotic in appearance. These plants also tend to have wavy leaves with some leaf cupping, which may have been mis-diagnosed as off-target growth regulator injury in the past. I've seen those symptoms for several years but just told people the plant was working to metabolize the pre-emergence herbicide and it was most likely taking longer due to the environmental conditions at the time. So, in a way, it was correct, but now we can all be more aware there are sensitive varieties to PPO-inhibitors. Thus, it's important to talk with your seed dealer/agronomist about their variety ratings (if they exist). If planting a sensitive variety, it's better to apply your pre-emergence application a week or so before planting to reduce the herbicide load on

that germinating seedling. I've put a lot more [explanation and pictures in this CropWatch article] and the pics also on my blog.

The pre-emergence products did a great job for the most part. Thus, a common



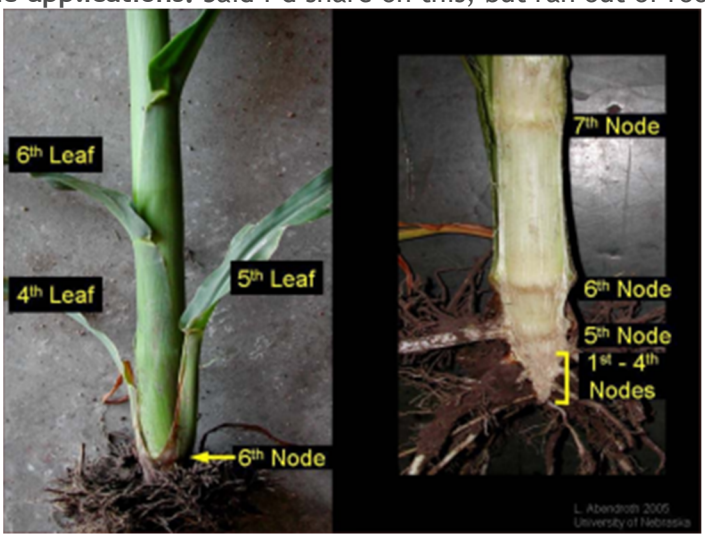
Source: UNL Guide for Weed, Insect, and Disease Management.

question/discussion this week was around spraying essentially 'contact' herbicides in the absence of weeds. Could appreciate those thoughts. Regardless if the farmer wanted to apply glyphosate, liberty, or dicamba, we did talk about the importance of spraying earlier than one thinks is necessary and the need for residual products. I was going to share more about that here, but Amit Jhala wrote a very good article in this week's CropWatch at: https://go.unl.edu/y3r8. He explains which products are options to consider at this point depending on if you have emerged weeds or not, what growth stage they can be applied, and some label restrictions. There's a picture on my blog for soybean development stages. The cotyledons are not counted. The unifoliolates are counted as V1 only when the trifoliolate leaf edges above them are no longer touching. This continues up the plant. New nodes with leaves will be produced every 3.75 days. Note that early planted soybean may flower soon; they don't have to wait till June 21 (longest day of year) to do so.

Because of that, for those near the 45 day window for post-dicamba application to soybean, be sure to check fields as the label states 45 days after planting or R1 (at least 1 flower on any node), whichever occurs first. Follow label instructions and I'm also recommending documenting development stage via picture/video on all post- applications to crops this year. Regarding use of soybean dicamba, Nebraska Dept. of Ag Director Steve Wellman stated, "The Nebraska Department of Agriculture has not issued a stop sale order and will enforce the sales and applications of these products as they are currently registered in Nebraska."

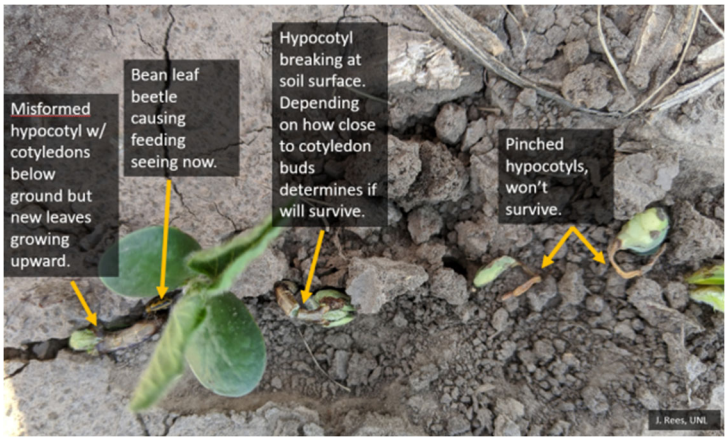
Thistle caterpillars are being observed in some early planted soybean fields. Threshold for pre-flowering is 30% defoliation.

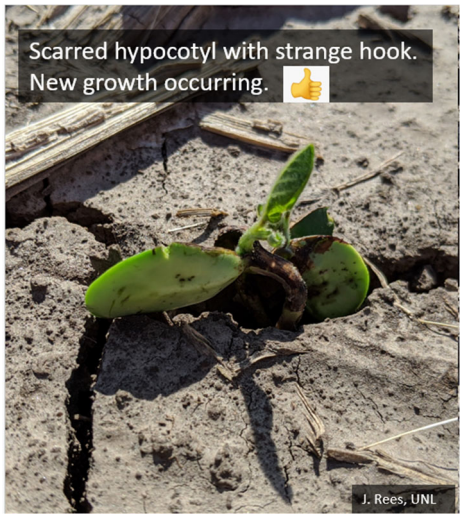
Corn post-herbicide applications: Said I'd share on this, but ran out of room; I



Leaf collar correlating to split stalk method. Courtesy L. Abendroth, Iowa State University.

wrote a CropWatch article here: https://go.unl.edu/jz9v. Recommendations for any applications this year: Go into the field (beyond the endrows) and document growth stage of the plant via picture/video using the leaf collar method and/or split stalks (once reach V6 due to leaves sloughing off). Do this before any applications are made to the field. If the growth stage isn't correct for the application, don't spray. How I explain the split-stalk method of development staging: The growing point emerges above ground around V6. Dig a plant without breaking the stalk. Carefully split the stalk down the middle through the root ball. At the base of the stalk is an inverted triangle that contains Nodes 1-4 (but they can't be differentiated). Next look for the white area above that (about ½-3/4") followed by the next visible band. The white area is the internode with the band being the 5th node (V5). There's about an inch of internode between V5 and V6. After that, internode length is more dependent upon air temperature instead of soil temperature. Every leaf is attached to a node. Pull off the fully collared leaves and follow them back to where they break off at a specific node. Count the nodes on the stalk to the highest collared leaf that breaks off at a node to determine the growth stage.





My concern with some of these plants is them becoming brittle and potentially breaking off at some point in the season.

There's been mis-diagnosis/confusion about PPO-inhibitor injury vs. ILeVo 'halo' effect which shows the seed treatment is working. ILeVo causes no burning to the hypocotyls and the effect isn't seen on leaves other than cotyledons.

Also been confusion between PPO-inhibitor injury and Phytophthora. Phytophthora will have discolored root and lesion from soil line upward. PPO-inhibitor won't cause discoloration/rotting of the root. We have seen burning of stem near soil line due to rain/irrigation splash from PPO-inhibitor, so dig up seedling to check the roots for root rot.

Soybean recovering from hail damage.

Storm damage resources: Have had a number of calls throughout the State this week from those who have experienced hail, flooding, and/or wind damage. The warmer temperatures were helpful for regenerating plant growth after hail; however, they're not helpful for those who had heavy rains and flooding that didn't recede. I shared this last week too but here's a Hail Damage Assessment resource with many videos: https://cropwatch.unl.edu/hail-know/assess-my-damage. For flooding, corn plants prior to V6 can survive under water for 2-4 days if temperatures do not exceed 77°F. From V7-V10, plants can survive 7-10 days if temperatures do not exceed 86°F. For soybeans, yield losses are minimal if flooding lasts less than 48 hours. If flooded for 4-5 days, fewer nodes develop and plants will be shorter. If flooded for 6+ days, possible stand and yield loss. The longer it takes a field to dry out, the more yield loss that may occur. For soybeans at flowering, there's potential for yield loss, especially on poorly drained soils.

As we deal with corn leaf loss due to natural sloughing off, early frost, and recent hail and wind damage, it can make corn development staging tricky for post- pesticide applications. The reason I keep emphasizing development stages is because I've been called out to many ear formation concerns the past several years. No one intends for these things to happen! These are opportunities for all of us to learn. In all cases, mis-diagnosis of development stage occurred prior to the pesticide application (whether herbicide, insecticide and/or fungicide). The use of non-ionic surfactant (NIS) in the tank from V10-VT

resulted in the ear formation issues in addition to increased surfactant load from multiple products in the tank mix. My hope in emphasizing corn development staging this year is to hopefully reduce the incidence of ear abnormalities that occur from post- pesticide applications. I put together the following video to hopefully help: https://twitter.com/jenreesources/status/1272370173853470720?s=20.

Gardening 101 resources: A team within Extension pulled together all the vegetable gardening resources to create a one-stop place for vegetable gardening. This resource, housed on the backyard farmer website, is a place for beginning gardeners and experienced ones. Check it out at https://go.unl.edu/veggies101!

Sunscald/scorch on green beans: This past week I received a few pictures of green beans that had large brown 'burnt looking' areas. This is caused by sunscald. The sun and wind has been intense. Seek to evenly water and avoid watering the foliage.

Trees: Lots of tree questions past few weeks. If leaves are pre-maturely turning yellow and dropping, it's most likely due to fungal disease. This is mostly happening since the 3" rain over Memorial Day. All the trees I've looked at are already starting to develop new leaves. Weed whackers cause more injury to trees that one realizes, so be very careful using them around trees, or put mulch around them to reduce weeds. Remove 'mulch volcanoes' around trees as the mulch against the trunk can cause rot. Mulch should not be piled against the trunk. Seek to make clean and proper pruning cuts for all the storm damage that has occurred to trees. For those who've experienced bark removal from lightning strikes or winter cracking, don't paint anything over the wound and don't fertilize or do anything to the tree. Allow the tree to seek to heal on its own. It's amazing what trees can overcome! Winter and spring dessication injury may be causing evergreens (cedars, junipers, yews, and arborvitae) to suddenly turning brown. Kelly Feehan, Extension Educator shares, "During warmer than average temperatures in February and March, moisture was lost from green needles and could not be replaced from frozen or cold soils. This was followed by a dry spring; and then above average temperatures and extreme winds. These conditions increase the rate of transpiration and increased moisture loss from needles. If the moisture is not replaced quickly, tissues dessicate and eventually die. Evergreens growing in open exposed sites, near pavement or light colored houses, and those planted in the last three to five years are most susceptible. Other than using organic mulch and keeping soil moist, there is not much to do. Once an evergreen or a branch turns completely brown, it will not recover." You can prune out dead branches/areas and see how the plants overall recover.

Crop Update: The National Weather Service in Omaha shared that it's been the 2nd hottest June on record (150 years) and the 2nd windiest June (72 years). It's truly taken its toll on people, plants, and animals. It's also resulted in increased stress levels with much to be done (spraying, hilling/cultivating, fertigating, changing herbicide plans, etc.) as crops rapidly grow.

Tweet from NWS Omaha on June 17, 2020.

Since the Memorial Day rains, I've observed bacterial leaf streak (BLS) on corn in fields.

Bacterial leaf streak on susceptible hybrid this past week.

BLS has long, narrow, red/brown colored lesions that follow leaf veins. The lesions also have a yellow halo when backlit. Upon close examination, the lesion edges are wavy, which differentiate it from gray leaf spot. It started fairly minor, but some more susceptible hybrids are showing higher levels of lesions right now. There's also been a number of whitish colored lesions on leaves from wind damage/sand blasting (if they

Been receiving a number of questions on white-colored lesions on leaves. Some are just due to wind damage. Some situations are herbicide related. A number of people are starting to notice BLS developing from these damaged areas on the leaves, particularly on more BLS susceptible hybrids.

weren't due to herbicide situations). It's from some of these wind damaged areas that BLS is also occurring. The bacterium causing BLS can infect directly through stomata; however, it can also infect through wounding. So the wind-driven rains and also high winds with sand blasting have also increased the incidence and severity of BLS in fields. Fungicides aren't effective on it and it's not known to result in yield loss.

Received a number of field calls/questions regarding herbicide application problems. Also recognize the challenge in figuring out a plan B, C, or D with some fields. Some practical things for those still needing to spray: know what traits are in what fields and double/triple check with whoever is spraying that the right product is going to the correct field. Double check the crop growth stage and the label as to what can be in the tank mix to avoid crop damage. Don't go by plant height as there's short beans that are flowering now and shorter corn in no-till and/or cover crop situations that is further along than one may realize. Proper tank/boom/nozzle cleanout is also always important to avoid crop damage to the next field being sprayed. And, spraying in high winds doesn't help any of us.

For irrigation, UNL research shows we can wait till 35% depletion in the top 2 feet prior to tassel or top 3 feet once tasseling occurs. There's a number of reasons why farmers have been irrigating: applying fertilizer, activating herbicide, small/replant crops with shallow roots, softening the topsoil for brace root establishment, and some may not be needing to water. There's an article in this week's CropWatch by Steve Melvin regarding irrigating considerations during the vegetative stages. We have a CropWatch poll to learn where people obtain their evapotranspiration (ET info.). Please help us by filling it out at: https://go.unl.edu/wxqv. There's also ET and GDD info. available from CropWatch at: https://cropwatch.unl.edu/gdd-etdata and the NAWMN ETgage site (ET info. only) at: https://nawmn.unl.edu/ETdata/DataMap. The recent weather has helped with moving

roots down. From digging plants and watching moisture sensors, many area fields from V7-10 have roots at least at 12” and below now.

Light Trap Reports: Light trap data can aid in scouting for various moth/butterfly pests. The closest light trap reports for the area are at UNL’s South Central Ag Lab near Clay Center and the Eastern NE Research and Extension Center near Mead. You can find all the reports online for the State at: https://entomology.unl.edu/fldcrops/lightrap.

Field Days: Weed Science (Clay Center) and Palmer Amaranth (Carleton) Field Days are cancelled for this year. Dr. Amit Jhala and his team are working on ways to present the data and information virtually. Nathan Mueller shared a self-guided tour is setup at the 2020 Jefferson County Winter Wheat Variety Trials in cooperation with Brian Maust (Variety Trial Technician) and Mark Knobel (hosting farmer). It’s located north of Fairbury on Hwy 15, then east 1 mile on 716th Rd, then 3/4 of a mile north on 569th Ave, east side of the road marked with a UNL sign. You can take a self-guided tour by grabbing a handout in the realtor box at the plots. It’s asked that you not walk/damage the wheat (i.e. pulling heads) and stay in the wide walking alleys. Please bring your own hand sanitizer so you can use it after touching the realtor box. Will keep you updated on additional information regarding these and other field days as details are released.

Also seeing low levels of woolly bear caterpillars in soybeans. This guy was moving with the wind/heat trying to get in lower canopy. Thresholds for soybean defoliation: 30% defoliation for anything defoliating soybean in vegetative stages and 20% with insects present in the soybean reproductive stages.

Independence Day: As we approach July 4th this year, I can't help but think how different it may be on many levels, particularly from all that's occurring in our Country. Our flag is one of the most beautiful things to me because it represents so much…many willingly put their lives on the line for my freedom and freedom for all of us…many dying to do so. The flag and patriotism, gratitude for this Country, those who serve(d), and families left behind means much to me (most likely to many of you as well). My hope and prayer is that this Independence Day also provides an opportunity for families to talk about our independence, freedoms, patriotism, respect, and that freedom isn't free. I hope that in spite of all the challenges and division occurring that we would pause, remember, and be grateful that we live in the greatest Nation in the world! We are so blessed!

July 4th Food: To ensure you're staying safe from food-borne illness and for fun family recipes, check out this information from our Food experts: https://food.unl.edu/july-food-calendar#4th!

Crop Update: Corn and soybean have been rapidly growing in spite of having difficulty in closing canopies this year. Dr. Roger Elmore shared a paper with me on high winds altering corn leaf architecture (will share more next week). So it may be part of what we're seeing in addition to hybrid differences? Many continue to contact me about bacterial leaf streak and there's nothing outside of hybrid tolerance to do for it. Seems like hail occurs weekly in some part of the State. Resource: https://cropwatch.unl.edu/hail-know/assess-my-damage.

Chiggers: For whatever reason, chiggers, ticks, mosquitoes all find me. There's all kinds of information/hypotheses available as to why some people tend to get bites more than others. Never have chiggers gotten me as bad as this year! As bites tend to peak around the 4th of July with more families' outdoors, here's some things to consider. Chiggers (also known as redbugs or jiggers) are the immature stages of red harvest mites. They tend to hang out in moist, tall grassy/weedy areas such as along streams, road-side ditches, forested areas, lawns. But they can also hang out in moist and dry lawns with a lot of trees too. They bite humans and other animals including pets. Eggs are laid on clusters on plants and the larvae hatch and wait for their host to come along. They latch onto clothing, shoes, and fur and can hang on while working their way to the skin (often to an area where clothing is tighter like around socks, undergarments, and back of knees and under armpits). They actually don't

burrow into human flesh. They only survive on a warm-blooded host for around 3 days before falling off to molt for the next stage in life cycle which doesn't feed on humans.

They have needle-like mouthparts that allow them to pierce the skin then inject saliva that dissolves body cells in the area to aid them in feeding. Thus, they don't feed on blood but liquefied cells. The feeding creates an allergic reaction in which many see swelling, intense itching, and small, clustered, red bumps (which can become larger welts in some). To prevent chigger bites, avoid sitting or lying on the ground when picnicking or working outdoors. Wear loose-fitting clothing and apply a repellent like DEET to shoes, socks, and pants before going into areas more favorable for chiggers. It's also wise to take a hot shower with plenty of soap as soon as possible after being outdoors and launder clothing with hot water before re-wearing. Also launder any blankets/sheets being used outdoors. If you receive bites, rubbing alcohol can be used then apply an anti-itch cream to help reduce itching. Thankfully chiggers can't live in the home but they can become dislodged in bedding and on floors, so laundering bedding and vacuuming is also wise.

Keep lawns and shrubs well-manicured, particularly where adjacent to dwellings. If you tend to have problems with chiggers in your lawn, they can be reduced from 75-95% for several weeks with a liquid treatment of bifenthrin. Be sure to read and follow all label instructions.

Corn: Corn plants are rapidly growing and at or nearing tasseling soon. One sign of rapid growth is to look at the new leaf edges. Sometimes there will be a white margin, more transparent look, wrinkles, or notches in them. All of those are signs of rapid growth which take place during cell division.

Wrinkled/wavy leaf edge symptoms of rapid growth of corn.

Fertigation and Irrigation: Some fertilizer is occurring now before tassel. I also recommend 30 lbs. of N at brown silk if needed. This is based on research from Purdue University sharing today's hybrids use 30-40% of their total Nitrogen from flowering through maturity. In the past, some have asked about applying fertilizer during pollination. The following information is from Dr. Tom Hoegemeyer, Plant Breeder and UNL Professor of Practice Emeritus, "Pollination mostly occurs between 8:30 a.m. and Noon. Thus, as a precaution, I would not run a pivot on pollinating corn from 6 a.m. to Noon. When the temperature is 90°F to 95°F, the pollen is killed by heat and is seldom viable past 2 p.m. That leaves lots of time to run pivots, apply N, etc. when it won't harm pollination. Silks tend to be viable for three or four days at these temperatures, so if a plant isn't pollinated one day, generally the next day will work just fine. (If nitrogen is needed), I'd recommend that nitrogen go on as soon as practical. Corn nitrogen use is very high during the pre-tassel growth phase and again at kernel growth, from one to three weeks post pollination. About seven to ten days post pollination (before brown silk) lower N will start causing kernel abortion and serious yield loss in corn." The UNL recommendation for fertigation is to use 30 lb of N with 0.25″ of water or 50-60 lb. of N with 0.50″ of water.

Insects and Diseases: Thus far, insects and diseases have been pretty minimal in corn. Seeing some spider mites in low numbers. Japanese beetles are showing up in areas where they've traditionally been more of a problem. In corn, the threshold is 3 or more beetles per plant, clipping silks to ½" or less, with pollination less than 50% complete. The hard thing about the

beetles is they have a long emergence of 3-4 weeks where they don't all emerge at the same time…and they live as an adult for 3-4 weeks. The threshold for corn rootworm beetles for silk clipping is similar. Light trap data for western bean cutworm is showing moths are beginning to appear in low numbers. They prefer laying eggs on upper leaf surfaces of corn in late whorl stage to early tassel (however, I've seen them lay eggs on the underside of leaves and on leaves closer to developing ears in high heat). The current UNL economic threshold for treatment is 5-8% corn plants with eggs or larvae.

Corn ears with primordial tips looking like this are just one of several abnormalities (including ear abortion, barren plants, bouquet ears, pop-can ears) that can occur when NIS is applied to corn plants from V10-VT.

And, often there's discussion about fungicide applications at tassel time or throwing in a fungicide with an insecticide (or vice versa) to save an application cost. I shared a great deal about this a few weeks ago; please be very careful with growth stages and what is applied in the tassel time. With uneven emergence, not all plants in the field will be tasseling at the same time, which allows for corn ear abnormalities when NIS in particular is added to the tank (or is in the product formulations) and applied just prior to tasseling. That's why I prefer to see fungicide applications delayed to at least full brown silk and preferably later if there's no disease pressure to warrant the application.

Research at UNL South Central Ag Lab showed we can still apply fungicide to dough stage with no yield difference, particularly in low disease pressure years. The research also didn't show an automatic yield increase with tassel applications. This allows us to account for southern rust which has occurred at some point all but two years of my Extension career. With tight economics, it just makes more sense to me to delay fungicide applications to when disease warrants it vs. applying too early as some have had to repeat applications (when

southern rust occurred after applying too early). It's also just good resistance management to not apply when disease and insect pressure doesn't warrant it. Also be aware that we can see corn leaf aphids flare after fungicide applications as the fungicide kills a natural fungus that keeps their numbers in check. Aphids also can interfere with pollination by covering tassels.

Soybeans: As soybeans approach R3 (beginning pod), that's the critical time to avoid water stress in soybean (similar to tassel for corn). We recommend avoiding irrigating during flowering whenever possible to reduce disease pressure (such as white mold and SDS). Don't pull insecticide triggers too early for soybean defoliators. UNL recommends 20% defoliation at reproductive stages from all defoliators.

Japanese beetle on soybean. Japanese beetles can be identified by their metallic green heads and white tufts of hair on the abdomen that look like white spots.

Wind-damaged Corn: The evening/early morning hours of July 8-9 caused quite a bit of damage to corn fields for some of you reading this. It's always hard to see crop damage. For field corn, it came at a critical time prior to pollination. The severity and amount of recovery for every field situation will vary depending on the soil moisture at time of the wind, root mass structure, hybrid planted, severity of leaning/bent/snapped plants, and growth stage of the plants. It will also depend on where the bending and snapping of those plants occurred. 'Recovery' encompasses the plants righting themselves, re-establishing roots, and re-orienting leaves as they have the ability to bend and grow up towards the sunlight in areas of the plant where plant tissues were not yet lignified (hardened). We know hybrids have been bred to better withstand greensnap. We know that plants that are leaning due to root lodging may have better ability to upright themselves (and have seen this in some fields since the storm). We also know that it is harder for plants near tasseling to upright themselves compared to plants at earlier vegetative stages.

What to expect? It really depends on the conditions outlined above. We all will learn a lot and I encourage us to share what we are observing. For fields very close to tassel with severe bending near ears, we may see pollination, possibly even ear formation issues. There may be fields that were leaning and will have minimal impacts after uprighting themselves. The main research I can find regarding corn lodging yield impacts comes from the University of Wisconsin in 1988. In the study, they manually lodged corn at various growth stages over 2 years to determine yield impacts. Corn lodged at V10-V12 resulted in a yield reduction of 2-6%. Corn lodged at V13-15 resulted in a yield reduction of 5-15%. Corn lodged after V17 resulted in a 12-31% yield reduction.

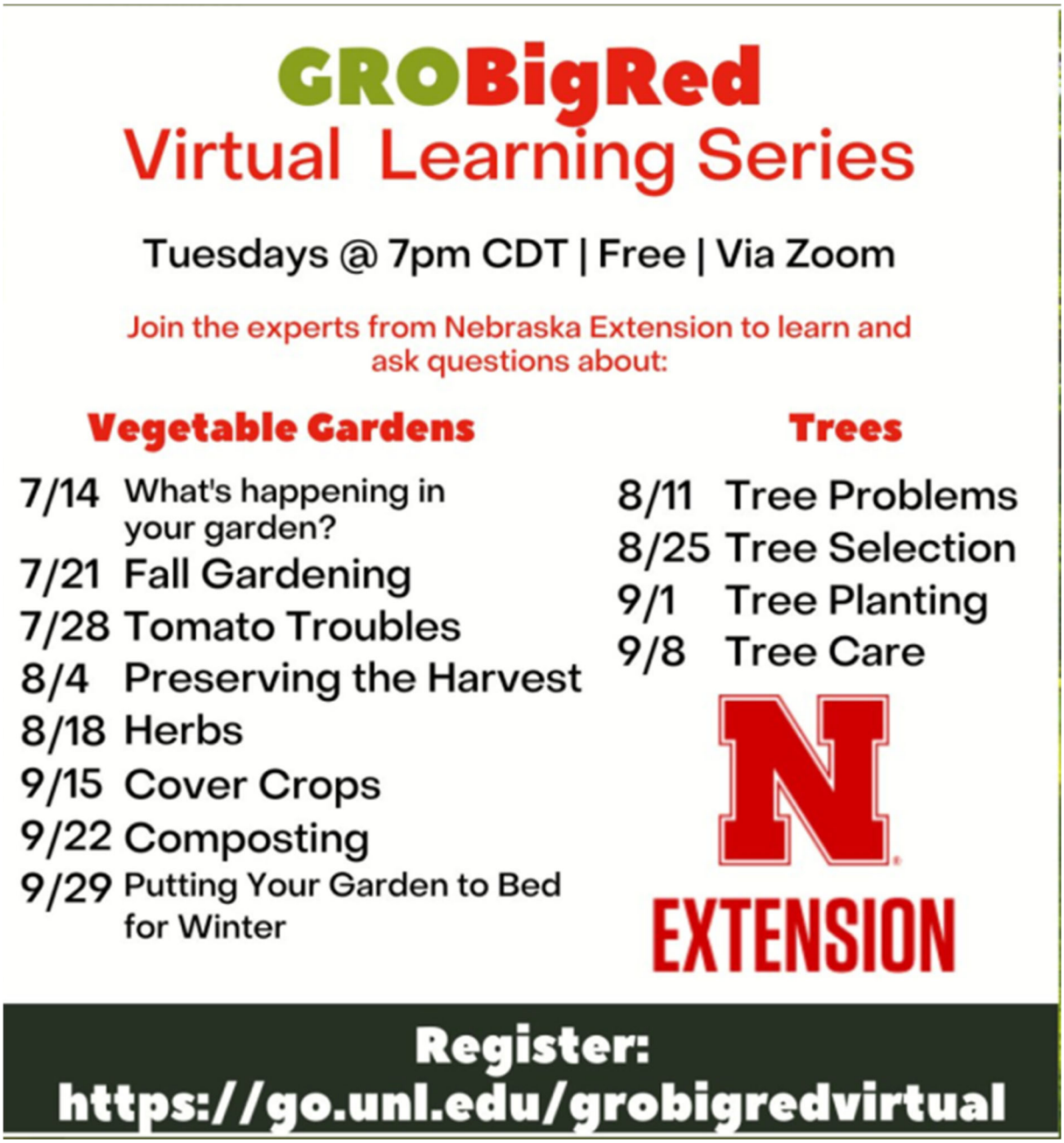
What to do? Recommend waiting, observing, call your crop insurance adjuster. Don't apply products right now. Economically, we need to see how each field recovers before putting more into the crop. Plants are already stressed so give them time to try to recover. A respected agronomist shared another point with me-that adding heavy amounts of water right now can add weight onto the plants and keep them sticking together when they're trying to separate. For those who were planning on fertigation, I've seen soil sample results and heard from several people that we're seeing increased mineralization this year in fields due to the heat. It may be worth a tissue and/or soil

test to see if you really need additional nitrogen (final application at brown silk). Regarding fungicides, my recommendation prior to the storm was to wait till at least brown silk (or after) due to low disease pressure, uneven growth stages in fields, waiting for southern rust, and economics; I stand by that after this storm. Fungicides can't help much with the plant stress being experienced.

Spidermites have been found in low levels in corn, but in some cases, fairly high levels in soybean. Higher levels have been observed in stressed fields (due to off-target herbicide damage and/or beans stressed due to drought). If you're noticing pockets in fields that appear to be yellow/brown/dying and spreading, check the top side of the leaf for stippling (yellow needle-like pin-pricks) and undersides for webbing and mites. Seeing them in non-stressed beans at low levels as well. Check out this information from Illinois for guidelines on when and how to control: http://bulletin.ipm.illinois.edu/?p=5080.

Gardening Resources: Nebraska Extension is hosting a series of 12 virtual learning sessions for home gardeners to discuss timely issues around vegetable gardening and trees. Each session will include a short (15-20 minute) presentation on the specified

topic and opportunities for participants to chat about their issues and "ask the expert". Sessions will be each Tuesday through September at 7 p.m. CST. Participants can register via go.unl.edu/grobigredvirtual – you can register for all the sessions you're interested in at one time. You can also view the series via this Facebook post: https://www.facebook.com/events/1195072680839800.



Crop Update: The smell of pollen is in the air! Did you know each tassel contains around 6000 pollen-producing anthers? Two good articles from Dr. Bob Nielsen, Purdue University at https://go.unl.edu/x5tv.
How does heat impact pollination? Dr. Tom Hoegemeyer, former UNL Professor of Practice, shared that high humidity, without a drop in humidity during the day, can delay pollination or prevent pollen from leaving anther sacs. While heat over 95°F depresses pollen production, one day of 95-98°F has no or little yield impact when soil moisture is sufficient. *After 4 consecutive days, there can be a 1% loss in yield for each day above that temperature*. Greater yield loss occurs after the fifth or sixth day. Thankfully we're not in a high heat pattern during this critical time of pollination!

My concerns regarding pollination: bent ear leaves covering silks in wind-damaged fields. Seeing a great deal of this. Also seeing silks continuing to elongate and grow through broken mid-ribs to increase exposure to pollen. Will continue to observe impacts.

Preliminary storm prediction center weather data showed a total of 93 wind, 11 hail, and 13 tornado damage reports on July 8th in Nebraska. Univ. of Wisconsin found lodged plants had yield reductions of 2-6% (V10-12 stage), 5-15% (V13-15 stage), and 12-31% (V17 and after stages). For greensnapped plants (below ear), Iowa State found in the worst case situation, yield reduction may range up to a 1:1 percent broken:yield loss. It's possible these losses will be as low as *1:0.73* or even *1:0.50*. We have an article in this week's CropWatch (https://go.unl.edu/cwy2) with more detailed information. Recovery pics also at https://jenreesources.com.
Southern Rust was confirmed at low incidence and severity in Fillmore, Nuckolls, and Jefferson county fields this past week (probable for Thayer). Received questions on fungicide applications. In conversations, it seems like there's fear of making the wrong decision and ultimately pressure to apply them. I realize economically it's easier to justify adding a fungicide with insecticide when insect thresholds are met to save application costs. Most fungicide studies focus on VT applications; however, yield increases with automatic VT applications aren't consistently proven in Nebraska.

In fact, in 2008-2009, a UNL fungicide timing trial was conducted near Clay Center on 2 hybrids (GLS ratings 'fair' and '(very) good') with a high clearance applicator. Timing over the two years included: Tassel, Milk, Dough, 25%, 33%, 50%, and 100% Dent comparing the fungicides Headline, Headline AMP, Quilt and Stratego YLD.

- 2008: *No yield difference on GLS hybrids rated 'good' at any of the timings* (Tassel, Milk, 33% and 100% Dent) nor the check when Headline or Stratego YLD were applied. *For the 'fair' hybrid, no yield difference for any application timing nor the*

check for the April 30th planting except for Headline applied at milk stage (increased yield). Low gray leaf spot pressure.

- 2009: *No yield difference on GLS hybrids rated 'very good' or 'fair' nor the check on any timings* (Tassel, Milk, and Dough) using Headline, Headline AMP, or Quilt. Moderate gray leaf spot disease pressure.

Thus I've recommended waiting till disease pressure warrants the application (have personally recommended apps as late as hard dough in previous years). Hybrids vary in disease susceptibility (thus response to fungicide application). The main 'plant health' benefit observed in Nebraska when disease pressure was low (ex. 2012) was stalk strength and that may be something to consider again in this lower disease year. Regarding any improved water use efficiency for drought-stressed plants, the peer-reviewed research published on this was in 2007. The researchers found slightly increased efficiency in *well-watered plants*, but *it was reduced in water-stressed plants*. They suggested fungicide use in water-stressed plants could potentially negatively influence water use efficiency and photosynthesis.

Same area of a York County Field taken morning of July 9th (left photo) and morning of July 13th (right photo). Grateful to see how plants are re-orienting themselves in many impacted lodged fields!

Plants re-orienting themselves by 'pushing' and establishing more brace roots on the leeward (leaned side) helping roots reconnect with soil on the windward side. Notice the additional brace root development within the circled area of this photo.

Plants reorienting themselves at each node at various angles and bends. Nodes become thicker to aid in reorientation.

Splitting open of thickened node. Additional cell division and/or elongation occurring at these nodes appears to help 'push' the stalk upward (geotrophic response).

Consistently seeing bent ear leaves covering silks in wind-damaged fields. Will have to watch any impacts to pollination.

Also seeing how either the ear or silks are working their way through tears in leaves or silks elongating to the side of the plant to try to pollinate.

Severely green snapped field of later-planted corn.

Seeing some new growth on some green snapped plants. Dissecting the growth revealed baby corn ears (they won't amount to anything). Just shows the resiliency in plants regarding how they're created to survive and reproduce. I never cease to be amazed by their Creator!

Seeing this very minor. Ear trapped within thickened husk/stalk tissue so forcing itself through side of plant. Silks visible first.

Opened this one to see curving of ear and some potential pinching occurring where ear was trapped above where it was forcing out of husk. Will be interesting to see any pollination and ear development impacts on plants like this.

Crop Update: Grateful to see how corn ears in wind damaged fields were able to expand and expose silks to pollen! Noticing on the primary ear node one normal ear and another 1-2 small ears on the same node in some hybrids-more common this year than I've noticed before. Unsure what to think of it; just an observation. Southern rust has been confirmed in 19 Nebraska counties at low incidence and severity; levels not necessary for fungicide applications yet (in my opinion). Last week I shared UNL data that showed no yield differences between a check treatment vs. various growth development timings (through 100% dent) and various fungicides in two low and moderate disease years. For those dealing with spidermites, it's important to determine whether the plants have two-spotted or banks grass mites as they differ in control. For more information, check out this information: https://go.unl.edu/idsm.

Virtual Field Days: As someone who enjoys field days and meetings to see and catch up with people, it's been hard to not have field days this year! Thankfully we can share information via technology. The following are resources for weed management and wheat production/variety info:

- South Central Ag Lab Weed Science Field Day: https://go.unl.edu/2020weedfieldday
- Glyphosate Resistant Palmer Amaranth Field Day: https://go.unl.edu/palmer-amaranth2020
- Wheat Field Days (Part 1 Production background): https://mediahub.unl.edu/media/13563
- Wheat Field Days (Part 2 Varieties): https://mediahub.unl.edu/media/13564

Tree Problems: Trees are important to any landscape, whether in town or on the farm!

Cedar tree in windbreak that suddenly died.

Often, there's stories behind their planting and it's always hard to see them decline/die. The #1 killer I've found of cedar windbreaks is landscape fabric used as a weed barrier when trees are planted. No matter what the product says or who tells you it will tear as the tree grows, it rarely does. It does a great job with weed control! And, 5-15 years down the road, it's understandably forgotten. Once the tree trunk expands to where the original edge of the hole is, the trunk often can't tear the fabric right at the soil line while the trunk above and below it tries to expand. Sometimes a tree can survive for awhile with the choking. However, if you ever see a tree that dies quickly with no other apparent reason, it usually

Landscape fabric I cut away from the tree. There was a clear indentation in the trunk where the tree was being choked (not pictured).

is due to something with the root system or choking somehow on the tree. I realize it's a pain, but with as much work and money that goes into windbreaks, it's a really good idea to take some time and pull weed barrier away from the tree trunks. A long-handled tool with tines can help but just make sure to carefully get all the way to the trunk to release any potential choking (I often have to get under the tree and cut the fabric next to the trunk to accomplish this). This goes for weed barrier used for any trees and shrubs. Weed barrier with rock is one of the biggest killers of plants I see in landscapes.

Bagworms are also impacting cedars, spruce, and various shrubs. Right now I recommend using Bifenthrin as it irritates the bagworms and makes them leave bags to be better exposed to the product. It has a two week residual and is used as an insecticide for many plant situations. Get really good coverage of the trees/plants when applying.

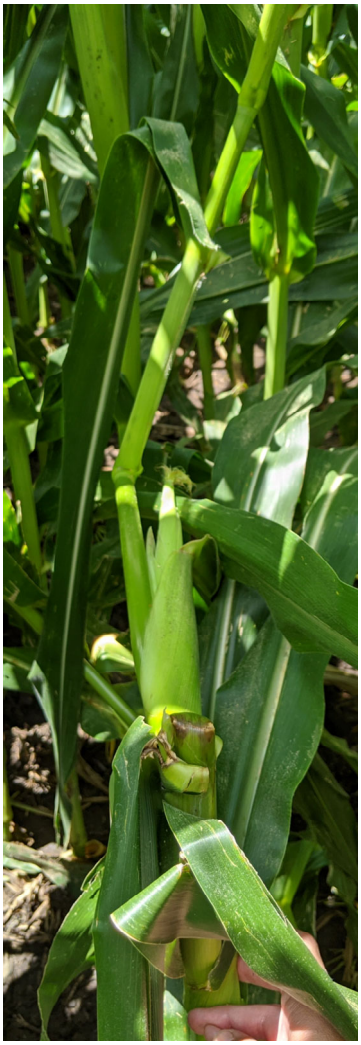
A number of fungal diseases are impacting evergreen trees. Many started the past few springs due to wet, humid weather. They are showing up worse now with recent humidity. The good news is trees can be treated with various fungicide products next spring that can be obtained from local hardware, farm, and landscape stores. PLEASE read and follow the label (can pull the label back in the store) regarding if the tree/plant is labeled for the product. I've been called out to disasters this year when the wrong products were applied to trees for which they weren't labeled.

Japanese beetles continue to be a problem. Hopefully they'll be finished in the next few weeks. Apply products at dusk to reduce harm to pollinators. Natural products include Neem and Pyola oil that can be applied every week. Conventional insecticides can provide 2 weeks of control: pyrethroid products like Tempo and Bayer Advanced Lawn & Garden Multi-Insect Killer (cyfluthrin) or Ortho Bug B Gone (bifenthrin).

York County Fair Open Class: Quick note for those exhibiting in York County Fair's Open Class, we ask that you have entry tags completely filled out including mailing address PRIOR TO fair this year. Entry tags can be obtained from the York Co. Extension Office and Wagner Decorating. All rules same as last year except Needlework is limited to 3 entries per exhibitor. Exhibits can be dropped off on the WEST side of Ag Hall Tues. Aug. 4th from 6-8 p.m. and Wed. Aug. 5th from 8-11 a.m. Volunteers will take items into buildings as much as possible.

Ears able to elongate and expose silks to pollen on wind-damaged plants. Notice bent ear leaf that had been covering silks last week and bent node where plant was trying to right itself.

Second set of brace roots on leeward sides of plants now found the soil to support the plants with developing ears. Notice the emphasis placed on brace roots on that side instead of the windward side.



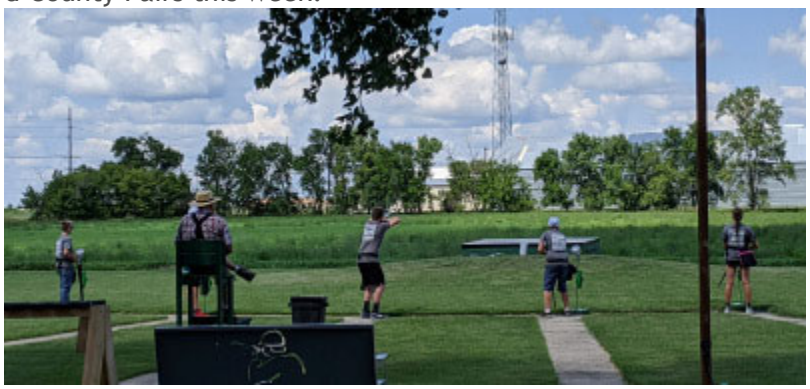
Seeing a lot of this. Pinched plants that bent at various angles to right themselves are fairly brittle and tend to snap as ears continue to develop and as one walks through fields.

The tertiary ear became the main ear on some bent plants. Notice the ear shoots of the primary and secondary ear (green things sticking out of nodes) on this plant and the messed up tertiary ear.

Hard to tell from this picture, but even the waterhemp righted itself in this field. This plant's main stem actually goes to the left in the corn row but was pushed down under some broken corn so bent upright in the center of the row.

Have seen more of this for some reason this year. Solid ear with 1 or 2 additional ears on the primary ear node. Several hybrids across companies.

York and Seward County Fairs: Here's wishing the best to all the youth competing in the York and Seward County Fairs this week!



One group of youth competing at the York Co. 4-H Trap Shooting competition today.

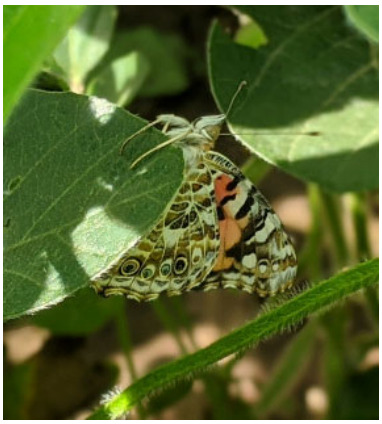
Crop Update: It's unfortunately not hard to find southern rust in fields anymore as I'm finding it in every field I walk into. Incidence is mostly confined to lower canopies with the highest I've seen so far on the ear leaf. What's concerning to me is the amount of rust I'm seeing (ear leaf and below) in canopies of fields that have already been sprayed. Some fields sprayed in mid-July will be out of residual soon, which is also concerning to me. Physoderma brown spot, which moves with water and isn't a significant pest, can be confused with southern rust. While it can look bad, a major difference with Physoderma is that there's no raised pustules (bumps) on the leaves. I haven't seen gray leaf spot at ear leaves or above yet. I've added pictures of what I'm seeing on my blog at jenreesources.com. There's been some questions about 'late season' Nitrogen applications. I've had to ask how late is 'late season'; brown silk has always been the latest I recommended. Most University research considered 'late season' as by tassel time. I haven't found any University research that has said applications should be made later than brown silk or would be beneficial past this time.

In soybeans, there's a disease called Phyllostichta leaf spot that I had never before seen.

Phyllostichta leaf spot. Photo courtesy John Mick, Pioneer.

It's one caused by a fungus that begins often as brown lesions on leaf margins and can move between leaf veins. In learning more about it, it can be residue born or seed transmitted. It doesn't sound like anything to be too concerned about, just something different that's been seen in some fields this year.

Painted lady butterflies are the orange and brown butterflies that are flying now that are often confused for monarchs. A painted lady female can lay up to 500 pale green eggs on plants individually instead of in egg masses. The larvae (called thistle caterpillars) hatch in around a week and can feed from 2-6 weeks depending on weather conditions. They feed on around 100 different host species including thistles, soybeans, asters, zinnias, etc. These butterflies are often used in schools to teach students about complete metamorphosis using the life cycle of a butterfly.



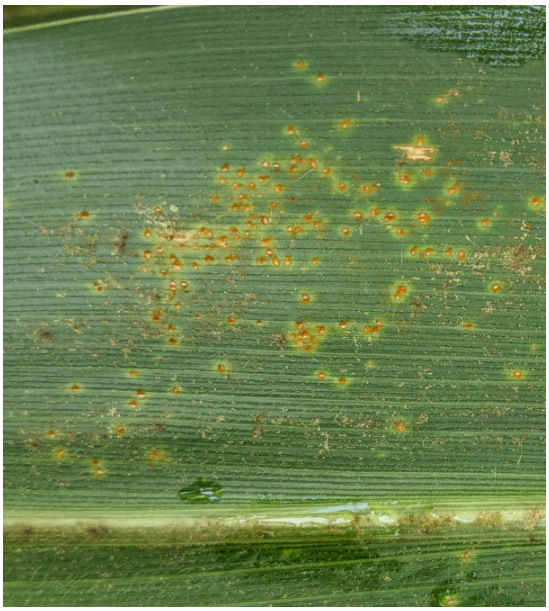
Painted lady butterfly (underside) on soybean leaf.

Soybean Defoliators: In addition to thistle caterpillars, other defoliators including various worms, grasshoppers, Japanese beetles are also present. Thresholds for damage for all soybean defoliators is 20% defoliation of plants during the reproductive stages. If you're unsure what 20% defoliation in soybean looks like, check out the graphic in CropWatch at: https://go.unl.edu/7qjg. It's actually a good graphic to keep on one's phone as it's very easy to over-estimate 20% defoliation.

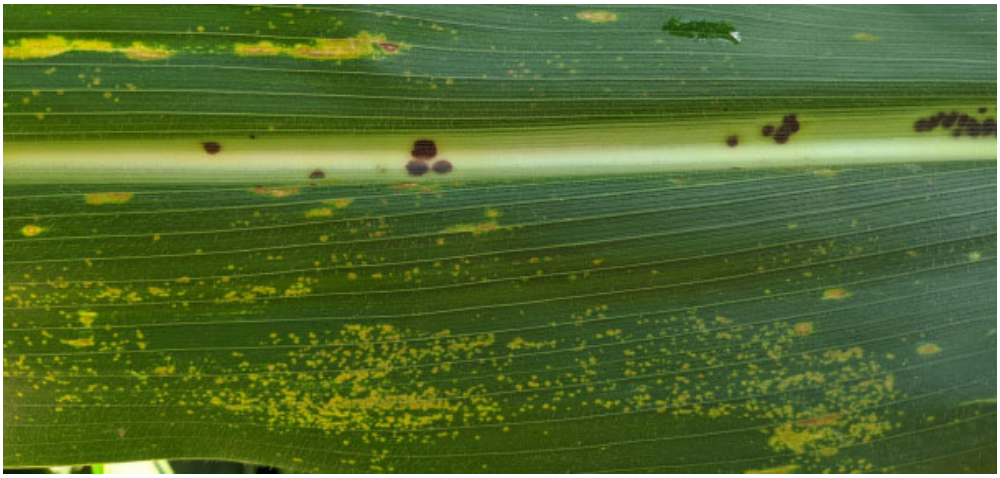
Unsolicited Seeds from China: I haven't heard of anyone in this area officially receiving a packet yet. USDA is aware that people across the country have received suspicious, unsolicited packages of seed that appear to be coming from China. USDA's Animal and Plant Health Inspection Service (APHIS) is working closely with the Department of Homeland Security's Customs and Border Protection, other federal agencies, and State departments of agriculture to investigate the situation. Anyone in Nebraska who receives an unsolicited package of seeds should immediately contact Julie C. Van Meter at 402-471-6847) or Shayne Galford at 402-434-2346. Please hold onto the seeds and packaging, including the mailing label, until someone from your State department of agriculture or APHIS contacts you with

further instructions. Do not plant seeds from unknown origins. At this time, there's no evidence indicating this is something other than a "brushing scam" where people receive unsolicited items from a seller who then posts false customer reviews to boost sales.

Squash Vine Borers tend to be a problem at some point every year. If you're seeing zuchinni, squash, or pumpkin plants looking wilted and suddenly dying, check the stems at the base of the plant. If you see insect frass (like sawdust), squash vine borers are most likely the culprit. You can remove the plants and discard if you're done with them. Otherwise, you can also slit the stems and kill the larvae. Then cover the stem base with soil to encourage new root growth. There's only one generation a year and it's too late to apply insecticides (should be applied to plant base beginning in late June-mid-July). Some master gardeners also say wrapping the base of stems with aluminum foil discourages moths from laying eggs.



Southern rust: Small, orange to tan clustered pustules primarily on the upper sides of leaves.



Physoderma brown spot: the tiny clustered tan spots (below mid-rib) and purple blotches on mid-rib that also occur around leaf axils and on outer stalk tissue. Upper left-hand corner of this picture is bacterial leaf streak.

Physoderma brown spot on outer stalk tissue. It looks bad but not penetrating beyond the outer stalk tissue.

Fair: As fairs wrapped up in the area, in my opinion, it was a great way to cap off the summer for the youth. So much has been taken away from them and I really appreciate Ag Societies working hard with Extension staff to give the youth an opportunity to showcase their projects! There were several moments throughout fair where I thought "this is why we do this"…to watch youth and adults so excited to see the ribbons on projects, watching siblings and club members supporting each other, families helping other families, and friends catching up. Fair did look different this year. But it forced us to think about things differently with the blessing of some changes may be kept as a result! Thank you to all the Ag Society, 4-H Council members, Extension staff, newspaper staff, and volunteers who gave youth and adults alike the opportunity to showcase projects and safely gather at fairs! Thank you also to health departments for advising on directed health measures and providing PPE and nurses who helped with screenings!

Crop Updates: I didn't get into the field much this past week but the primary questions I received were regarding tip back on corn, spidermites flaring, and if it was too late to spray fungicides in corn. The answer to the latter is no. If southern rust is showing up pretty good low-mid canopy of your field, it's something to consider to help with stalk strength as that's my concern. I'm hearing of some guys having to apply a second round of fungicide due to rust. Hard for me to see guys spending the money to do that thus prefer avoiding automatic tassel applications. While I'm not aware of research to prove it, I think coverage is another issue. Consider asking the aerial applicator to use 3 gallons/acre to increase coverage. I hear some are refusing to do more than 2 gallons/acre and I think that's part of the problem. Some farmers are also chemigating fungicide and insecticide through the pivot in hopes of improving coverage.

Typically we'd say southern rust occurs on the top side of leaves unless severe, whereas common rust typically occurs on both sides of leaves. On leaves that were flipped over from the wind, I'm seeing southern rust spores (confirmed via microscope) on the undersides of leaves that are now technically facing upward, but not on the 'normal' top side of leaf (an interesting observation that a crop consultant asked me about and then I also saw this week to confirm it truly was southern).

Spidermites continue to flare 7-10 days later because most of the products used don't kill eggs. Sometimes second applications are needed. Insecticides with activity against eggs and immature stages (not adults) include Zeal, Oberon, and Onager whereas the pyrethroid (Bifenthrin products like Brigade in corn and soybeans) and organophosphate products (like Lorsban used in soybean) can help with adults but not eggs. Product has to come in contact with the mites. Thus at least 3 gallons/acre are

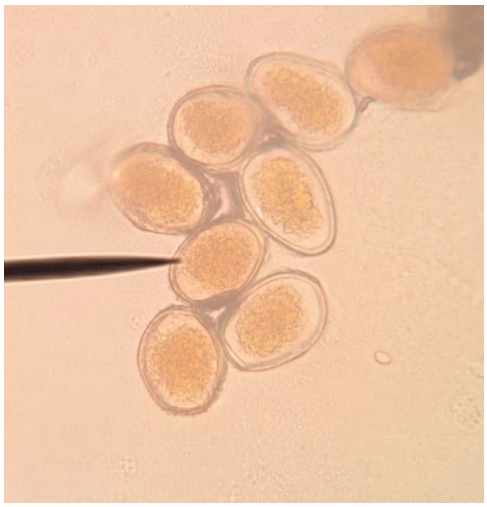
recommended with aerial applications. Entomologists share aerial applications early in the morning or late in the evening can be more effective to avoid hot rising air away from plants (be careful of inversions). With twospotted spider mite, perhaps all that can be accomplished is to slow the rate of population increase.

Tip back on corn occurs most often from some sort of stress. For this year having good pollination weather, some are surprised regarding how much tip back we're seeing. It's important to count kernels long as there may be more kernels than one realizes in spite of tip back occurring. You can tell approximate timing of stress events by the appearance of the kernels. If kernel formation isn't evident, the stress occurred before or during pollination. If kernels are very small or appeared to have died, the stress was after pollination as the kernels were filling. Water stress is a major stress outside of temperature as to kernels not pollinating and/or aborting. Each ovule (and later, each kernel), competes for water and nutrients. Water and nutrients are necessary for pollen tube formation down silks to fertilize ovules. Water and nutrients are necessary to fill individual kernels with the tips being sacrificed for filling kernels at the base of the ear first.

CARES Act Tax Planning for Farmers: The CARES Act included the Payroll Protection Program (PPP) and Economic Injury Disaster Loans (EIDL), which many farmers utilized. However, several other provisions didn't get as much attention. For tax planning this fall, check out this helpful info. from Tina Barrett: https://go.unl.edu/re6e.

True topside of leaf that was flipped over with windstorm to be on underside. Can see indentations of lesions but not pustules.

True bottom side of leaf that after being flipped over with windstorm was showing as the top side. Notice the pustules on this side of the leaf.



Under the microscope, the spores were truly southern rust (oval-shaped). Common rust pustules are circular in shape.

Crop Updates: For the past week, crops used around 0.22" per day in the York area, around 0.20" as one goes east towards Ithaca and closer to 0.25" per day going south towards Harvard and Guide Rock (based on High Plains Regional Climate Center data posted on CropWatch). As we think about water use the finish the year, the following come from the NebGuide Predicting the Last Irrigation of the Season found at: https://go.unl.edu/k74n:

- Corn at Beginning Dent needs 5" of water (approximately 24 days to maturity)
- Corn at ¼ milk needs 3.75" (approximately 19 days to maturity)
- Corn at ½ milk (Full Dent) needs 2.25" (approximately 13 days to maturity)
- Corn at ¾ milk needs 1" (approximately 7 days to maturity)
- Soybean at beginning seed (R5) needs around 6.5" (approx. 29 days to maturity)
- Soybean at full seed (R6) needs 3.5" (approx. 18 days to maturity)
- Soybean with leaves beginning to yellow (R6.5) needs 1.9" (approx. 10 days to maturity)

Spent a lot of time last week looking at ear development in fields, particularly those impacted by the July 8th windstorm. Also appreciated a long conversation with John Mick with Pioneer on what he was seeing. For the most part, I'm seeing a lot of 'normal' ears that vary in the amount of tip back from lack of pollination and/or kernel abortion. Less commonly seen are ears with 3/4 husks. On plants that were pinched, continue to see messed up secondary and/or tertiary ears after the loss of the primary ear. On plants that bent and righted themselves, seeing a variety of things. Some are more 'normal' while other ears are much smaller that either didn't pollinate well and/or had kernel abortion.

Last month, had mentioned a curious thing regarding how many hybrids are putting on multiple ears on the same ear shank, on the primary ear node. It's far more than I've ever seen before. In sharing some observations with Dr.'s Tom Hoegemeyer and Bob Nielsen, they share it's most likely a genetic X environmental response under excellent growing conditions or some other phenomena. As I continued to see these ears in fields and husk them back, for the most part, they don't appear to be detrimental to the main ear, which is good. So it's more of a curiosity than anything.

Many of us probably don't examine ear shanks much in comparison to the ears. However, when one does look at ear shanks, one will observe they are similar to the corn stalks in that there are nodes and internodes. Each node also produces a leaf (in this case a husk leaf) instead of a collared leaf such as what happens on the main stalk. And each node (on stalk and on ear shank) has an axillary meristem which allows for ear development. Normally, there must be genetic or hormonal suppression so that only one main ear is formed on a shank at a stalk node. It's not uncommon for us to observe an ear on different nodes of the stalk (ex. Nodes 12 and 13). What is more uncommon is to observe multiple ears on different nodes of the same ear shank, such as what is being observed this year.

Renovating Lawns: If your lawn is in need of repair, now through mid-September is a great time-perhaps the best time-to do so! This resource, Improving Turf in the Fall at https://go.unl.edu/rz9z is a great one to walk you through renovation depending on your situation. Some lawns can be easily improved by adding fertilizer this fall and/or overseeding. Some may need total renovation, which starts with a glyphosate (Roundup application) followed by waiting at least a week to then prepare the soil for planting.

Multiple ears on the same ear shank (with husk tissue on left and husked on right). Doesn't appear to be impacting main ear in most fields I've seen these in. And, this is occurring on primary ear nodes and within fields (not just in endrows or in lower population areas).

Pretty impressive brace root development on leeward side of plants that tried righting themselves.

Ears from the plants with the brace roots from above photo. These are pretty decent with some tip back, but otherwise more 'normal'. Other plants like this have ears that have poor kernel set.

Seeing some ears with 3/4 husk.

Bent plant that tried righting itself with a 'zippered' appearance to ear and poor pollination in addition to kernel abortion.

Plant with loss of the primary ear showing multiple ears on the secondary and tertiary ear nodes.

Leasing land for solar development is a topic landowners in the McCool Junction and Lushton area are facing. This is a guest column by my colleague John Hay, Nebraska Extension Energy Educator.

Renewable energy has increased significantly in recent years and the number of wind farms and the size of wind turbines are a visual reminder of renewable development. Due to higher development cost, solar electric systems, also called solar photovoltaic (PV), have lagged in commercial electric development. In recent years, the dramatic price decline of solar PV has led to greater interest in utility-scale solar development. For instance, consider a 5-Megawatt system similar to the one constructed West of Lincoln North of I-80. Based on solar cost benchmarks published by the National Renewable Energy Lab, a 5-Megawatt system constructed in 2010 would have cost $27.6 million, compared to $5.65 million to construct the same size project in 2018. Combine this with the 26% federal tax credit and the economics of utility-scale solar is sufficient for major development interest across the nation. The federal tax credit is currently 26% and set to decline to 22% in 2021, then 10% for future years.

Utility-scale solar farms are constructed on the open ground generally near access to the electric transmission grid. Other considerations for siting solar farms may be the solar resource, proximity to electricity demand, other local incentives, and regional value of electricity. Access to land is an early step in utility-scale solar development. Farmers and landowners in Nebraska are being approached to lease land for solar development and these landowners are facing important long-term decisions about the future of their land. When considering a solar leasing contract many factors should be considered. According to the Farmland Owner's Guide to Solar Leasing published by the National Agricultural Law Center, these considerations are Length of the commitment, Who has legal interests in the land?, Impacts on the farm and land, Family matters, Property taxes, Government programs, Liability and insurance, and Neighbor and community relations.

Utility solar farmland leases are long term contracts and need to be reviewed by a qualified attorney. In Nebraska, these leases can be as many as 40 years and longer if extended. For many landowners, this long-term contract may extend into the next generation and should be discussed with the family. Landowners at times feel pressured to sign contracts and this can be stressful. Take the time to review and negotiate these contracts and always know that saying "no" is an option.

Solar leases can be attractive to landowners as they can offer long term income and profitability on the leased land. A study in Michigan of landowners with wind farm

leases showed farmers with leases invested more in their farms than farmers without leases. This suggests the lease income may influence farm stability and longevity. Solar farms like wind farms add to county tax income. These developments are exempt from property tax and instead have a nameplate capacity tax paid each year in place of the property tax.

Utility-scale solar farms are unlike wind farms in some ways. For example, wind turbines may take only 1-2 acres out of production per turbine because farmers can farm around the base of the turbine and turbine access road. In comparison, a 1,000-acre solar farm will take all 1,000 acres out of production. Solar farms are low to the ground and have less impact on the skyline. Generally, solar farms will be fenced with vegetation growing amongst the solar panels. Vegetation could be perennial pollinators, grass, or weeds. Common management is periodic mowing to ensure plants do not disrupt solar operation and production.

Landowners approached about solar leases should seek advice from an attorney and take time to thoroughly consider the contract and its implications to their farmland. Review of the Farmland Owner's Guide to Solar Leasing published by the National Agricultural Law Center will help frame the issues and considerations for solar leases. This can be found at https://farmoffice.osu.edu/sites/aglaw/files/site-library/Farmland_Owner's_Guide_to_Solar_Leasing.pdf. For additional questions about solar leasing, please see https://cropwatch.unl.edu/bioenergy/utility-scale-solar, or contact John Hay, Extension Educator at 402-472-0408 or jhay2@unl.edu.

Grateful Nebraska held our State Fair this year! Seeing the youth competing, showcasing 4-H projects, and the excitement, smiles, and friends reconnecting from across the State this past weekend was heartwarming!

Received many calls about end of season irrigation this past week. Would encourage our farmers to finish the season well! You've been through much in another trying year and the past few weeks have been extra hard keeping up with irrigation, cleaning out bins, and getting combines ready in the heat. It can be tempting to just stop but would encourage you not to quit irrigating too soon, particularly on soybeans. Soybean maturity (R7) is defined when 50% (or all) of the field plants possess one mature pod (when the interior white membrane no longer clings to the seed). In most years, most leaves and pods will have changed color (from green to yellow-green or yellow) by this plant-based R7 date.

The heat has pushed crops along, but we've also had a great deal of humidity. Corn is moving the starch line slower in irrigated fields. That's a good thing for fill and a harder thing regarding labor, time, and money. A lot of corn in this area is 1/3 milk and I just saw a few fields at ½ milk over the weekend.

- Corn at ¼ milk needs 3.75" (approximately 19 days to maturity)
- Corn at ½ milk needs 2.25" (approximately 13 days to maturity)
- Corn at ¾ milk needs 1" (approximately 7 days to maturity)
- Soybean at full seed (R6) needs 3.5" (approx. 18 days to maturity)
- Soybean with leaves beginning to yellow and pod membrane still attached to seeds (R6.5) needs 1.9" (approx. 10 days to maturity)

So, we're potentially looking at one to two more irrigations yet for some of this corn and soybeans depending on the current status of your soil moisture profile, development of the crops in your particular fields, and any rain. It is recommended to allow that soil moisture profile to dry out to 50-60% depletion towards the end of the season to capture moisture in the off-season. So one way to consider this is a step-wise approach. If you typically irrigate at 35% soil moisture depletion and have around 2" left, the next week you could wait till a trigger of 40% depletion with the following week's trigger around 50%. Again, this depends on your individual field's soil moisture status and crop development after a taxing August.

Upon physiological maturity, corn ears begin drooping down. However throughout the area, corn ears are doing this that aren't at ½ starch yet. These ears will black layer prematurely at the cost of yield. Dr. Bob Nielsen from Purdue shares that yield penalty can be as much as 40% at denting when there's essentially no milk line visible and

around 12% at half milk. So what causes this? The ear shank can collapse when there's a lack of turgor pressure due to stress from the inability to keep up with crop water demand. August has been abnormally dry with warmer than average temperatures the past few weeks. Sometimes the ear shank also cannibalizes itself, similar to what can happen in stalks. Perhaps part of this can be from poor root development or lack of root development into deeper layers? In areas that have received less rain, perhaps deeper soil layers are drier in spite of having moisture in the top soil layer from irrigation? For those with conventional hybrids, European corn borer tunneling can also cause this type of collapse. There's also some hybrids that I notice this happening more than others; perhaps genetics also plays a roll? That shank is the source for feeding the ear, so when it collapses, it weakens it. Keep an eye on ears in these fields as we approach harvest and consider getting at them sooner if possible.

Drooping corn ears in this irrigated field with green plant tissue above ears. This corn was getting close to 1/2 milk.

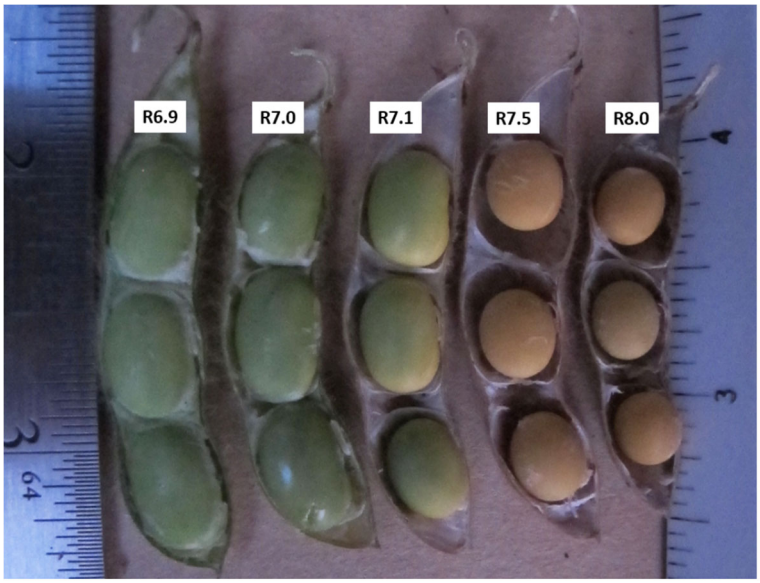


Photo by Dr. Jim Specht showing end of season soybean development stages. Notice the white membrane still attached to the seed in R6 stage and how it disconnects at R7 (maturity). Not all pods on the plant may be at R7 at the same time. R7 for all the plants in the field is considered when 50% (or all) of the field plants possess one mature pod (when the interior white membrane no longer clings to the seed). In most years, most leaves and pods will have changed color (from green to yellow-green or yellow) by this plant-based R7 date.

Sudden Death Syndrome (SDS) has been observed for the past several weeks in fields. Thankfully it's been minor this year compared to last year. It's wise to take a soil sample for soybean cyst nematode (SCN) in these areas of the field to determine if you also have a nematode problem. The combination of the diseases has a synergistic impact on yield.

Harvest: Harvest has begun for some with soybeans, seed corn, and silage. For all of us as we're on the roads, please be alert and slow down. It's also important to talk about safety with teens who drive. With it being so dry, gravel roads are extra dusty, reducing visibility. It can be helpful to turn on headlights and be sure to slow down at intersections. On highways, slow down when coming upon slow-moving equipment. And, be aware of equipment turning. Here's wishing everyone a safe harvest! Nebraska Public Power District, Rural Radio, Center for Ag Safety and Health, and Nebraska Extension are teaming up to share on harvest safety with the Harvest Safety Tour. Power line, ATV, and grain bin safety demos will be on display and a free lunch will be served September 9th from 11 a.m.-1 p.m. at the big parking lot at the York County Fairgrounds. For more information call 877-ASK-NPPD.

Early and mid-group two soybeans rapidly turned last week and may be drier than one realizes in spite of having green stems. Every year it's a challenge to harvest close to 13% moisture. There's a dock for delivering wet beans. While not a dock, delivering soybeans below 13% moisture reduces profits because there's fewer bushels to sell (load weight divided by 60 lbs/bu assuming 13% moisture). Selling soybeans at 8% moisture, you're losing about 5.43% yield; at 9% moisture, it's 4.4%; at 10% moisture, 3.3%; at 11% moisture, 2.25%; and at 12% moisture, it's 1.14% yield loss. That doesn't take into account additional risk for shatter losses during harvest. The following are two profit examples:

Example 1: Based on the elevator dockage numbers obtained, if the grower was to sell beans at 13.8% moisture, he/she would be docked 3% of the selling price of $8.75/bu, reducing the actual price to $8.49 per bushel. Total income per acre would be: 75 bu/ac yield x $8.49/bu = $636.75 per acre gross

Example 2. If the soybeans were harvested at 9% moisture, there would be 3.3 fewer bushels per acre to sell (4.4% of 75 bu/ac yield due to water loss): 75 bu/ac – 3.3 bu/ac =71.7 bu/ac yield x $8.75 = $627.38 per acre gross

In this example it's better to take a dockage for selling beans at 13.8% moisture than sell them at 9%. The difference is a positive gain of $9.37 per acre or almost $1265 on a 135 acre field.

Harvesting at 13% moisture is perhaps a combination of art and luck depending on environmental conditions. Some tips to achieve this can include begin harvesting at 14% moisture, making combine adjustments and operating at slower speeds (consider these equipment adjustment tips for your combine), plan variety selection to spread out maturity and harvest (we're finding around 1 day delay for every 0.1 difference in

maturity group), and avoid harvest losses from shatter as only 4-5 beans on the ground can add up to a bushel per acre loss.

Pasture & Forage Minute: With Dr. Bruce Anderson's retirement (former Extension Forage Specialist), a team of Extension specialists and educators are sharing pasture and forage minutes. These quick updates are also shared via email. If you're interested in receiving them, you can sign up for the email list by going to this site: https://listserv.unl.edu/signup-anon , enter PASTURE-AND-FORAGE under 'list name', and your email.

Emerald Ash Borer (EAB) was found in Seward in a trap at the Blue Valley Campground in early August. We don't recommend treatments right now in the fall. Because of the cost, treatments are only recommended for high value and/or already healthy trees. Once EAB has been confirmed within the 15 mile radius of your location, then you can begin the proper treatment applications on healthy trees. A yearly soil drench application is one option for homeowners for trees under a 20" trunk diameter. Tree care professionals are able to use additional products like trunk injections on larger trees. Contact a certified arborist for these treatments. Some products are best applied in the spring, while others can be done throughout the summer. Treatment zone considerations can be found here: https://nfs.unl.edu/documents/EABmap_2020-08-03.png. Please don't move firewood to help prevent the spread!

Will miss catching up with people at Husker Harvest Days this week! Virtual field day at: https://www.huskerharvestdays.com/en/home.html.

Grateful for the rain! It provided a break, the end of irrigation, and will help with settling dust and hopefully reducing fire risk. Here's wishing you a safe harvest as it resumes! May see some soybean shatter. Was hearing reports of soybean moisture ranging from 9-11% over Labor Day weekend on 2.0-2.5 maturity beans. Saw non-irrigated soybean fields in Nuckolls/Webster county area that died with the leaves still attached. The previous week's heat with the lack of moisture for so long was just too much.

One area on-farm research study is a soybean maturity study. This is the third year for this study and after harvest we'll have 9 site-years' worth of data. The objective is to determine yield and economic impacts from planting 2.0-2.5 maturity beans vs. 3.0-3.5 maturity beans in April to early May. Planting a range of maturity groups can aid in spreading out harvest; we've found about 1 day delay for every 0.1 in maturity group. Planting a variety of maturity groups can spread risk regarding timing that heat and moisture (or lack of) are received (especially for non-irrigated beans). There's also increased interest in earlier maturing varieties for seeding a cover crop for erosion and/or weed control or increased biomass for grazing. Our data thus far has found genetics to be the bigger yield factor as there's high yielding genetics regardless of 2.0 to 3.5 maturing varieties.

The soybean yield equation is more complicated than determining yield for corn with final yield harder to predict. This is what it looks like followed by an example with numbers that Dr. Jim Specht shared:

[Plants/Acre X Nodes/Plant X Pods/Node X Seeds/Pod] / [Seeds/Pound X Pounds/Bushel] = Bushels/Acre

120,000 x 21 x 2 x 2.4 / [2500 X 60] = 81

Plants per acre is often less instrumental for yield as it's inversely related to total number of seeds per plant (high population=less seeds/plant, low pop=more). We had more soybeans planted early in the area this year than I've ever before experienced. Early planting allows for increased nodes per plant. This year many remarked on plants being loaded with

flowers; this could be partly due to the abundant sunshine. On average, Dr. Specht assumes 2 pods/node; there's some nodes loaded with pods this year and we need to watch how they finish filling. A soybean pod contains, on average, 2.4 seeds, primarily because the 1-seed, 2-seed, 3-seed, and 4-seed pods produced by indeterminate soybean plants tend to occur in respective proportions of 10%, 40%, 50%, and ~0.1%. These proportions can vary somewhat among varieties.

As we think about the soybean yield equation, seed size (seed mass) is the component most impacted by lack of August rain or ending soybean irrigation too soon. This ranges from small (3750) to large (2250) seed/pound with most varieties today averaging about 2500 seed/pound. Last week's rains will most likely help group three soybeans with seed size and reducing additional seed abortion.

Soybean Quality Study: The Nebraska Soybean Board and some researchers from UNL are asking farmers to help with a soybean quality study. I have sample jars in my office and all that's required from you is to take 3 samples from a non-irrigated field and 3 samples from an irrigated field (not field corners). They will share results with the growers who participate. Please contact me at jrees2@unl.edu or 402-440-4739 if you're interested in participating!

Overseeding Lawns can still occur as late-August through mid-September is the best time to seed bluegrass and fescue. Fescue really shouldn't be seeded any later than this but bluegrass can be into later September if needed. It's really important to get good seed to soil contact by preparing the seedbed. The following publications from Nebraska Extension provide step-by-step instructions: Improving Turf in Fall and Establishing Lawns from Seed. Buy blue tag certified seed from a reputable dealer.

Explore Beekeeping free webinar will be held on September 24th from 6-8 PM. The speaker will address how she uses bees on her family farms in conjunction with pollinator cover crops and fruit trees. This program will be offered in English and Spanish. Participants can register online at https://go.unl.edu/beekeeping.

Soybeans: The past week I was mostly in soybean fields taking harvest notes for on-farm research or helping harvest plots. The non-irrigated yields have been better than anticipated for the beans just dying in fields; I can't help but wonder what they could've been had there been rain in August! As noted last week, there's a definite difference in varieties as to the number of 4-bean pods. Some varieties are loaded with pods and it's not hard to find 4 bean pods. Others in our variety studies have a majority of 3 bean pods and it's rare to see 4 bean ones. It will be interesting to see yields, and may be something to observe in varieties on your farms if you're curious. Will also take a look at solar radiation data as several commented the smoke seems to be impacting drydown of irrigated soybeans.

Woolly Bear Caterpillars are noticeable in soybean fields as are stink bugs and loopers; however, woolly bears are also on the move from soybean fields to find green plant tissue elsewhere. In past years, it's not uncommon to find them crossing roads. I had a couple of reports towards the end of last week of them demolishing garden plants and shrubs. They probably don't need controlled in all cases and not all products are as effective on them. Bifenthrin is labeled to be effective on them and can be used on a variety of plants, so that may be one option if treatment is necessary.

Stalk Nitrate Test: A corn stalk nitrate test can provide an indication if the amount of nitrogen for the corn plants was low, high, or sufficient for that year. This test involves taking an 8" sample of the stalk. It should be taken 6" above the soil line and go to 14" above the soil surface. All leaf sheaths should be removed from the stalk. 15 samples should be collected 1-3 weeks after black layer from a one acre area that represents a larger area (same soil type, etc.). Sample other areas of the field with different soil types or management. Then place stalk samples into a paper bag (don't use plastic) and ship the samples within one day or refrigerate until shipping. It's important to take the sample from 6-14" above the soil line because all the research to create the test

was done from that area of the stalks. Also note that situations like a good grain fill season, drought, or poor ear development can all impact the test providing lower or higher numbers. This test isn't to be used to determine nitrogen rates. It just gives a ballpark over time regarding if too much, too little or sufficient nitrogen is available on a consistent basis over years in a field. If the test results over several years are consistently high (greater than 2000 ppm), it would suggest the grower could reduce nitrate rates without impacting yields. If too low, the grower could consider additional nitrogen or adjust nitrogen management within the field. You can read more about this test here: https://store.extension.iastate.edu/product/Use-of-the-End-of-Season-Corn-Stalk-Nitrate-Test-in-Iowa-Corn-Production. My colleague, Aaron Nygren, also created a short Twitter video here: https://twitter.com/ColfaxCountyExt/status/1305982739791966208?s=20.

Sensors and ET gages: A quick reminder to remove any sensors for irrigation scheduling and ET gages from your fields before harvest. In the midst of everything else, it can be easy to forget about them!

Fall Lawn Fertilization: Early September is one of the best times to fertilize Kentucky bluegrass and tall fescue. There's still time to apply if it's not yet been done. One application may be all that's needed on older lawns (10 to 15 or more years). Use a fertilizer with at least a 50% slow release nitrogen source. Two fertilizer applications are recommended on younger lawns; one in late August/ early September and one about mid-October. Use a slow release nitrogen source on the first application and a fast release nitrogen source on the second one. Avoid fertilization after late October as plant uptake is low. This causes nutrients to leach away during winter or linger in soil until spring leading to early growth. More info: How to Fertilize Turfgrass This Fall.

Bean harvest was rolling this week. Hearing non-irrigated beans in the area ranging from 40-60 bu/ac and irrigated beans going 70-90+. Regarding solar radiation and some wondering about smoke impact on drydown, I ran data from 9/1/20 though 9/26/20 for Harvard and York weather stations. Then looked at long term average for this same September time-frame from 1996-2020. Both stations showed slightly higher solar radiation in 2020 compared to the long-term average for September (York: 379 and 372 langleys respectively) (Harvard: 383 and 376 langleys respectively). And, it was higher yet for 2020 when I queried Sept. 10-26 for same time periods. So, unsure solar radiation was the factor impacting drydown for this part of the State?

Small Grains and Weed Control: Been watching weed control particularly in soybean fields. For future columns/winter programs, I'd like to hear from you. What weed control approaches have worked in your soybean and corn fields? I'm curious about all systems and all types of weed control options. Please share at jrees2@unl.edu or give me a call at the Extension Office. Thanks!
In the past, I've shared weed control begins at harvest by not combining patches of weeds or endrows full of weeds. I realize that's difficult to do, and for many fields, we're past this point. From a system's perspective, another option to aid weed control is to plant a small grain such as wheat, rye or triticale this fall. We had a whole edition of CropWatch devoted to wheat production here: https://cropwatch.unl.edu/2020/september-4-2020. Wheat provides an option for both grazing and grain. Rye provides the best option for earliest green-up/growth in the spring and longest seeding time as it can be seeded into December. Triticale provides the most biomass but produces the latest into late May/early June. All keep the ground covered from light interception penetrating the soil surface which allows weed seeds to germinate. While I've observed this in farmers' fields, there's also recent research from K-State that supports the impact of a small grain in rotation for weed control.

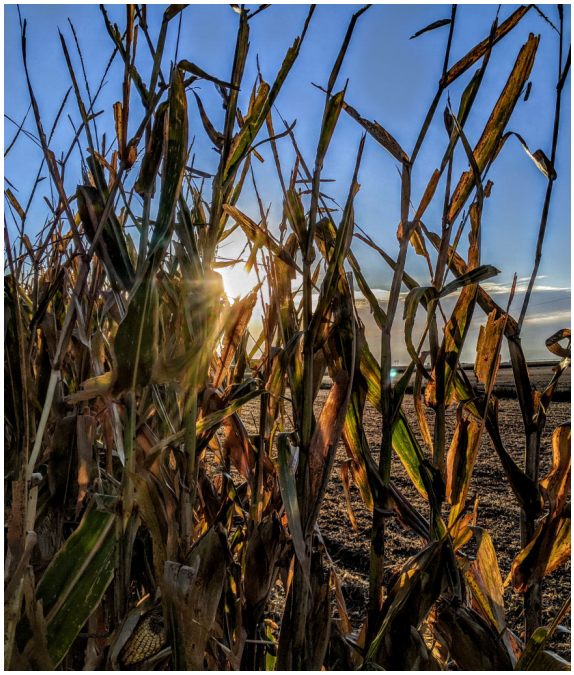
One study looked at marestail (horseweed) and palmer amaranth control from 2014-2015 in no-till soybeans at six locations in eastern Kansas. They also found the majority of marestail emerged in the fall (research from UNL showed up to 95% does). They compared five cover crop treatments including: no cover; fall-sown winter wheat; spring-sown oat; pea; and mixture of oat and pea. Cover crops were terminated in May with glyphosate and 2,4-D alone or with residual herbicides of flumioxazin +

pyroxasulfone (Fierce). Ten weeks post-termination, palmer amaranth biomass was 98% less in winter wheat and 91% less in spring oat compared to no cover crop.

Another study in Manhattan from 2015-2016 compared fall-seeded rye; a residual tank-mix of glyphosate, dicamba, chlorimuron-ethyl, tribenuron-methyl, and AMS; and no fall application. Four spring treatments included no spring application or three herbicide tank mixes: glyphosate, dicamba, and AMS alone or with flumioxazin + pyroxasulfone (Fierce) as early preplant, or as split applied with 2/3 preplant and 1/3 at soybean planting. They found the fall rye completely suppressed marestail while fall herbicide suppressed biomass by 93% and density by 86% compared to no fall application. They also found rye to reduce total weed biomass (including palmer amaranth) by 97% or more across all spring applications. In both studies, soybean yields were best with the combination of cover crop + herbicides or the combination of fall + spring herbicides compared to no cover and no herbicides.

The way I think about this for conventional systems is that the use of a small grain in the system reduces the pressure on the chemicals for having to provide all the control. It also buys some time for chemical control, perhaps even removing one application (based on these studies, small grain delayed at least a month till 50% palmer germination). Economically, while there's the expense of seeding and purchasing the small grain seed, what are the other economics to consider? What could the small grain provide by reducing an additional chemical application, adding a forage crop after harvest, selling seed (if there's a market), selling straw (depending on location for moisture savings & ability to get a cover back in for weed control), etc.? Just some considerations this fall looking at weed control by adding a small grain.

Corn observations: It seems amazing to me to be where we're at with harvest and it's only October 4th as I write this! Many farmers finished beans last week and started on corn. It's a good feeling to be at this point; can also appreciate there's been no rain and not a lot of breaks either. Please be safe!



Early morning sunlight before harvest of the York Co. Corn Grower Plot Saturday morning.

This past week was spent taking corn notes and starting to harvest corn studies. Besides harvest stand counts, I also like to look at percent stalk rot in fields. This gives an idea regarding standability and harvest priority. To do this, I use a pinch test using my thumb and first finger to pinch the elongated first or second internode above the soil line on 20 plants in an area of the field. Stalks that are compromised will "give" or "crush". Obtain a percentage for the number of stalks that do so. Quickly doing this in five areas of the field provides a better idea of stalk health and harvest priority. Stalk quality pinch test video at: https://youtu.be/7z75VN1c51Q. So far, much of the corn is standing well. I'm mostly finding compromised stalks on plants that had premature ear droop. It will be especially important to assess stalk rot for fields that had high southern rust pressure and weren't sprayed with a fungicide.

Another observation is some weakened ear shanks, although I can't say this is a problem yet or even widespread. Weakened shanks makes sense on ears that prematurely drooped as that ear shank collapsed. Things we know cause weakened ear shanks and ear drop include stresses like high heat and/or moisture stress around pollination, large ears after this type of stress due to long grain fill, fungal disease like Fusarium infecting the shank, and to an extent, genetics (regarding shank diameter size). As we think of this year, we had the July 8th wind storm shortly before tassel which caused additional stress on plants. Corn also had a long fill period creating larger ears. So again, not saying this is a problem, just something to watch.

Stress cracks and broken kernels are another thing to watch for and seek to minimize. We know this can occur during the grain drying process in the bin when high moisture corn is dried with high heat followed by rapid cooling. In one conversation this week, a farm family was wondering if there were conditions that led to more stress cracks to corn in the field this year. I really don't know. Found one publication that said internal, invisible stress cracks can also occur during kernel fill as a result of high temperatures and/or high moisture. However,

the focus of the publication was viewing cracks with other types of imagery instead of the physiology, so I don't have more to share on that. Broken kernels can also occur with harvesting higher moisture corn (above 20%), particularly with too high of rotor speed. A handful of guys have mentioned seeing broken kernels as they've been harvesting above 20% and shared the combine adjustments they've made to minimize them, so thought it may be something to mention. Combine setup is not my expertise but with a quick search, there's a number of YouTube videos and websites regarding reducing broken kernels that may be helpful.

Corn Drydown Calculator: If you've never seen it or used it before, Iowa State University has a neat tool that estimates corn drydown in the field based on weather forecast for a particular area. It's called the corn drydown calculator and you can find it at: https://crops.extension.iastate.edu/facts/corn-drydown-calculator.

Land Leasing for Solar Development Oct. 9th: Just a reminder of this virtual seminar to be held October 9th from 11 a.m. to 1 p.m. You can register at https://go.unl.edu/solarleasing. This seminar is open to the public. Farmers, landowners, and their families in areas with potential solar development have much to consider and should consider attending. This webinar will give an overview of solar development and touch on major issues to consider when negotiating a solar lease agreement. More info. on this topic at: https://cropwatch.unl.edu/2020/considerations-leasing-land-solar-development.

Solar Land Lease Considerations for Landowners

Speakers:

- F. John Hay – Department of Biosystems Engineering, University of Nebraska-Lincoln
- Eric Romich— Extension Field Specialist Energy Development Ohio State University Extension
- Peggy Kirk Hill—Director Ag and Resource Law Program Ohio State University Extension

Who Should Attend:

This seminar is open to the public. Farmers, landowners, and their families in areas with potential solar development should attend. The seminar will focus on landowners' considerations related to leasing land for utility scale solar development. Farmers, landowners, and their families have much to consider when considering long term land leases. This webinar will give an overview of solar development and touch on major issues to consider when negotiating a solar lease agreement.

DATE:	LOCATION	TIME
Friday October, 9th	Online (Zoom)	11:00 AM– 1:00 PM CDT

- Registration is required, registration is open until the start of the webinar
- Registration Link: https://go.unl.edu/solarleasing

For more information contact F. John Hay jhay2@unl.edu 402-472-0408

Extension is a division of the Institute of Agriculture and Natural Resources at the University of Nebraska-Lincoln cooperating with the Counties and the United States Department of Agriculture, and abides with the nondiscrimination policies of both institutions.

Crop Update: This has been an interesting harvest season and yet, overall good one. To be at October 11th with so much of the area crop harvested is a blessing! I've heard growers thankful for the good harvest conditions and ability to go anywhere in fields without fear of getting stuck. Many were grateful for good soybean yields.
As we get further into corn harvest, there's perhaps disappointment experienced on corn yields and moisture variance. Honestly, I'm struggling to explain some of it. Part of it is the difference in rainfall that we received in various parts of counties this year. There's non-irrigated fields receiving 180-220 bu/ac which is a blessing! Another part is the impact of the July 8th wind event in which some fields had greater greensnap while others had more leaned plants. Depending on severity, was estimating and now seeing/hearing a lot of 180-240 bu/ac irrigated corn in those fields. The UNL Hybrid Maize model was predicting average yields for irrigated in this area of the State based on weather conditions. I just thought we may see actual yields go a little higher with how long it took to reach black layer. Have seen a couple really high yields with longer season numbers harvested wet.

Corn also greatly varies in moisture. Non-irrigated fields are quickly reaching 15.5% and lower. Irrigated fields range from 15-23%; what I can't explain is that for hybrids planted in the same time-period, some short season ones are staying wet while some longer season ones are dryer. Everyone who has shared this situation with me had applied fungicide to their fields for southern rust control. Some also fertigated. Ultimately, just sharing what I've seen and heard thus far.

Example using plastic zip-top bags for SCN sampling (black mark is identifier for grower/field name). This was from beginning SCN samples taken on an On-Farm Research Check vs. ILeVO vs. Saltro study in 2020.

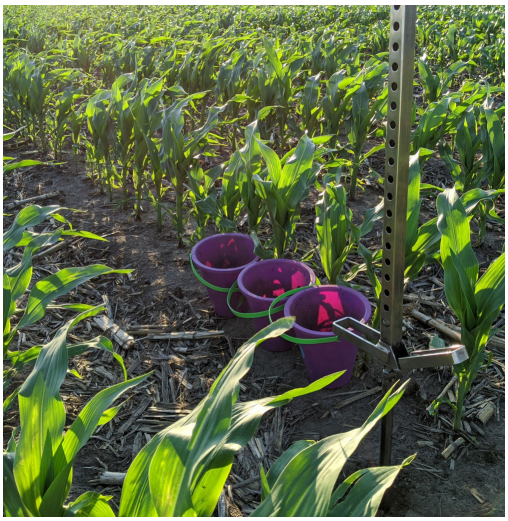
Received some questions this week on sampling for Soybean Cyst Nematode (SCN). It continues to be Nebraska's top yield-limiting soybean disease with research showing it can cause up to 40% loss. The Nebraska Soybean Board is again sponsoring free

sampling courtesy of soybean checkoff dollars. You don't need a special bag to submit samples as a quart-sized plastic zip-top bag will suffice. If you had areas of a soybean field that yielded less than expected, particularly any areas that also showed sudden death syndrome or brown stem rot, consider taking a soil sample for SCN this fall. The female nematodes live in the top 8" of soil, thus sampling is as easy as taking your fertilizer sample for the following year's corn crop and sending part of it in for an SCN analysis.

To collect a soil sample, use a soil probe to collect soil cores from a zig-zag pattern representing the lower yielding area of the field. For comparison, it's wise to also take another sample from a better yielding area of a field. I've found that around 12 cores per sample is enough to provide around a 2 cup sample of soil that will fit in a ziplock type bag (and not have excess that needs to be dumped out). Be sure to label the bag with your contact info, field name, or other ID to report the results back to you. Also be sure to fill out a completed sample submission form requesting SCN analysis and mail the samples to the UNL Plant & Pest Diagnostic Clinic (1875 North 38th Street, 448 Plant Science Hall, Lincoln, NE 68583-0722). For those who submitted samples during the summer, campus mail is better now that the University campus is open again.

Caring for Drought-stressed trees/shrubs: With the continuing dry conditions, this is a critical time to prepare woody plants for winter and prevent winter injury, especially to evergreens. Dry fall conditions can reduce the number of leaves, blooms and fruits trees produce the next season. Trees often delay the appearance of drought-stress-sometimes months or years after the stress occurs. Even after the drought has ended, trees that experience drought stress are more susceptible to secondary attack by insect pests and disease problems, such as borers and canker diseases, which can cause tree death. When watering, moisten the soil around trees and shrubs, up to just beyond the dripline (outside edge of tree leaf/needle canopy), to a depth of 8 to 12". Avoid overwatering; but continue to water until the ground freezes as long as dry conditions persist.

This week I don't have a crop update, just grateful for how well harvest continues to progress and how many farmers have shared they finished this week or are near the finishing mark. It's also heartwarming to see so many friends and neighbors rally around farmers in need across the country.



Picture taken from June 2020 soil sampling of 1′, 2′, 3′ depths
in on-farm research nitrification inhibitor studies.

I'm also grateful to all the farmers who worked with me in on-farm research studies and plots this year! We had 20 and will share the results when the data is compiled. Six of the on-farm research studies were on nitrogen management in partnership with the UBBNRD. As harvest finishes and you turn your attention to planning for next season, one topic on your mind may be nitrogen management. There was a recent CropWatch article written with some considerations here: https://cropwatch.unl.edu/2020/planning-2021-fertilizer-n-application-following-dry-2020

Are you interested in how agricultural technologies can improve nitrogen management on your farm? Nebraska Extension received a $1.2 million On-Farm Conservation Innovation grant from USDA – Natural Resource Conservation Service which connects corn and wheat producers across Nebraska with access to cutting-edge technologies through on-farm research. The goal is for producers to get hands-on experience with new technologies to manage nitrogen more efficiently and evaluate how these technologies will work on their operations. Interested producers will be able to select from several project options. They include:

- Nitrification Inhibitors for Corn
- Crop Canopy Sensing for Corn N Management
- Crop Model Based Tools for Corn N Management and Split-Applications
- Crop Sensing for Wheat N Management.

Producers and consultants will work closely with Nebraska Extension to accomplish the project. Eligible producers who complete these studies will receive $1,300 for recognition of their time and resource commitments and to mitigate risk of potential yield (and therefore potential profit) loss. Cooperating producers will also be eligible to receive up to $1,200 for eligible technology costs associated with these studies.

Interested growers should contact me at jrees2@unl.edu, your local Extension Educator, or Laura Thompson, Director, Nebraska On-Farm Research Network at laura.thompson@unl.edu. Additional information regarding the project can be found at https://cropwatch.unl.edu/precision-nitrogen-management-farm-research-project.

Women Managing Ag Land Conference on Dec. 2nd from 11:30 a.m.-2:30 p.m. will offer learning opportunities for female farmland owners and tenants looking to improve their business management skills and navigate the challenges of owning and renting agricultural land. Attendees will have the opportunity to attend either in person or virtually via Zoom. The closest in-person event locations near Eastern Nebraska R&E Center near Mead and Holiday Inn at Kearney will have limited attendance and health measures will be implemented. The keynote address, "Finding Happiness in the Craziness of Life," will be delivered by Kathy Peterson, a farmer from Storm Lake, Iowa, and founder of PeopleWorks, Inc. Additional topics include: "Improve your Ag Lease by Improving the Landlord/Tenant Relationship" by Extension Educator Allan Vyhnalek, "NextGen A Win-Win for Beginning Farmers & Asset Owners" by Karla Bahm with NDA, "Navigating Uncertainty in 2021: Nebraska Land Values & Cash Rental Rates" with Ag Economist Jim Jansen, and more!

Registration on or before Nov. 18, is $25. Registration on or after Nov. 19 is $30. Registrations for in-person locations will close Nov. 29. Lunch will be included at each in-person site. This conference is hosted by Nebraska Extension and inspired by Annie's Project. More information and registration at: https://wia.unl.edu/WMAL.

Berries turn from green to black When they ripen.

Black nightshade in wind-damaged corn fields

Grazing Corn Residue: Have received some questions on corn residue management. Cattle grazing can be a beneficial way of residue management if one has access to cattle. Note: I've been seeing quite a bit of black nightshade and some horsenettle, particularly in corn fields that had wind damage. Both species have poisonous leaves (increase concentration as plants age) and berries (decrease concentration as berries ripen). Frost doesn't change toxin levels. UNL forage specialists say when cattle graze corn fields containing nightshade species, there's enough dilution with the grain, leaf, and husk that poisoning shouldn't be an issue. We'd recommend watching the cattle as some may prefer grazing the nightshade. I've also seen cattle prefer weeds after herbicide applications, so also watch that if fall herbicides are applied. Ultimately, would just recommend don't turn cattle empty into stalks with significant amounts of nightshade, watch cattle, and don't graze past the point of 50% of leaf/husk removal. Dr. Jerry Volesky shares more here: https://twitter.com/jenreesources/status/1320513145941692418?s=20.

So, how does one calculate 50% leaf/husk removal and the grazing days for cattle on corn residue? The following is information from my beef Extension colleague, Brad Schick.

- "There are 8 lbs of grazable dry matter per bushel of corn.
- Leaf and husk make up 39.6% of the dry matter in corn residue.
- Intake on corn residue fields will be close to 2% of bodyweight.

Having corn stalks to graze is a great resource for livestock producers. For dry cows, it is a relatively inexpensive feed that can typically meet or come very close to meeting nutritional needs. Grazing can also help get rid of corn remaining in the field and potentially reduce volunteer corn the following year. But are cattle really grazing stalks?

Yes and no. In everyday conversation, grazing corn stalks is said, but the stalk is the last thing cattle eat. Cattle do eat stalks, particularly if they are left on a field too long, but they are primarily consuming leaf, husk, and leftover corn. The stem or stalk makes up about 48.5% of the residue, while the leaf blade and husk make up 39.6%. Cattle will consume leaf and husk if available. That diet will consist of 52 to 55% TDN (total digestible nutrients) and 5 to 5.5% crude protein.

When thinking about how long to graze corn residue, the calculation to follow is that for every bushel of corn produced, there is 16 lbs of dry leaf and husk. The recommended grazing plan should be to remove 50% of the leaf and husk. This assumes that portions of the forage will also be lost to trampling, defecation, and other considerations such as wind. That leaves 8 lbs (16 lbs X 50%) of good forage on a dry matter basis that is available for consumption for every bushel of corn.

For example, say the field produced 200 bu/ac corn. By the calculations, there is 1600 lbs of dry matter per acre available (8 lbs X 200 bu = 1600 lbs). A 1000 lb animal will consume about 26 lbs of dried forage per day which means a 1300 lb animal will consume about 34 lbs per day. However, with lower quality forage such as corn residue, intake will be closer to 2% of bodyweight. In this example, that means closer to 26 lbs for the 1300 lb animal. So, how many days of grazing is that? By the calculations, there are 61 days of grazing for one cow grazing one acre (1600 lbs DM ÷ 26 lbs = 61 days). A general rule is about 30 cow days per 100 bushels/acre of corn produced.

Calves and replacement heifers can be also be a great option but will need a protein source in order to meet their growing requirements. Not only is grazing corn residue good for the cattle producer, but it is also good for the crop producer. Studies from the University of Nebraska-Lincoln have shown that grazing corn residue increases or at least maintains crop yields. (Grazing Corn Residue: A Win-Win for Crop and Cattle Producers)." More info. can be found at: https://go.unl.edu/fsa9.

It's November 1st as I write this. With much of harvest done, the next task for some may be fall herbicide applications and/or fall anhydrous application.

Fall Anhydrous: With nutrient management, we're hearing more about the 4R's. **1-Right Time** is after Nov. 1st in our area NRDs. Extra important, consider soil temperature. Soil microbial activity and the conversion rate of ammonium to nitrate is very low when the soil temperature is less than 50°F. Thus, apply fertilizer-N (and manure) when the soil temperature at the 4" soil depth is below 50°F and trending cooler. You can view soil temps at: https://cropwatch.unl.edu/soiltemperature. **2-Right Source** in the fall is anhydrous ammonia as it will bind to soil particles. Leaching risk is reduced in a dry fall and when applied at soil temperatures below 50°F. **3-Right Rate** for each field is based on soil samples and various nitrogen credits. Can also consider splitting the application with part this fall and the remainder next season. **4-Right Place** is making sure the anhydrous is deep enough. It's also ensuring there's a good seal, which will be something to watch in this dry fall.

Fall Herbicide is one management tool to control winter annual weeds and marestail (horseweed); it may not be necessary for every field. It's important to scout fields for current weed pressure. Also consider targeting fields that have a history of winter annual weeds or marestail. Nebraska research shows up to 95% of marestail germinates in the fall, so fall application can aid management. Some winter annual weeds also serve as hosts for pathogens like soybean cyst nematode (SCN): purple deadnettle (strong host), henbit (strong host), field pennycress (moderate host), shepherd's-purse (weak host), small-flowered bittercress (weak host), and common chickweed (weak host). SCN can reproduce in the field on henbit and purple deadnettle.

If you have a 2020 Guide for Weed, Disease and Insect Management, page 81 provides fall burndown corn herbicide options and page 127 provides soybean ones (I also show these at https://jenreesources.com/). Most products contain 2,4-D and/or dicamba. Tank-mixing a residual herbicide with a burndown product will improve marestail control because the residual activity will control marestail emerging after herbicide application. Be sure to check labels for any grazing restrictions if livestock will graze cornstalks after a fall herbicide application (You can find these on pages 200-204 of the 2020 Guide). If the label doesn't specify and you want to be on the safe side, a rule of thumb is to use the pre-harvest interval for the amount of time to wait before grazing stalks.

Regarding temperatures, in a CropWatch article Dr. Amit Jhala and I shared the ideal temperature for applying most post-emergence herbicides is between 65°F and 85°F. Herbicides can be applied at 40°F to 60°F, but weeds may be killed slowly. When the temperature is below 40°F for an extended time after burndown, weed control will

most likely be reduced, specifically for a systemic burndown herbicide such as glyphosate. Additionally, weed control may be reduced under cloudy conditions following an initial temperature drop below 40°F. With late-fall herbicide applications be sure to add labeled adjuvants to improve herbicide efficacy.

Actively growing weeds are key to achieving good control, regardless of herbicide used. Frosts of less than 25°F usually cause leaf damage to annual plants, making them poor targets for herbicide applications; however, winter annual weeds may tolerate a frost up to 20°F and continue growing when conditions improve, with little tissue damage. After weeds experience frost, active growth may not begin again for a few days. Growers should wait until new leaf tissue is produced, scout the field, and then consider applying herbicide. Generally, this would be when nighttime temperatures are 35°F or greater and daytime temperatures are at least 50°F for two consecutive days. Additionally, sunshine is needed for plants to recover.

Corn

Weed Response to Fall Burndown Herbicides[1]

Winter annual weeds (henbit, horseweed, pennycress, etc.) are often more susceptible to herbicide applied in the fall than in the spring. Herbicides can be applied in the fall, weather permitting, from late September to early December. Before using a particular herbicide, check to see if it is labeled for fall application.

Plant response may be altered by growing conditions, genetic variation in crops and weeds, soil type, pH, organic matter, temperature, growth stage and application rates. Ratings may vary from season to season and from area to area within the state. Ratings apply when herbicides are used as suggested in this publication and represent control that may be expected when using the higher rate when a rate range is presented. See pages 167-174 for additional problem weeds and their control.

Response Ratings: Ratings are for light to moderate weed densities, favorable conditions and weed growth stage as specified on product label. High weed densities, adverse conditions, or large weeds will reduce control.
10 = 96-100% 6 = 70-79%
9 = 90-95% 5 = 60-69%
8 = 85-90% 4-2 = less than 60%
7 = 80-84% 1 = 0

Site of Action[‡]	Herbicide	Alfalfa	Dandelion	Downy Brome	Field Pansy	Field Pennycress	Henbit	Marestail	Marestail, Glyphosate-Resistant	Prickly Lettuce	Shepherdspurse	Tansymustard
4	2,4-D ester 4L	7	8	1	2	10	9	9	9	9	10	8
4	2,4-D + dicamba•/Diflexx	9	9	1	4	10	9	9	9	8	9	8
2+4	Autumn Super + 2,4-D	6	8	1	7	10	9	8	8	8	9	10
2+4	Basis Blend + 2,4-D	6	8	4	8	10	8	9	8	9	10	9
4	Clarity/Banvel•	7	8	1	2	9	9	9	9	8	9	8
9	Glyphosate♦	5	6	10	8	9	9	8	4	8	10	8
9+4	Glyphosate♦ + 2,4-D	8	8	10	6	10	9	9	8	8	10	9
22	Gramoxone SL	4	5	7	6	10	9	7	7	8	9	8
5+4	Princep + 2,4-D	6	6	7	5	9	9	8	8	9	9	8
2+4	Python + 2,4-D	6	6	1	5	9	9	9	9	9	9	9
4	Scorch	7	8	2	4	9	9	9	9	8	9	8
14+9	Sharpen + glyphosate♦	9	9	10	8	10	9	10	9	10	10	10
14+4	Valor SX + 2,4-D ester	8	8	4	4	10	9	9	9	9	10	9

[1]This table presents fall burndown herbicide information only. It does not reflect residual control.
•Dicamba rates are based on a 4.0 lb ae/gal formulation, like those found in Clarity. See pages 210-214 or the *Herbicide Dictionary* for other products containing dicamba.
♦Glyphosate rates are based on a 4.0 lb ai/gal or 3.0 lb ai/gal formulation. See page 208 for information on common glyphosate formulations.
[‡]See pages 8-10 for more information on classification of herbicides by mode and site of action.

Using 2,4-D or Dicamba Before Planting

The University of Nebraska–Lincoln recommends following these guidelines when applying 2,4-D or dicamba before planting corn, soybean, or sorghum. Please note that these recommendations are applicable to both the ester and amine formulations of 2,4-D.

2,4-D Preplant Interval	Use Rate	Use Rate
Crop	16 oz	>16 oz
Corn	7 days	14 days
Soybean (use ester only)	7 days	30 days
Sorghum	10 days	21 days

Dicamba Preplant Interval	Use Rate	Use Rate
Crop	4 oz	8 oz
Corn	5 days	7 days
Soybean	only DT-soybeans	only DT-soybeans
Sorghum	7 days	10 days

Soybean

Weed Response to Fall Burndown Herbicides[1]

Winter annual weeds (henbit, horseweed, pennycress, etc.) can be quite susceptible to fall herbicide application. Herbicides can be applied in the fall, weather permitting, from late September up until early December. Before using a particular herbicide, check to see if it is labeled for fall application.

Plant response may be altered by growing conditions, genetic variation in crops and weeds, soil type, pH, organic matter, temperature, growth stage, and application rates. Rating may vary from season to season and from area to area within the state. Ratings apply when herbicides are used as suggested in this publication. See pages 167-174 for additional problem weeds and their control.

Site of Action[3]	Response Ratings: Ratings are for light to moderate weed densities, favorable conditions and weed growth stage as specified on product label. High weed densities, adverse conditions, or large weeds will reduce control. 10 = 96-100% 6 = 70-79% 9 = 90-95% 5 = 60-69% 8 = 85-90% 4-2 = less than 60% 7 = 80-84% 1 = 0 Herbicide	Alfalfa	Dandelion	Downy Brome	Field Pansy	Field Pennycress	Henbit	Marestail	Marestail, Glyphosate-Resistant	Prickly Lettuce	Shepherdspurse	Tansymustard
4	2,4-D ester 4L	7	7	1	4	10	9	8	8	9	10	7
4	2,4-D + dicamba	9	9	1	4	10	10	9	9	10	10	9
14+4	Aim + 2,4-D	7	8	1	5	10	10	9	10	9	10	9
14+2+4	Authority MTZ + 2,4-D	6	8	1	6	9	10	8	9	10	10	9
2+14+4	Authority XL + Aim + 2,4-D	9	9	9	6	8	10	9	9	10	10	10
14+2	Canopy EX	5	8	2	8	10	9	9	9	9	10	7
2+9	Envive/Enlite	4	6	2	8	9	8	8	7	8	8	
2+9	Extreme	4	8	10	8	10	9	9	9	9	10	8
9	Glyphosate•[2]	5	6	10	8	9	9	8	5	6	10	8
9+4	Glyphosate• + dicamba•[2]	10	8	10	8	9	10	9	9	9	9	9
9+4	Glyphosate• + 2,4-D[2]	8	8	10	8	10	9	9	9	8	10	9
22	Gramoxone SL	4	5	7	8	10	9	7	7	8	9	8
14+4	Sharpen + 2,4-D	8	9	2	6	10	9	9	9	9	10	9
14+9	Sharpen + glyphosate•[2]	9	10	10	8	10	8	8	6	10	10	10
14+2+4	Valor XLT + 2,4-D	9	9	4	8	10	9	9	9	10	10	9
14+9+4	Valor + glyphosate• + 2,4-D	9	9	10	8	10	9	9	9	9	10	9
2+14+15	Zidua Pro +Glyphosate	9	10	10	7	10	8	8	6	10	10	10

[1]This guide presents burndown information only. It does not reflect residual weed control.
[2]During colder days/nights (less than 60°F/50°F) glyphosate performance can be reduced.
•Glyphosate rates are based on a 4.0 lb ai/gal or 3.0 lb ae/gal formulation. See page 208 for information on common glyphosate formulations.
•Dicamba rates are based on a 4.0 lb ae/gal formulation, like those found in Clarity. See pages 210-214 or the *Herbicide Dictionary* for other products containing dicamba.
[3]See pages 8-10 for more information on classification of herbicides by mode and site of action.

Forage, Feed, and Grazing Restrictions for Row Crop Herbicides

The following information is provided as a reference to the restrictions and limitations for the grazing and feeding of row crops to livestock. This information serves as a guide only and does not replace or supersede the label. Always read and follow label directions.

Herbicide	Restrictions
2,4-D	Do not forage or feed corn fodder for 7 days following application. Do not permit dairy animals or meat animals being finished for slaughter to forage treated grain fields within 2 weeks after treatment. Do not feed treated straw to livestock if a preharvest or emergency treatment is used. See label for further information.
Accent Q	Do not graze or feed forage or grain from the treated areas to livestock within 30 days after application.
Achieve	Mature straw and grain may be fed to livestock 45 days after treatment. Immature crops (forage) may be grazed or cut for hay 30 days after treatment.
Acuron	Do not graze or feed forage from treated areas for 45 days following application.
Afforia	Do not graze treated soybean fields or harvest for forage or hay.
Aim	Do not feed soybean forage or hay to livestock. Do not feed small grain forage for 7 days.
Anthem MAXX	Do not feed soybean hay or forage to livestock. Do not feed corn forage for 30 days after application. Do not harvest or feed corn grain or fodder for 70 days after last application.
Anthem ATZ	Do not harvest for forage for 60 days or for grain and stover for 70 days after the last application. Do not harvest sweet corn or feed forage for 45 days after application.
Armezon/Armezon Pro	Do not graze or feed treated corn forage, silage, fodder, or grain for at least 45 days after application.
Arrow	Do not graze treated fields or feed treated forage or hay to livestock.
Assure II	Do not graze treated fields or harvest for forage or hay.
Atrazine	Do not graze or feed forage from treated areas for 21 days following application, or illegal residues may result.
Authority Assist	Do not feed treated soybean forage, soybean hay, or soybean straw to livestock.
Authority Elite	Do not feed soybean forage or hay to livestock.
Authority First	Do not feed treated soybean forage or hay to livestock.
Authority MTZ	Do not graze treated soybeans or harvest for forage or hay.
Authority Supreme	Do not feed treated soybean forage or hay to livestock.
Authority XL/Authority Maxx	Do not feed treated soybean forage or hay to livestock.
Balance Flexx	Corn may be harvested for forage 45 days after a postemergence application.
Banvel	Do not graze or harvest for livestock feed prior to crop maturity.
Basagran	Do not graze treated fields for at least 30 days after application.
Beacon	Do not graze or feed forage from treated corn to livestock within 60 days after application.
Beyond	No restrictions.
Bicep II/Bicep II Magnum, Bicep Lite II/Bicep Lite II Magnum	Do not graze or feed forage from treated areas for 60 days following application.
Blazer	Do not use treated plants for feed or forage.
Boundary	Soybean plants or hay may be grazed or fed to livestock 40 days after application.
Breakfree ATZ	Do not apply within 60 days of harvest for forage use.
Breakfree ATZ Lite	Do not apply within 60 days of harvest for forage use.
Broadaxe	Do not feed soybean forage or hay to livestock.
Bronate	Do not graze treated fields for 30 days following application.
Buctril	Do not cut for feed or graze within 45 days after application.
Buctril + atrazine	Do not cut crop for feed or graze within 45 days after application.
Bullet	Do not graze treated area or feed treated forage to livestock for 60 days following application.
Butyrac/Butoxone (2,4-DB)	Do not graze or feed soybean hay within 60 days after application of a 2,4-DB tank-mix application.
Cadet	Do not feed treated soybean forage to livestock. Do not harvest or feed corn grain or stover for 90 days following application. Do not harvest or feed field corn forage for 30 days after application.
Callisto	Do not harvest forage, grain, or stover within 45 days after application.
Callisto GT	Do not graze or feed forage from treated areas for 45 days following application.
Callisto Xtra	Do not harvest field corn within 60 days after application and sweet corn with 45 days after application.

Herbicide	Restrictions
Canopy EX	Allow 14 days after application before grazing or feeding forage or hay.
Capreno	Do not apply within 45 days of grazing livestock or harvesting corn forage.
Cinch	Do not feed or graze forage from treated areas for 30 days following application (all corn).
Cinch ATZ	Do not graze or feed forage from the treated area following application to sweet corn (45 days) and field corn and sorghum (60 days).
Cinch ATZ Lite	Do not graze or feed forage from treated area following application to field corn (30 days).
Clarity	For lactating dairy animals, do not harvest forage within 37, 51 or 70 days for 1, 2, and 4 pt/A use rates, and do not graze within 7, 21, and 40 days for 1, 2, and 4 pt/A applications. No restrictions for other animals.
Classic	Do not graze treated fields or harvest for forage or hay.
Cobra	Do not graze animals on green forage or stubble. Do not use hay or straw for animal feed or bedding.
Command	Do not allow livestock to graze on treated fields or crop residue, or feed treated forage to livestock.
Conclude/Conclude Ultra/ Conclude Xact/Conclude Xtra	Do not use treated plants for feed or forage.
Corvus	Corn may be harvested for forage 45 days after a postemergence application.
Degree	No information on label. Consult product manufacturer.
Degree Xtra	No information on label. Consult product manufacturer.
Diflex	Do not harvest forage for 45 days after application. Corn grain and stover may be harvested once the crop has reached the ensilage (milk) stage.
Distinct	Do not apply within 32 days of forage harvest. Do not apply within 72 days of corn grain and stover harvest.
DSMA	Do not feed treated foliage to livestock or graze treated areas.
Dual II/Dual II Magnum	Do not graze or feed forage from treated areas for 30 days following application.
Enlist Duo	Do not graze treated soybean. Do not harvest for forage or hay.
Enlite	Do not graze treated areas or harvest for forage or hay.
Envive	Do not graze treated areas or harvest for forage or hay.
Eradicane	No information on label. Consult product manufacturer.
ET	Do not allow livestock to graze treated areas.
Expert	Do not graze or feed forage from treated areas for 60 days.
Extreme	Do not graze or feed treated soybean forage, hay, or straw to livestock.
Fierce/Fierce XLT	Do not graze treated fields or feed treated forage or hay to livestock.
FirstRate	Do not harvest soybeans for forage or hay for 14 days after application.
Flexstar	Do not graze treated areas or harvest for forage or hay. Do not graze rotated small grain crops or harvest for livestock forage or straw.
Flexstar GT	Do not graze treated areas or harvest for forage or hay.
Frontrow	Do not graze or feed treated soybean forage, hay or staw to livestock.
Fultime NXT	No information on label. Consult product manufacturer.
Fusilade DX	Do not graze or harvest for forage or hay.
Fusilade 2000	Do not graze or harvest for forage or hay.
Fusion	Do not graze or harvest for forage or hay.
Glyphosate*	Refer to product label for specific information.
G-MAX Lite	*Corn:* Do not graze or feed treated forage within 60 days of application. *Sorghum:* Do not graze or feed forage within 80 days of application.
Goal	Do not use treated plants for feed or forage or allow animals to graze treated areas.
Gramoxone SL	*Soybean POST directed:* Do not graze treated areas or feed treated forage to livestock. *Corn harvest aid:* Do not use on corn grown for fodder or forage. Do not pasture livestock in treated fields. *Soybean harvest aid:* Do not pasture livestock within 15 days of treatment and remove 30 days before animal harvest.
Guardsman Max	*Corn:* Do not graze or feed treated forage within 60 days of application. *Sorghum:* Do not graze or feed forage within 80 days of application.
Halex GT	Do not graze or feed forage from treated areas for 45 days after application.
Harmony Extra	Do not graze or feed forage or hay from treated areas to livestock (dry-harvested straw may be used for bedding and/or feed).
Harmony GT XP	Do not graze or feed forage, hay, or straw from treated areas to livestock for 30 days after application.
Harness	No information on label. Consult product manufacturer.

*See pages 208-209 for information on common glyphosate formulations.

Herbicide	Restrictions
Harness Xtra	No information on label. Consult product manufacturer.
Hoelon	Do not allow livestock to graze treated fields. Do not harvest forage, hay, or straw from treated fields.
Hornet WDG	Allow 45 days before harvesting for forage or silage.
Huskie	Do not graze or harvest forage within 25 days or grain and straw within 60 days after application.
Impact	Do not graze or feed treated corn forage, silage, or grain for at least 45 days after application.
Intrro	*Grain sorghum:* Do not graze harvest forage for 70 days following application. *Soybeans:* Do not feed forage, hay, or straw. Do not ensile treated soybeans.
Keystone NXT	Allow 45 days before harvesting for forage or silage.
Lariat	Do not graze treated area or feed treated forage to livestock for 60 days following application.
Laudis	Do not graze livestock or harvest corn forage within 45 days of application.
Liberty	Do not harvest corn forage within 60 days of application.
Lightning	Do not graze or feed treated corn forage, silage, fodder or grain for at least 45 days after application.
Linex	Do not graze treated fields or feed forage from treated areas to livestock. Do not feed gin trash to livestock.
Lumax EZ/Lexar EZ	Do not graze or feed forage for 45 days. Do not harvest forage, grain, or stover within 45 days after application.
Marvel	Do not feed soybean forage or hay to livestock.
MCPA	Do not forage or graze meat or dairy animals on treated areas within 7 days of slaughter.
Me-Too-Lachlor II	Do not graze or feed forage from treatment areas for 30 days following application.
Moxy	Do not cut crop for feed fodder or graze within 45 days of application.
MSMA	Do not feed treated foliage to livestock or graze treated areas.
NorthStar	Do not graze or feed forage from NorthStar-treated corn to livestock within 30 days following application. Do not harvest silage within 45 days after application.
Optill/Optill PRO	Do not graze or feed treated soybean forage, hay, or straw to livestock.
Orion	Do not allow livestock to graze treated areas or harvest forage within 7 days of application. Do not apply closer than 14 days before cutting of hay or 40 days before harvest of grain or straw.
Outlook	*Corn:* Do not graze or feed forage within 40 days of application. *Sorghum (forage):* Do not graze or feed forage within 60 days of application. *Sorghum (grain):* Do not graze or feed forage within 80 days of application. *Soybean:* Do not graze or feed forage, hay, or straw to livestock
Panoflex	Allow at least 7 days between application and grazing of treated foliage.
Paramount	Do not graze treated areas. Do not harvest hay from treated areas for 309 days. Do not feed forage or fodder from treated areas.
Peak	Do not graze or feed forage from treated crops until 30 days following application. Do not harvest for silage until 40 days following application.
Permit	Allow 30 days before grazing and harvest of forage or silage.
Phoenix	Do not graze animals on green forage or stubble. Do not feed treated soybean silage (ensiled soybeans) to cattle. Do not utilize hay or straw for animal feed or bedding.
Poast/Poast Plus	Do not graze treated fields and do not feed treated soybean forage (green succulent) or ensilage to livestock. Treated soybean hay may be fed. Do not apply within 75 days of harvest for fodder or forage/silage.
Prequel	Do not graze or feed forage, grain, or stover from treated areas to livestock for 30 days after application.
Princep	Do not graze treated areas, or illegal residues may occur.
Priority	Following application to foliage, allow 30 days before grazing livestock, harvesting forage, or harvesting silage.
Prowl H_2O	*Sorghum:* Do not graze or feed forage within 21 days of application. *Corn:* Do not graze within 21 days of application. *Soybean:* Livestock can graze or be fed forage from treated soybean field.
Pulsar	Do not allow livestock to graze treated area or harvest forage within 7 days of application. Do not apply closer than 14 days before cutting of hay or 40 days before harvesting of grain or straw.
Pursuit Plus	Do not graze or feed treated soybean forage, hay or straw to livestock.
Pursuit	Do not graze or feed treated soybean forage, hay or straw to livestock.
Python	Do not graze or feed treated soybean forage, hay or straw to livestock. No corn information on label.
Raptor	No restrictions.
Realm Q	Do not graze or feed forage, grain, or fodder (stover) from treated areas to livestock within 45 days of application.
Reflex	Do not graze treated areas or harvest for forage or hay. Do not graze rotated small grain crops or harvest for livestock forage or straw.
Reglone	Do not graze or feed treated forage to livestock. Do not use seed from treated plants for food, feed or oil purposes.

Herbicide	Restrictions
Resicore	Do not apply within 45 days of harvest for ears and forage or within 60 days of harvest for stover.
Resolve	Do not graze, feed forage, grain or fodder (stover) from treated areas to livestock within 30 days of Resolve SG application.
Resource	Do not graze animals on green forage or use as feed prior to 28 days after application.
Revulin Q	Do not graze, feed forage, grain, or fodder (stover) from treated areas to livestock within 45 days of application. Do not harvest grain within 70 days or harvest forage or stove within 45 days of application.
Roundup PowerMAX	Allow a minimum of 7 days for corn and 14 days for soybeans between application and feeding of treated vegetation. *General:* Do not harvest or feed treated vegetation for 8 weeks after application unless otherwise specified.
Roundup WeatherMAX	*Roundup Ready corn:* Do not harvest or feed treated crops within 7 days of application. *Roundup Ready soybeans:* Do not harvest or feed treated crops within 14 days of application. *Forage legumes:* If application is greater than 44 oz, wait 8 weeks before grazing or feeding to livestock. *Pastures:* Do not harvest or feed treated crops within 8 weeks of application. *Corn, sorghum, and wheat harvest aid:* Allow 7 days between application and harvest of treated vegetation. *Soybean harvest aid:* Do not graze or harvest treated hay or fodder for livestock feed within 25 days of application.
Rowel	Except for field corn, do not graze treated fields or feed treated forage or hay to livestock.
Rowel FX	Do not graze treated fields or feed treated forage or hay to livestock.
Scepter	Do not graze or feed treated soybean forage, hay, or straw to livestock.
Select MAX	Except for alfalfa (15 days), do not graze treated fields or feed treated forage or hay to livestock.
Sencor/Dimetric	Treated vines may be grazed or fed to livestock 40 days after application.
Sequence	Do not graze or feed treated forage or hay to livestock following a POST application to soybeans.
Sharpen	*Corn:* Forage or silage may be harvested, fed, or grazed 80 or more days after application. *Sorghum:* Forage can be harvested, fed, or grazed 70 or more days after application. *Soybeans:* Forage may be fed or grazed 65 or more days after application.
Solistice	Do not harvest or feed forage for 45 days after application. Do not feed stover for 70 days after application. Do not harvest sweet corn ears or forage for 40 days after application.
Sonalan	Do not graze or forage crop grown in treated soil or cut for hay or silage.
Sonic	Do not feed treated soybean forage or soybean hay to livestock.
Spartan	No information on label. Consult product manufacturer.
Spirit	Do not graze or feed forage from treated crops to livestock for 30 days after application.
Stalwart C	Do not feed or graze forage from treated areas for 30 days following application.
Stalwart Xtra	Do not graze or feed forage from treated areas for 60 days following application to field corn or popcorn.
Starane Ultra	*Corn:* Do not allow livestock to graze or harvest forage from treated areas within 47 days of application. *Sorghum:* Do not allow livestock to graze or harvest forage from treated areas within 40 days of application. *Small Grain:* Do not graze or harvest forage for 7 days following treatment.
Steadfast Q	Do not graze or feed forage, hay, or straw from treated areas to livestock within 30 days of application.
Storm	Do not use treated plants for feed or forage.
Stout	Do not graze or feed treated forage or hay to livestock for 30 days following application.
SureStart/TripleFLEX	No restrictions on the label.
Surpass NXT	No restrictions.
Surveil	Do not graze treated fields of feed treated hay or forage to livestock.
Synchrony XP	Do not graze treated fields for forage or hay.
Targa	Do not graze treated fields or harvest for forage or hay.
Touchdown	Do not graze or harvest treated cover crops for feed.
Touchdown Total	*Roundup Ready corn:* Allow a minimum of 50 days between POST application and harvest of forage. *Roundup Ready soybeans:* Do not graze or harvest for forage or hay.
Treflan	*Alfalfa:* Wait 21 days after application before grazing alfalfa. No other information on label. Consult product manufacturer.
Trivence	Do not graze treated fields or harvest for forage or hay.
Trizmet II	Do not feed or graze forage from treated areas for 30 days following application.
Ultra Blazer	Do not use treated plants for feed or forage.
Valor SX	Except for field corn, do not graze treated areas or harvest for forage or hay.
Valor XLT	Do not graze treated areas or harvest for forage or hay.
Velpar DF/L/AlfaMax/AlfaMax Gold	Do not apply within 30 days of cutting, feeding for forage, or grazing.

Herbicide	Restrictions
Verdict	Corn or popcorn silage can be harvested, fed, or grazed 80 or more days after application. *Sorghum:* Forage and silage can be harvested, fed or grazed 70 or more days after application. *Soybean:* Do not graze or feed forage, hay, or straw to livestock.
Warrant	Do not graze or feed treated soybeans for feed. Do not graze or feed treated corn for 40 days after application.
Warrant Ultra	Do not graze treated areas of feed treated forage to livestock following application of this product.
Yukon	*Corn:* Following application to foliage, corn may be grazed or harvested for feed after the crop reaches ensilage (milk) stage at least 30 days after application
Zemax	Do not graze or feed forage from treated areas for 45 days following application.
Zest	Grazing ok after soft dough stage, grain and stover at physiological maturity
Zidua	(BASF) Grazing restrictions not addressed on the label.
Zidua PRO	Do not graze or feed treated soybean forage, hay or straw to livestock.

What a beautiful week weather-wise! The winds this weekend have allowed leaves to drop from deciduous trees/shrubs. With the temperature fluxes this fall, many trees and shrubs still maintained leaves in spite of hard frosts. They hadn't completely formed an abscission layer (cells at the attachment point where the leaf petiole meets the stem). Now that leaves are falling, it's important to keep them mulched into lawns or raked up to avoid conditions like snow mold in lawns. Leaves are also great materials to add to vegetable and flower gardens as they can improve organic matter and act as a mulch. If added to perennial flower beds, make sure to remove the leaf material when hostas begin to leaf out in the spring. This is because slugs decomposing leaf litter also like to feed on plants such as hostas.

Residue Management: My goal in writing about residue management is to share recent research to aid in answering questions received. There's a lot of ways that corn residue is managed: processing with the combine, various types of tillage, grazing, baling, spraying products, and cover crops (with thought of lowering Carbon:Nitrogen ratio and increase microbial populations). On a year to year basis, depending on the soil moisture and temperature, combinations of these practices may work well for individual field situations. Unintended consequences of practices include wind and water removing loose residue and/or soil from fields.

A few recent questions have included impacts of spraying various products and also about spraying nitrogen. While I know farmers have tried various products, sugar, and applied UAN to corn stalks, we didn't have any on-farm research studies with those products for the purpose of residue decomposition, so don't have data to share. Data is also very limited in scientific journals. If any of you considering products would be willing to test them via on-farm research, please let me know and I'd be happy to help you set that up and help with data collection.

There is a recent study from Illinois where residue management included using Calmer Bt chopper stalk rollers that sized residue into smaller pieces vs. standard stalk rollers. In addition to each mechanical control treatment for residue management, AMS or a biocatylist product were also added. The researchers found a 7% enhanced reduction of corn residue with the chopped residue vs. the standard stalk rollers (46% compared to 39% reduction) but there were no differences with the addition of AMS or the biocatylist product.
Iowa State conducted a three year study evaluating the effects of conventional tillage, no-till, and strip-till on residue breakdown on Bt and non-Bt corn residues. They did this by placing bags of residue of Bt and non-Bt hybrids in the three different tillage systems and evaluated decomposition after 3, 6, 9, and 12 months in a corn/soy

rotation. The results showed no significant difference between tillage systems or Bt and non-Bt hybrid decomposition (34-49% of residue remained in all treatments).

These researchers also studied the impact of nitrogen applications on corn residue breakdown over two years in no-till. Immediately after harvest, three N rates (UAN 32 percent) of 0, 30 and 60 lb N/acre were applied to corn residue. A specific amount of residue was placed in nylon mesh bags and left in the field for 3, 6, 9, and 12 months, after which residue decomposition was evaluated. The different rates of N resulted in no differences in rate of decomposition. In general, the longer the residue remained in the field, the more it decomposed over time, regardless of N rate. Thus the authors shared that applying N after harvest for residue decomposition was not effective nor economical as soil and air temperatures decreased over time after harvest. They shared that in general, decomposition of crop residue is primarily influenced by soil moisture (near field capacity) and temperature (above 50F) as these factors influence microbial activity.

Ice Storm: Last week's ice storm caused a great deal of damage to area trees and property from tree branches and trees falling. The process of clean up continues. Some trees, such as oaks, red and silver maples still had leaves when the ice hit, adding to ice accumulation. If a tree has sustained trunk failure, been uprooted, or has 50% or more broken branches, the tree should be removed immediately. Many trees had branches that bent under the tremendous ice load. Because these limbs bent instead of broke under the load suggests they have good structural integrity. When bending occurred in the lower 1/3 of the trunk (particularly in young trees), internal cracks may have occurred creating a point of weakness in the future. Support can be provided by staking small trees while they grow and strengthen the trunk.
Corrective pruning can help with trees that lost less than 50% of their branches (and don't have additional issues such as significant decay). The pruning should be done to balance the limbs on all sides of the tree canopy (crown). Prune broken branches to the next larger branch or to the trunk. Cut at the collar area instead of flush to the trunk to aid the tree in healing. Cut large limbs in stages. With one cut, a branch often breaks before it's completely cut, causing damage to the tree bark. Instead, as explained by K-State, "take a cut around 15" from the trunk. Start from the bottom and cut one-third of the way up through the limb. Make the second cut from the top down but start 2 inches further away from the trunk than the first. The branch will break away as you make the second cut. The third cut, made at the collar area, removes the stub that is left." More information can be found at this resource from K-State: https://go.unl.edu/nsu9.

York County Corn Grower Plot results can be found at: https://jenreesources.com/2020/11/06/2020-results-york-county-corn-grower-plot/. Special thanks to Ron and Brad Makovicka for hosting and to all our seed corn companies who participated!

Soybean Varieties: Seth Naeve, University of Minnesota shared that compared to lower yielding varieties, highest yielding varieties produce between 20 to 40% greater yields. Thus, variety selection is the greatest factor for impacting soybean yield. Third-party information is somewhat limited in Nebraska, and not all companies participate in third-party trials. If there's interest around a soybean grower plot in the area (particularly someone willing to host this), please let me know. Some third-party resources include: F.I.R.S.T Soybean Testing Program (https://www.firstseedtests.com/), and data from Universities such as Iowa State,

K-State, South Dakota State, and Missouri. Seed companies also have numerous locations with data. When possible, look at how a variety performs over multiple years at multiple locations.

Consider disease history in your field and select varieties with resistance for soybean cyst nematode (SCN), sudden death syndrome (SDS), brown stem rot (BSR), Phytophthora, etc.

One 2020 soybean maturity on-farm research study in Seward Co. comparing Group 3 (left) to Group 2 (right).

There's also been a shift to using more Group 2 soybeans in the area. Reasons include spreading out harvest, opportunity for planting cover crops for greater fall growth, and spreading risk from weather events. We now have 9 site-years worth of on-farm research studies conducted in Seward and York counties where it's shown no yield differences between specific high-yielding Group 2 and 3 varieties when planted early (April through first week of May). Thus, the improvement in soybean genetics provides opportunity to plant shorter season varieties for our part of the State. For non-irrigated fields, heat and lack of rain in August can impact shorter and longer season varieties differently, depending on when the stress occurs and the timing of that stress. We especially saw this in 2020 with a hot, dry August. Some growers felt their shorter season varieties did better because they were nearly mature at time of stress while others felt their longer season varieties benefited from rains after Labor Day. So in selecting soybean varieties for 2021, choose higher yielding varieties with disease tolerance/resistance for the specific field, plant early and consider planting a range of maturities to increase yields, mitigate risk, and spread out harvest.

This article has been on my heart for several months. It's reflections from a compilation of conversations. Honestly, it's been a hard year at times for most, if not all people. Interweaving this with Thanksgiving, there's perhaps a variety of thoughts, perspectives, and feelings as we approach the holiday. It may be tempting to want to skip it and perhaps be easier to complain than find gratitude or feel thankful!

The challenges with COVID, markets, livestock harvesting facilities, trade, weather impacts to crops, online schooling and virtual meetings, societal and family tensions and divisiveness, the election, and many businesses and farm operations hurting financially added much stress to 2020. (Insert a deep breath after reading all that!).

With these above-mentioned challenges come the feelings and realities experienced. I'm so blessed with individuals' trust through conversations and the vulnerability in sharing…conversations around mental wellness, stress, family and financial struggles…

So many hurting. So many conversations involving hurt, anger, regret. Common threads have included 'just wanting to be seen', 'be heard', 'be appreciated', 'be useful'.

We often don't know what's going on in others' lives. If you are struggling right now, please know you're not alone and there is ALWAYS hope and help! Please do reach out to someone. It would be wise for us all to program the following in our cell phones: National Suicide Prevention Lifeline: 800-273-8255 and Rural Response Hotline: 800-464-0258.

This isn't a direct quote but had recently read something along these lines: *Why is it that we often wait till people's funerals to share gratitude of how a person impacted us?* Made me think.

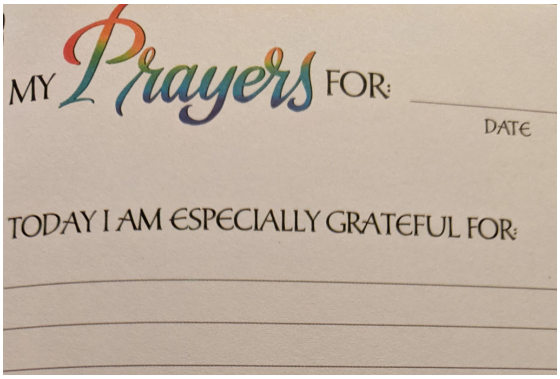
For me, perhaps a blessing this year is a renewed realization of how quickly time passes and each day is not guaranteed. Been processing and praying through all this.

Who are the people who've positively impacted my life that I need to tell?
Who are the people in my life I tend to take for granted and don't thank enough?
Who haven't I connected with recently?
Who could benefit from intentional encouragement during life's difficulties right now?

Perhaps questions others wish to consider?

We may never know how greatly a smile, kind words, a visit, a genuine 'thank you' can impact another person's life, especially since we often don't know the struggles others are experiencing. But these simple acts may just help someone in the midst of a dark or difficult time. They may also save a life.

Last November I mentioned there's been a lot of research on gratitude. Harvard University shared, "In positive psychology research, gratitude is strongly and consistently associated with greater happiness." Summarizing several studies I read, most would say finding a way to count one's blessings or focusing on gratitude greatly improved a person's sleep, health, attitude, focus, and relationships.



A simple way to start is to write out or send a text each day of 3-5 things for which you are grateful. If that's hard, start with one! For example, what are the ordinary every day things we take for granted (ex. bed, food in pantry, vehicle, etc.)? I've found the written account helps me with remembering my blessings and is encouraging to re-read in the difficult times. And, over time, it becomes easier to find gratitude even in the things that go wrong! I've also found one of the best ways to help my heart when feeling down is to find a way to encourage someone else. Additional ideas for expressing gratitude, particularly for those with children, can be found at: https://go.unl.edu/q04v.

My hope and prayer in writing this is that we seek kindness, seek connection, choose to more intentionally seek gratitude, and share with others how they've positively impacted our lives. Also hoping something shared here helps if you find yourself struggling today. Wishing everyone a very blessed Thanksgiving!

Thanksgiving Food Resources: For your Thanksgiving meal check out https://food.unl.edu/article/thanksgiving-central for turkey preparation, food safety questions, recipes, and health/wellness topics!

Hope you all had a wonderful Thanksgiving! May we continue to count our blessings as we are so blessed!

December brings another Extension winter programming season. Several have asked what this year's season entails. Honestly, like much in the midst of COVID, it's a moving target with adaptability and flexibility being key for us all. Had put together local plans allowing for both in-person and virtual programming. However, with a new set of restrictions, programming will depend on the risk dial going forward. I greatly prefer seeing people at meetings and field days, so still hoping for in-person meeting options for the future!

Risk Dial: As of 11/30/20, if either the district health risk dial Or state risk dial is Red, all Extension programming (including 4-H programs, meetings, and events) must be delivered virtually. Thus, for our part of the State, all December Extension programming is now virtual only. In-person programming with specific guidelines can only resume if the risk dial is not Red. The following are some upcoming December programs and connection info.
Dec. 2: Women Managing Ag Land Conference, 11:30 a.m.-2:30 p.m., https://wia.unl.edu/WMAL. Learn about navigating challenges of owning/renting ag land, improve business management and communication skills.
Dec. 10: Farmers & Ranchers College Weather & Economics Unplugged w/ Dr. David Kohl, Professor Emeritus, Dept. of AAEC, VA TECH & Eric Snodgrass, Principal Atmospheric Scientist for Nutrien Ag Solutions, 9:15 a.m.-Noon, https://go.unl.edu/december10. Learn latest on global trade, government payments, supply & marketing chain disrupters, and updated weather trends that impact ag business.
Dec. 17: Nebraska Soybean Day and Machinery Expo, 9 a.m.-3 p.m., https://go.unl.edu/w8k9. Learn marketing strategies, about soybean gall midge, soybean weed control, and improving Nebraska's soybean yield and quality.
Crop Production Clinics: The 2021 Nebraska Crop Production Clinics will feature research updates and information tailored to regional crop issues and grower interests. The Clinics will be offered virtually in 2021. (Depending upon directed health measures, there may also be limited opportunity for in-person viewing of Clinic presentations at various county locations).

Sponsored by Nebraska Extension, the programs will feature "live" presentations via zoom held on nine days throughout January. The clinics will be the primary venue for commercial and non-commercial pesticide applicators to renew their licenses in the following categories: ag plant and demonstration/research. The crop production

clinics also will serve as a venue for private pesticide applicators to renew their licenses. Dates include:

Western NE Focused Clinics: Tuesdays, Jan. 5, 12, 19, 2021
Central NE Focused Clinics: Wednesdays, Jan. 6, 13, 20, 2021
Eastern NE Focused Clinics: Thursdays, Jan. 7, 14, 21, 2021

Individual clinics will be customized to address topics specific to that area of the state, allowing growers to get research-based information on the issues they face locally. Complete agendas and online registration for each site will be posted at http://agronomy.unl.edu/cpc. Pre-registration is required and costs $80. Certified Crop Advisor credits will be available in these areas: crop production, nutrient management, integrated pest management, water management and professional development.

*Next week I'll share on private pesticide recertification and other certification program options.

This week, sharing more regarding certification trainings for ag professionals and master gardeners. Meeting in 'hubs' has been our vision in the midst of covid to reduce the number of people attending any one location for larger programs such as Crop Production Clinics and Nebraska On-Farm Research Updates. Example: instead of one day where 200+ people meet in York for Crop Production Clinics, attendees have the option of attending one of 6 days of central or eastern-focused Crop Production Clinics hosted by several local county Extension Offices each of those days, or they can attend virtually. As of current recommendations, if the risk dial is in the Red, we can only meet virtually.

Pesticide Training: For commercial and non-commercial pesticide applicators with the 'ag plant' or 'demo/research' categories, the Crop Production Clinics are your option for recertification. They will be virtual this year (and in person via 'hubs' if risk dial isn't Red) https://agronomy.unl.edu/cpc. Initial certification is still via testing: https://pested.unl.edu/certification-and-training#commercial.
For **private pesticide applicators**, our goal is in person training first. Should the risk dial be in the 'Red zone' at the time a training is scheduled, the training will be moved to a virtual option and those registered will receive the connection information. We also have a self-study option again which is an option provided by the local Extension office for those who are uncomfortable attending in person and/or have difficulty with using computers for virtual programming. Depending on the risk dial, and also depending on the town, there may be a mask requirement in place. To follow directed health measures on meeting capacities, **Pre-Registration is Required**. Not all county Extension Offices are publicizing their meetings. You will need to call the County Extension Office where you'd like to attend a meeting to Pre-Register. My preference is to share my meeting dates:
York County: Jan. 7 at 9:30 a.m. and 1:00 p.m. and Feb. 8 at 6:30 p.m. all at the Cornerstone Event Center at the Fairgrounds in York. RSVP to (402) 362-5508.
Seward County: Jan. 18 at 2 p.m. and 6:30 p.m. and Feb. 10 at 9:30 a.m. all at Harvest Hall at the Fairgrounds in Seward. RSVP to (402) 643-2981.

Chemigation Training: For those desirous to apply pesticides and/or fertilizer through irrigation systems, a chemigation license is necessary. If this is your first time, it's helpful to have the books ahead of time and you can contact the York Co. office if you'd like them. Training for our area will be conducted by Steve Melvin on January 8th at 9:30 a.m. at the Cornerstone Event Center at the Fairgrounds in York. Pre-Registration is Required to (402) 362-5508.

RUP Dicamba Training is no longer being conducted by Extension. Nebraska Department of Ag is leaving training up to the Registrants, and if I understand correctly, they will no longer require those trained to be listed on the NDA website.

Master Gardeners: If you have a strong interest in gardening and enjoy helping others, you are invited to become a Nebraska Extension Master Gardener volunteer. This program will increase your knowledge and understanding of best cultural practices for growing flowers, vegetables, turf, plant disease and insect pest identification, and much more. One area training option is through Lancaster Co. Extension beginning in Feb. 2021 via Zoom during the day. The fee is $190.00. Application deadline is Jan. 15, 2021 at:
https://ssp.qualtrics.com/jfe/form/SV_08OngDRFkSOJIRT. Please call Mary Jane Frogge at 402-441-7180 for any questions.
Current Master Gardeners can plan on recertification training via zoom on Feb. 16, 23, Mar. 2, and 9 from 6:30 – 9:00 PM.

JenREES 12-13-20

The sun glistening on the snow holds such beauty after a warm, dry beginning to December! Moisture is very much needed! For curiosity sake, I looked at the Drought Monitor for this past week and compared it to the same week in previous years. The pics are shared at jenreesources.com and it's quite interesting comparing and thinking back through the years. Hopefully we can receive more precipitation prior to planting season.

If you missed it, the Farmers and Ranchers College program featuring Dr. David Kohl and Eric Snodgrass can be found for 30 days at: https://www.youtube.com/watch?v=9cFKs13i_Ak. I appreciate how Eric shares global weather and climate information in an easy to understand way! He also shared an interesting story of how El Nino is related to the Christmas season, so you'll have to watch the recording to learn that. Some stats he shared for the State of Nebraska: June was the 18th driest on record followed by the wettest July on record. That was followed by the driest August on record with September as the 18th driest on record (would have been driest but thankfully we received precipitation after Labor Day weekend). He looked at weather data from 1901-2020 for Nebraska and the U.S. which showed a trend of 2.5" precipitation gain from April-October (with higher gains as one goes east in the U.S.). He also looked at the past 40 years which showed heavy rainfall events (more than 2" per event) has tripled.

There was an effort my colleagues began a few years ago called "Weather Ready Farms" https://weather-ready.unl.edu/. It was designed to improve or increase resilience towards the impacts of extreme weather on Nebraska's farms. A number of things go into that with some examples at the website. A few examples of things farmers have done since the 2012 drought and the 2019 floods include keeping the ground covered with residue and cover crops to help reduce evapotranspiration, increase water infiltration, and reduce wind/water erosion as we experience these more extreme events.

BeefWatch Webinar Series is designed to highlight management strategies in grazing, nutrition, reproduction, and economics to increase cow/calf and stocker production efficiency and profitability. More information and registration for the BeefWatch Webinar Series can be found at: https://beef.unl.edu/beefwatch-webinar-series. Dates are January 5, 12, 19 and 26 with each webinar beginning at 8:00 p.m. CST. The focus for January's webinar series is **"Preparing and Managing for the Calving Season"**. Jan. 5: Preventing calf scours (Is there a way to reduce the likelihood of calf scours without adding additional vaccines or other cash expenses to your current program?)

Jan. 12: Calving tool box and record keeping (favorite tools and tricks for smoother season)

Jan. 19: Calving complications and when to call the vet

Jan. 26: Cow nutrition needs at calving and in early lactation

Poinsettias: Kelly Feehan shares the following, "It's Poinsettia time. Hard to believe these bright, colorful plants originated from a weed. And amazing what plant breeding and good marketing can do. To enjoy your Poinsettia as long as possible, place them in an area with bright sun for at least half the day. If possible, provide a night temperatures in the 50's or 60's. This is often the most challenging condition to meet in the home, but keep plants as cool as possible at night. If plants

are near a window, don’t let the leaves touch cold window panes; and keep Poinsettias away from warm or cold drafts. Poinsettias need to be well-watered. Because they are in a light weight soil-less mix, they will dry out quickly. Allow the soil to dry slightly between watering; then water thoroughly until water runs out of drainage holes. Be sure to punch holes in decorative foil wraps to prevent soggy soil conditions or at least pour excess water out of the foil after each watering.”

JenREES 12-20-20

Farm Bill Webinar Link: Received some questions this month regarding decisions for 2021 ARC/PLC election sign-up but haven't looked at or worked with decision tools yet. Last week there was a webinar on program elections and the recorded link can be found at: https://go.unl.edu/yg90. For those of you who elected ARC-IC for 2019-2020 due to prevent plant or significant yield loss in 2019, it will be important to reconsider your options. This webinar does a great job of explaining and going through them. While our last election we could look back to get an idea, we don't have that opportunity going forward. It's nice that it's a one year election so it can be changed as prices/yields fluctuate. Hope to share more information in January after working with real data to get a feel for things. Curious how the significant windstorm and drought in areas may impact decisions for specific counties going forward. For now, you can find more information, including the decision tools, at: https://www.fsa.usda.gov/programs-and-services/arcplc_program/index. If you've used the decision tools in the past, you will use the same login info. you created in the past.
Ag Land Leasing and Budgeting Webinar was also held last week. If you missed it or were interested in watching the recording, you can do so at the following YouTube link for 30 days: https://www.youtube.com/watch?v=dH-RVIhnIG8&t=166s.
Ag Budgeting Workshop: calculating the cost of production per crop enterprise was a webinar held after the ag leasing webinar. You can also view this recording via YouTube at: https://www.youtube.com/watch?v=KIgbkp0QNH0.
Live Christmas Trees: Just a reminder to daily check live Christmas trees for their watering needs to avoid a fire hazard. Kelly Feehan, Extension horticulture educator shares, "The rule-of-thumb is a tree will use one quart of water per day for every inch of trunk diameter near the base. If you have a tree with a 3-inch base, it can use 3 quarts of water per day. The trunk should have been freshly cut at a slant just prior to putting it in the stand. If the stand is empty for more than six to eight hours, the tree's pores plug up again. Water uptake is much reduced and the tree dries out sooner. If a tree stand dries out for half a day or more, the only thing that can be done is to remove the tree from the stand and recut the base; which is not a fun task with the lights and ornaments. When watering, nothing needs to be added to water in the tree stand to promote freshness."
Christmas Cactus: Kelly also shares the following, "to keep Christmas cactus blooming as long as possible, place it in bright but indirect light. Too much sun can cause leaves to turn yellow. Keep soil or potting mix constantly moist but not waterlogged. Even though they are cactus, they are jungle natives and prefer just moist conditions with indirect light. Avoid fertilizing Christmas cactus during the winter; but do fertilize every other week from spring through fall. Plants seem to flower best if they are a little pot bound; but if roots become over-crowded in the container, blooming will decrease. If you haven't repotted in several years, or you notice a decrease in flowering from the previous year, repot the plant into a slightly larger pot, but wait until spring. If possible, move the plants outside for summer. Keep in a shady area as Christmas cactus will not tolerate full sun."

JenREES 12-28-20

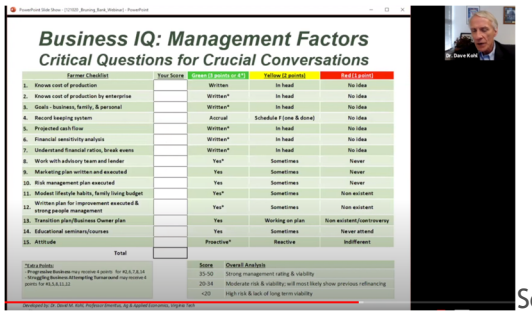
There's perhaps a certain anticipation to see the end of each year and the dawning of a new one. That speaks to optimism and hope many have.

While covid changed many things in 2020, there's many positive things that happened too. One has been watching families, communities, and neighbors rally around each other as hard times and losses were realized. I hope that's something that never changes within our communities. Both personally and professionally, covid also provided an opportunity for increased focus and intentionality on what was genuinely important in my life. Perhaps for others as well?

In Extension, and most likely for all, the challenges forced us to stretch, learn new technologies, and think outside the box more. For example, video production via smartphones out in the fields, pastures, and feedlots exponentially increased and more of my colleagues learned video production/editing. The 4-H, Family, and Food/Nutrition teams brought many virtual learning opportunities to family living rooms and provided fitness challenges for families. We also made some changes for county fair that worked better. Being forced to think outside the box was beneficial in many ways!

I'm also so grateful for my administrators allowing and trusting me to do my job in serving people in the midst of covid. That may sound strange to say, but I have colleagues in other states who weren't allowed to leave their homes for work…essentially research shut down and anything done Extension-wise happened virtually. So I've been incredibly grateful that much of my job remained the same with field visits and conducting on-farm research studies!

As we approach a new year, how can some of the challenges and positives of 2020 impact our 2021? Are there things in our lives that aren't necessarily bad, but are keeping us 'busy' and taking time from the more 'important things'? What realistic yet necessary goals should we individually set for 2021? Here's wishing you a blessed 2021!



Farmer Checklist	Your Score	Green (3 points or A*)	Yellow (2 points)	Red (1 point)
1. Knows cost of production		Written	In head	No idea
2. Knows cost of production by enterprise		Written*	In head	No idea
3. Goals – business, family, & personal		Written*	In head	No idea
4. Record keeping system		Accrual	Schedule F (one & done)	No idea
5. Projected cash flow		Written*	In head	No idea
6. Financial sensitivity analysis		Written*	In head	No idea
7. Understand financial ratios, break evens		Written*	In head	No idea
8. Work with advisory team and lender		Yes*	Sometimes	Never
9. Marketing plan written and executed		Yes	Sometimes	Never
10. Risk management plan executed		Yes	Sometimes	Never
11. Modest lifestyle habits, family living budget		Yes*	Sometimes	Non existent
12. Written plan for improvement executed & strong people management		Yes*	Sometimes	Non existent
13. Transition plan/Business Owner plan		Yes	Working on plan	Non existent/controversy
14. Educational seminars/courses		Yes	Sometimes	Never attend
15. Attitude		Proactive*	Reactive	Indifferent
Total				

*Extra Points:
- Progressive Business may receive 4 points for #2,6,7,8,14
- Struggling Business Attempting Turnaround may receive 4 points for #1,5,8,11,12

Score	Overall Analysis
35-50	Strong management rating & viability
20-34	Moderate risk & viability; will most likely show previous refinancing
<20	High risk & lack of long term viability

Developed by: Dr. David M. Kohl, Professor Emeritus, Ag & Applied Economics, Virginia Tech

Screen capture of the first page of Dr. David Kohl's Business IQ spreadsheet. The second page has specific action considerations. (Please click to enlarge).

Business IQ may be one key to success in the 2020's: This may perhaps help with some goal setting. In a recent webinar, Dr. David Kohl, Professor Emeritus Ag and Applied Economics from Virginia Tech, shared a 'Business IQ' spreadsheet with 15 key performance indicators ranging from knowing cost of production and having a written marketing plan to one's attitude. It's an

assessment where farmers (or any business owner) can honestly score oneself. He then suggests to write down 3 areas to continue and 3 areas to improve (no more than three each). I'm unsure I can share it on a website, but am willing to email or print a copy if you're interested.
He also shared two poll results. In the first, 976 ag lenders were polled in the summer of 2020 on "Characteristics That Are Important to Agricultural Producers for Resiliency & Agility". The top three answers included: knowing cost of production (62%); executing a marketing risk management plan (58%); and strong working capital (41%). In the second, 300 Kansas farm and ranch women selected their top three "Specific Actions You Are Taking in Your Business, Family & Personal Life for Resiliency & Agility". Their collective top three answers included: Reexamining goals-business, family & personal (68%); Building cash and working capital (41%); and Refining family living budget (39%). If you'd like to learn more, his recorded presentation is available till January 10th at: https://go.unl.edu/dec10recording.
Extension Survey: It's also that time of year for annual reporting. If you could please help me out by completing this 5 question anonymous survey, I'd appreciate it: https://app.sli.do/event/s8g48y8z. Thank you!