

Auglaize County OSU Extension Weekly Agriculture Newsletter – April 22, 2020

Scouting and Latest Information



Common chickweed and purple deadnettle



Wheat field

Hello!! Good morning/afternoon! I pray you are well.

Thank you to those individuals that participated in the fifth Auglaize County Ag Talk meeting on Tuesday. We had 19 people participate. As mentioned in a special message on Monday, because of the COVID-19 issue, I can no longer hold face-to-face meetings, so I wanted to start a virtual meeting so we can stay in contact. Therefore every Tuesday from 8:30 to 9:30 AM we will be hosting a virtual meeting via Zoom that can also act as a simple conference call for those of you not able to get online to view live. The meeting will be set up to discuss key, timely information for your operation and to open the floor for questions and sharing of information. You may propose topics for the next meeting at anytime during the week by e-mailing or calling me. **At this time only weather is on the schedule for next week.** Please join use every Tuesday for Auglaize County Ag Talk.

If you want to contact Brigitte Moneymaker you may contact her at moneymaker.4@osu.edu or 434-962-3525.

If you are a buyer or seller of hay or straw, let me know and I can keep a list to share with others. Currently an individual let me know they have about 200 3' X 3' wheat straw bales for sale. This same individual is willing to sell his winter cover crops as forage to anyone interested. Call the OSU Extension office at 701-541-0043 or e-mail me at stachler.1@osu.edu to get the contact information.

Joke: What did the neurotic pig say to the farmer??

Rain fell three days this past week. Rainfall on Wednesday, April 15th ranged from 0" near St Rt. 66 and Vogel roads to 0.11" near Shelby-Fryburg and Santa Fe-New Knoxville roads. Rainfall on Friday ranged from 0.02" near St. Rt. 385 and Feikert roads to 0.4" near Mercer Line and St. Rt. 197 roads. Rainfall on Tuesday ranged from 0" near Sommer and Minster-Ft. Recovery roads to 0.11" near Lowe's. Rainfall for the week ranged from 0.25" near County Road 66A and Dowty roads to 0.52" near Kossuth. Rainfall for the week averaged 0.33, 0.05" less than last week.

The average high temperature now is 63 degrees F, two degrees more than last week. Temperatures were above normal for **0** days of the week and below normal for **7** days of the week. The range in high temperature for the week was 44 to 60 degrees F. The average high temperature for the week was 51.4 degrees F, which is 4.9 degrees F cooler than last week and 11.6 degrees F below the current normal high temperature!

Wheat



Burned leaf tips from freeze



Purple color of wheat do to freeze

Wheat development moved very slowly last week. We are still at the one to two node stage of development. The biggest story of the week is the freeze damage to the wheat! It is so extensive. Maybe 50% of fields had areas in the field that turned purple while every field had leaf tips that were burned. Despite the extensive visual damage there **should have been no** long term effects of the cold based upon the stage of the wheat. However some fields were at the second node stage which **may** allow some freeze damage in the coldest areas of the field, but not extensive. Wheat quality deteriorated again this week due to the cold weather! This is my current rating of the wheat crop: 5% excellent, 40% good, 45% fair, 10% poor, and 0% very poor. Last week's rating was 5% excellent, 45% good, 40% fair, 10% poor and 0% very poor. I have not seen any significant leaf diseases in the wheat yet to be concerned!

Alfalfa



Maximum height of alfalfa



Alfalfa field



Patchiness of stand and lots of dandelion

Alfalfa grew slowly this past week due to the cold weather. Surprisingly there was little freeze damage to the alfalfa as compared to the wheat! Alfalfa is up to 8" now. We are at 168 heat units for alfalfa weevil activity. Between 300 and 350 alfalfa weevil start to hatch, so we are safe for now, but need to get ready to start scouting late next week.

Corn

I have not seen any corn planted yet, however I have heard of corn planted in the county.

Soybean

I have not seen any soybean planted yet, but I'm sure there is some planted already in the county.

Weeds



Common chickweed and purple deadnettle **New weed = perfoliate pennycress or claspleaf pennycress**

More winter annual weeds are flowering. Common chickweed and purple deadnettle are most prevalent in fields now as they are in full flower. Mature seeds have already been produced on these two species. In my scouting I found a new weed that I have only seen once before. It is called claspleaf pennycress or perfoliate pennycress. The scientific name is *Microthlaspi perfoliatum* or *Thlaspi perfoliatum*. It is a mustard species with small white petals. The plant is small as you can see from the photos. Obviously I have overlooked it for some time as I found it in many fields and at significant levels. Glyphosate and 2,4-D ester should control this species.

Insects/other

Watch out for slugs! They should be fairly prevalent. To check for slugs, purchase some cheap beer, dig a small hole and put a cup in it with some of the beer. The slugs love the smell of the beer and will be attracted to it.

There were NO changes to the XtendiMAX, Engenia, FeXapan, or Tavium labels this week. The Engenia label still has the most approved products compared to XtendiMAX and FeXapan. No new

herbicides were added to the XtendiMAX label this past week, which totals 238 herbicides. No new adjuvants were added the XtendiMAX label, now totaling 414. No new nozzles were added to the XtendiMAX label, which totals 44. No new Drift Reducing Adjuvant (DRA's) were added to the XtendiMAX label this week, making a total of 95 DRA's. No new nutritional products were added from the XtendiMAX label which totals 246. No new product was added to the Insecticides, Fungicides, Plant Growth Regulator and Other group on the XtendiMAX label which totals 105. No new adjuvants were added to the Engenia label, which now totals 582. No new herbicides were added to the Engenia label, which brings the total herbicide count to 170. No new products were added to the Other category (growth regulators and fungicides) on the Engenia label, which totals 31. No new insecticides were added to the label which currently has 37 products. No new Drift Reducing Adjuvants (DRA's) were added to the Engenia label, which totals 128. No new nozzles were added to the Engenia label, which totals 31. No new nutritional products were added to the Engenia label which totals 229 products. No new products was added to the pH Modifier group of the Engenia label which totals 17 products. The FeXapan label has many of same the products and nozzles as the XtendiMAX label, but NOT all are the same, so check the FeXapan label carefully. The FeXapan website has changed drastically! They now have DRA's listed per product type that must be mixed with FeXapan. There are some products that need no DRA added! There are 13 glyphosate formulations, 228 herbicides, 41 insecticides, 17 fungicides, 94 DRA's, 317 adjuvants, 202 nutritionals, 29 plant growth regulators, 18 other products, and 46 nozzles that have been approved for the FeXapan label. There are 47 herbicides, 101 DRA's, 316 adjuvants, 96 nutritionals, 16, insecticides, 7 fungicides, 8 other products, and 41 nozzles approved for use with Tavium.

Upcoming Meetings

1. **Auglaize County Ag Talk.** Every Tuesday from 8:30 to 9:30 AM we will have a virtual agricultural meeting. The third Tuesday will be the Ag Breakfast. Next week's topic is Weather by Aaron Wilson and Grain Market Update by David Bambauer. The link to get onto the meeting is as follows: <https://osu.zoom.us/j/2119847503>
If you just want to call in the phone number and meeting code are as follows: 646-876-9923 2119847503#

2. **Ag Madness.** OSU Extension is offering a virtual educational session at 9:00 AM, Noon, and 3:00 PM. Go to the following website for the schedule of topics: go.osu.edu/AgMadness. I have attached a flyer with this newsletter about this awesome educational experience.
3. **The OSU Farm Office is Open.** The OSU Extension Farm Office Team will open our offices online and offer weekly live office hours on Mondays from **8:00-9:30 pm EST**. Each office session is limited to 500 people and if you miss our office hours, we'll post recordings on farmoffice.osu.edu the following day. **Register at <https://go.osu.edu/farmofficelive>.**
4. **All OSU Extension face to face meetings have been cancelled or postponed through July 6th. Meetings after this date will go on as planned at least until further notice.**

Answer to joke: You take me for grunted!!

Sharing the Road With Farm Equipment



It is that time of year again when the planting season is upon us. This is an especially busy time of the year for farmers who need to share the roads with non-farm people. It is paramount that everyone is extra cautious at this time of the year when on the roads. Accidents happen quickly.

After last year's late planting, farmers will be anxious to get crops planted as fast as they can and as soon as they can working long hours during the day and night. These long hours and working at night will pose special road hazards with impatient non-farm drivers.

Farm equipment is much wider and longer today than ever before, so special caution is required when passing farm equipment. Tractors can also go faster today than years ago making it more difficult to pass safely. When drivers see farm equipment and tractors with slow moving vehicle signs and flashing lights take special precautions.

Allow tractors and equipment to get off the side of the road before passing on narrow roads. Be extra cautious early in the day and in the evening when the angle of the sun is low and can impair driving. Be especially careful passing to make sure the farmer is not making a left hand turn suddenly into a field or into an intersection. The larger equipment needs to make a wider turn than normal to get into the fields. The tractors and farm equipment can not always get off the side of the road due to objects and the steepness of the road ditch. Never pass on a bridge.

Besides asking the non-farm drivers to be extra careful, the agricultural community has established rules and recommendations for farmers to encourage safety on rural roads. The highlights of these rules are listed below

- At all times, a "slow-moving vehicle" emblem is required.
- Headlights and taillights are required until 30 minutes after sunrise, and 30 minutes before sunset.
- Headlights and taillights are required during day hours in inclement weather, including fog and rain.
- Additional extremity lighting is required on dual-wheeled tractors.
- Amber flashers and turn signals are recommended at all times.
- Ideally, towed implements should have reflectors, lights, and a slow-moving vehicle emblem. Law requires these items when the implement blocks the lighting/marketing configuration on the tractor.
- Safety cables or chains should be used in any towing situation.

- Lock tractor brakes together when driving the roads.
- Wear seat belt while operating tractors with rollover protective structures (ROPS) and cabs.
- Ohio law states that only one wagon/implement may be towed behind any vehicle with two exceptions:
 - 1) Towing with a tractor: More than one wagon/implement may be towed. While no maximum is indicated, common sense and safety should play a role.
 - 2) Towing with a pickup or straight truck: A truck designed by the manufacturer to carry a load of not less than one-half ton and not more than two tons may tow two wagons/implements.
- Use an escort vehicle when possible.

Farmers please take special precautions when making left hand turns. Make sure no one is ready to pass you and you have enough time to make the turn with on-coming traffic. As much as possible be looking for traffic following you and pull over from time to time when safe to do so. Agriculture is a major source of income for the community and has been designated as an essential industry during the COVID-19 pandemic. Be especially careful on the roads the next several weeks. Be aware of farm equipment. All of us will be sharing the roads, so drive safely.

More information on Ohio laws and road safety may be found in the publications *Rules of the Road: Navigating Ohio Roadway Laws for Farm Machinery*, <https://farmoffice.osu.edu/sites/aglaw/files/site-library/Roadway%20Law%20Bulletin.pdf> and *Transporting Farm Equipment*, <https://www.extension.purdue.edu/extmedia/PPP/PPP-83.pdf>. Thank you to Ed Lentz for sharing much of this information with me.

C.O.R.N. Newsletter

<https://agcrops.osu.edu/newsletter/corn-newsletter>

CFAES Ag Weather System Near-Surface Air and Soil Temperatures/Moisture

We are once again providing a soil temperature overview in the C.O.R.N. Newsletter through April-May 2020. The College of Food, Agricultural, and Environmental Sciences (CFAES) Agricultural Research Stations located throughout the state have two- and four-inch soil temperatures monitored on an hourly basis.

CFAES Near-surface Air and Soil Temperatures

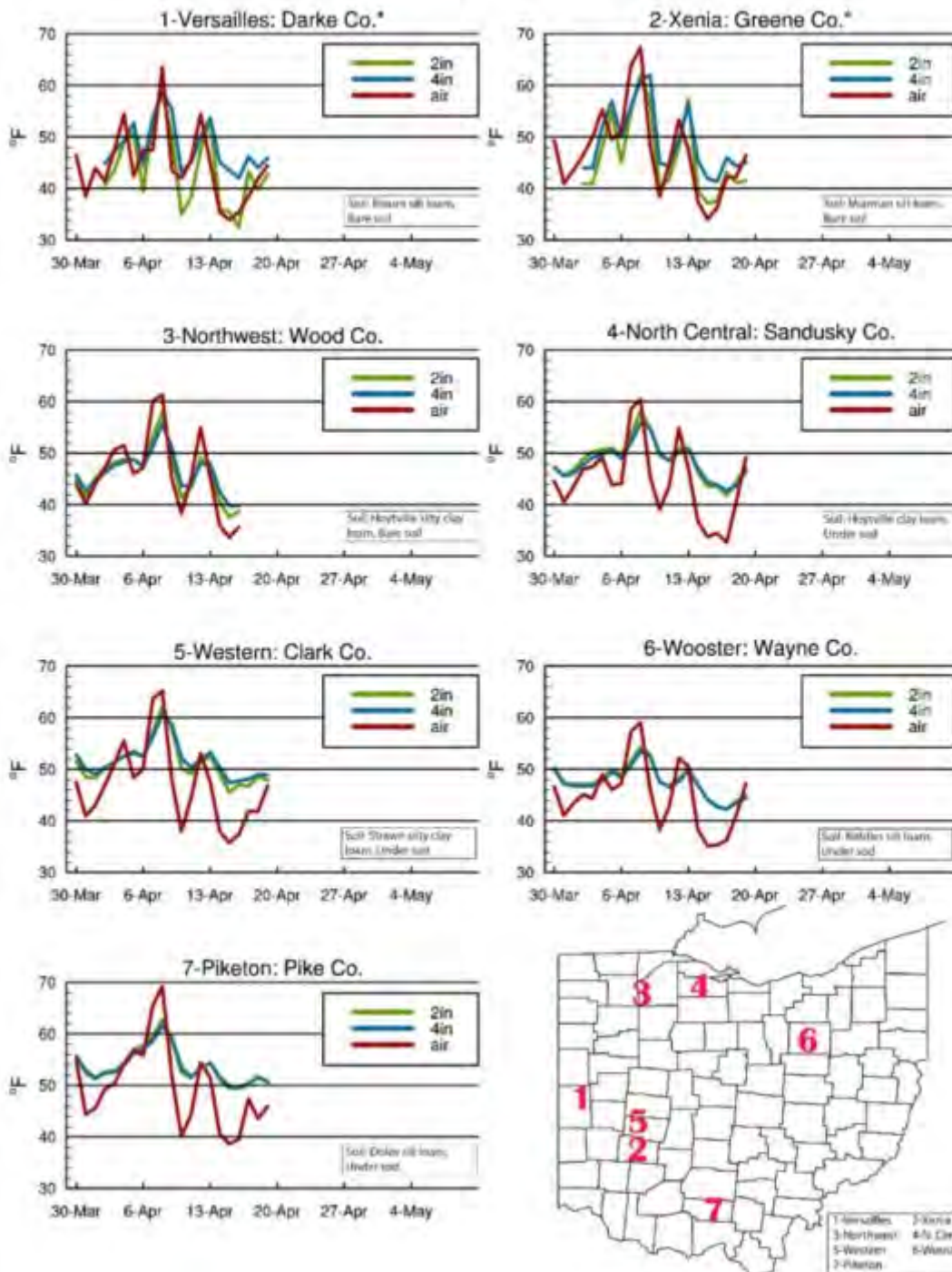


Figure 1: Average daily air temperature (red), two-inch (green) and four-inch (blue) soil temperatures for spring 2020. Soil type and placement are provided for each location. Map of locations provided in the bottom right. Soil temperatures are minimum temperatures for Versailles and Xenia and daily average for other sites.

Our Western site in Clark County is now available. We have added this and Northwest Agricultural Research Station from Custar, Ohio as well. We are still supplementing additional data from western Ohio with data from Darke and Greene Counties. These sites (noted by an asterisk on Figure 1) report minimum (morning) soil temperatures. The other sites are reported on Figure 1 as a daily average.

Figure 1 shows that two- and four-inch soil temperatures have cooled significantly in response to air temperatures running 4 to 12°F below average for the week ending April 19, 2020. In general, average soil temperatures have dropped from the mid-50s/low-60s back into the 40s across the state. In fact, 2-inch soil temperatures at Northwest were in the upper 30s as of April 16, 2020. These soil temperatures are below their 5-year averages. The current weather forecast calls for seasonally cool air temperatures over the next 5-7 days with highs generally in the 50s and 60s, and overnight lows in the 30s and 40s. Soil temperatures are likely to slowly warm throughout the week.

Figure 2 (left) shows that lighter precipitation fell across Ohio this week, but some of this precipitation across the north came in the form of accumulating snowfall. Totals ranged from 0.1 inch in the northwest up to 2 inches in southeast Ohio. Calculated soil moisture ranking percentiles (right) remain above the 80th percentile with the greatest percentiles noted in southeast Ohio.

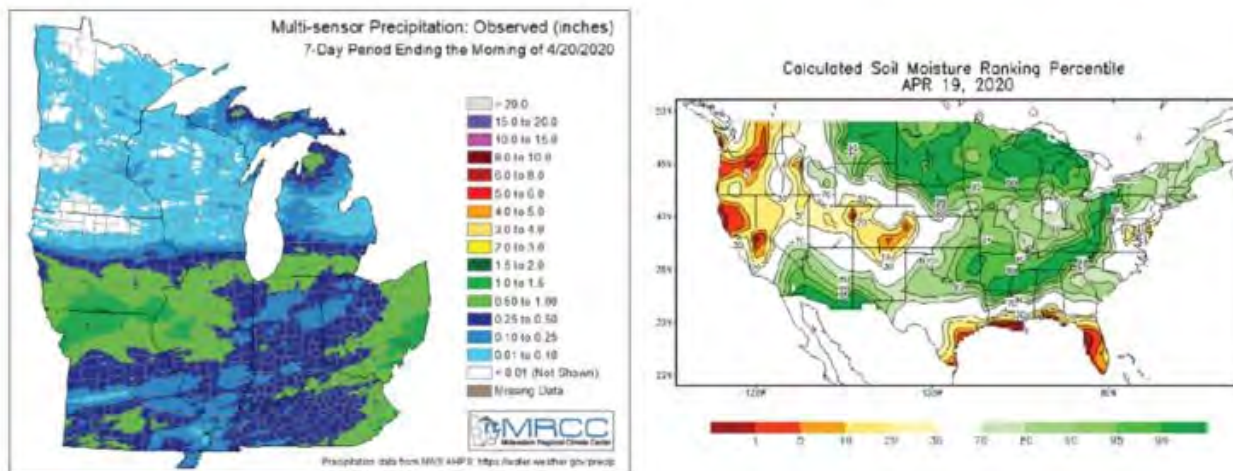


Figure 2: (Left) Precipitation estimates for the last 7 days ending on 4/20/2020. Figure provided by the Midwest Regional Climate Center (<https://www.mrcc.illinois.edu>). (Right) Calculated soil moisture ranking percentile for April 19, 2020 provided by NOAA's Climate Prediction Center (<https://www.cpc.noaa.gov/>).

For more complete weather records for CFAES research stations, including temperature, precipitation, growing degree days, and other useful weather observations, please visit <https://www.oardc.ohio-state.edu/weather1/>.

Author(s):

[Aaron Wilson](#), [Greg LaBarge, CPAg/CCA](#), [Elizabeth Hawkins](#), [Sam Custer](#)

How cold is too cold (for winter wheat)?

Overnight temperatures on April 15 and April 16, 2020 dropped into the low to mid 20s across a large portion of Ohio (Figure 1), and unofficial reports show a few locations briefly dropped into the upper teens! These temperatures were generally 12-20°F below average (1981-2010). A closer investigation at a few of the colder sites reveal temperatures remained below 32°F for 9-11 hours, below 28°F (hard freeze) for 7-9 hours, and below 22°F for 3-5 hours.

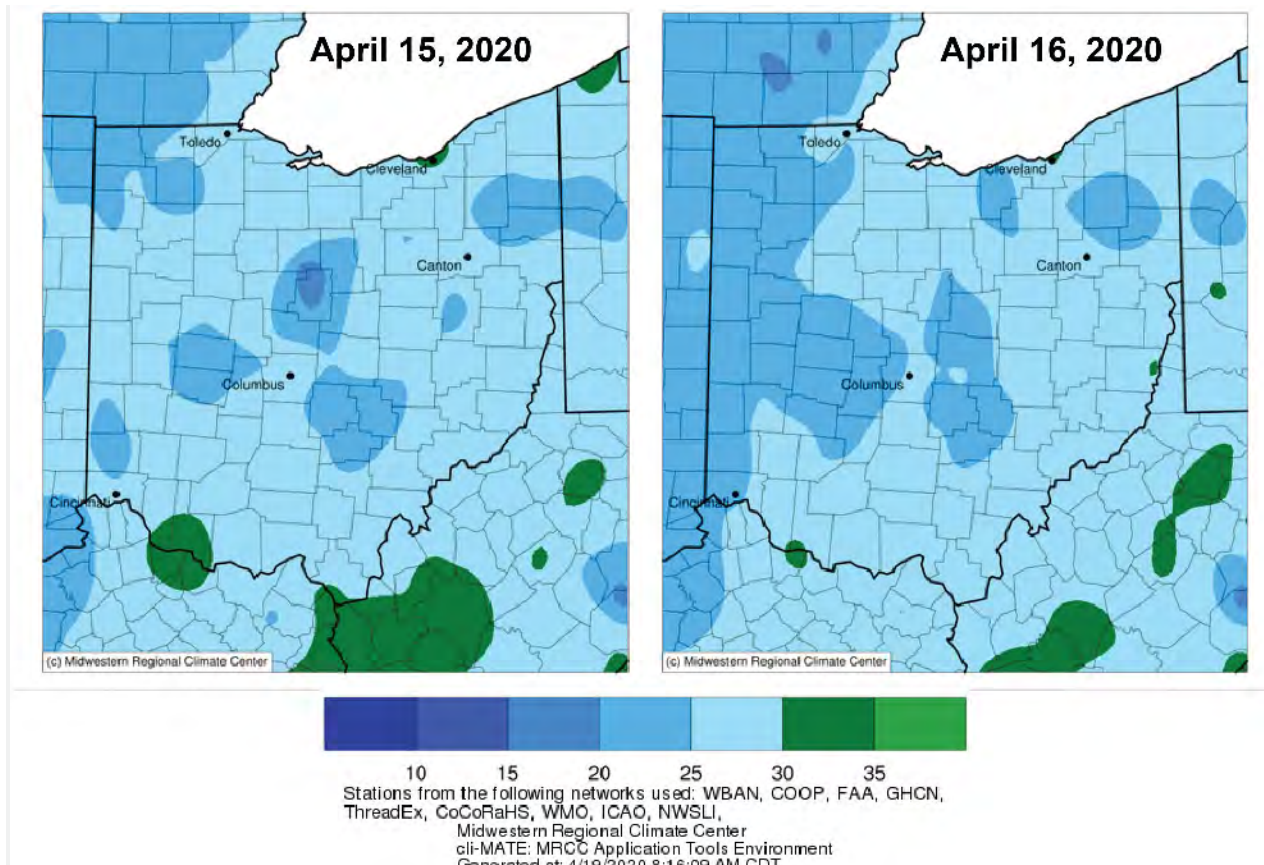


Figure 1. Daily overnight lows based on station observations for April 15-16, 2020. Figures generated at the Midwest Regional Climate Center

Injury to winter wheat depends primarily on three factors: 1) growth stage, 2) how cold, and 3) duration of cold temperature. Differences in freeze injury among cultivars can usually be attributed to slight differences in growth stage.

Although temperatures were low and there may be some yellowing/browning of leaves, the impact on wheat grain yield is likely to be minimal. In our research, at Feekes 6 growth stage, reductions in wheat grain yield began when temperatures fell to less than 20°F for a 15-minute duration. A 50% reduction in grain yield occurred at 12°F for a 15-minute duration.

Prior to Feekes 6 growth stage, the growing point of wheat is below the soil surface, protected from cold temperatures. However, at Feekes 6 growth stage, the first node appears and pushes the growing point (developing spike) up through the plant stem, and this developing spike can be damaged by low temperatures.

Damaged spikes can be observed by carefully cutting the wheat stem lengthwise to expose the developing spike at the first node. Damaged spikes will appear discolored and shriveled, which occurred at the 3°F temperature treatment (Figure 2).



Figure 2. At Feekes 6 growth stage, cold temperatures cause damage to the forming wheat spike within the stem. Wheat spikes pictured (left to right) were exposed to 39, 28, 21, 14, and 3°F temperature treatments.

At Feekes 6 growth stage, damage from low temperatures will cause yellow or browning (necrosis) of the leaf tissue, most likely leaf tips or edges exhibiting symptoms first (Figure 3). Death of leaf tissues and stems may result in the formation of tertiary (regenerative) tillers from surviving plant crowns (Figure 4). These tertiary tillers may produce seed, but often time do not fully mature, resulting in small, lightweight kernels. Overall, grain yield is reduced in these situations as primary and secondary tillers account for the majority of grain yield.



Figure 3. At Feekes 6 growth stage, low temperatures cause yellowing or browning of the leaf and stem tissue. Wheat plants pictured (left to right) were exposed to 3, 14, 21, 28, and 39°F temperature treatments, corresponding to death of 100, 80, 50, 25, and 0% of the aboveground biomass, respectively.

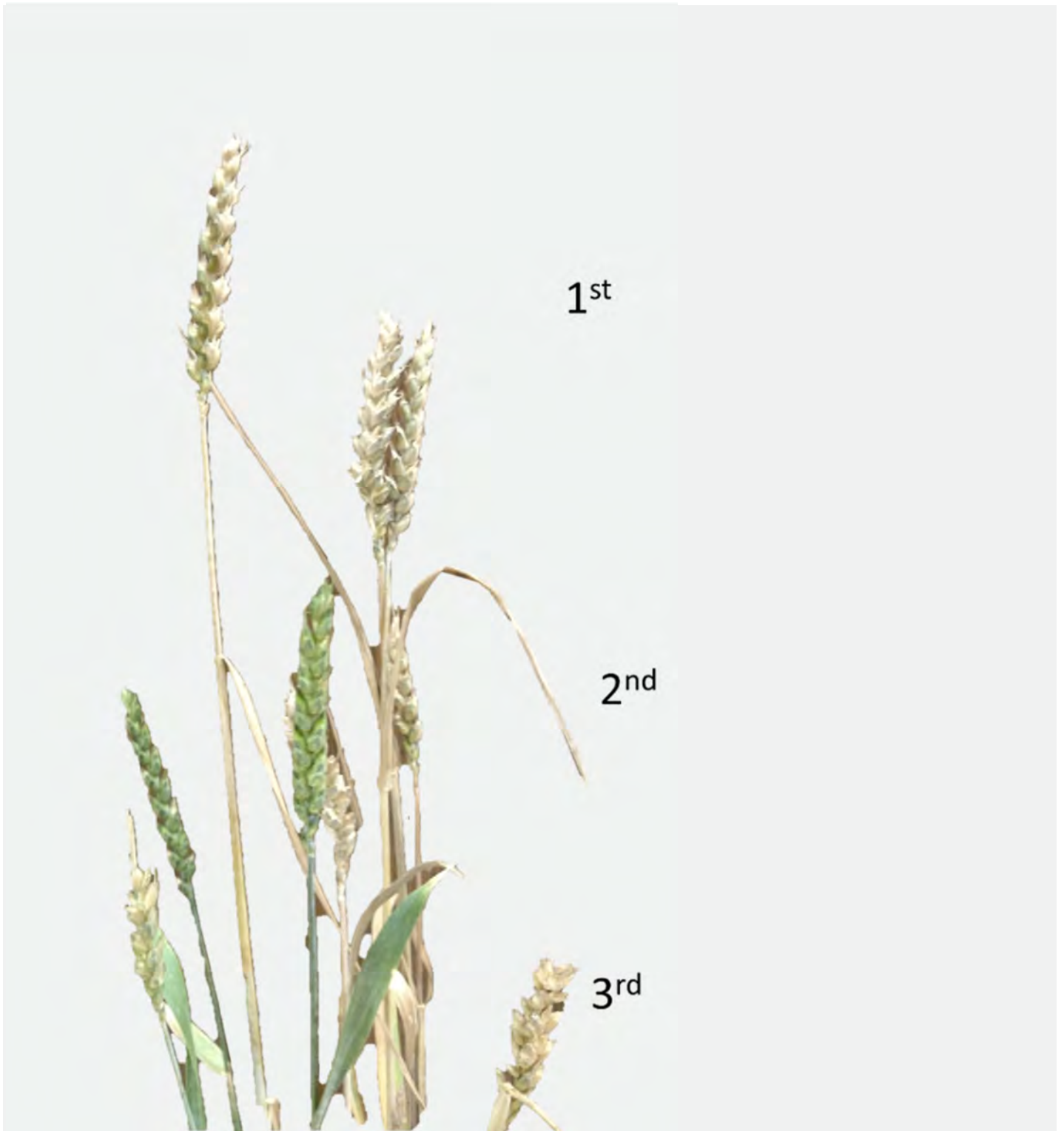


Figure 4. Low temperature damage to wheat leaves and stems may cause uneven tillering. Here, the wheat plant has primary (1st), secondary (2nd), and tertiary (3rd) tiller development as a result of regrowth after a freeze event.

Author(s):

[Laura Lindsey](#), [Alexander Lindsey](#), [Aaron Wilson](#)

Freeze Potential in Ohio

Note: This article has been modified from an article originally published in VegNet Newsletter (<https://u.osu.edu/vegnetnews/>) on April 6, 2020.

Now that we are well into spring and turning a corner toward May, warmer temperatures are hopefully on the horizon. As we have already experienced, April can be a fickle month, with both warm spring rains and lingering cold nights that bring frost and occasionally, a late-season snowfall. Cold April weather can delay the warmup of soils (see CFAES Ag Weather System Near-Surface Air and Soil Temperatures/Moisture) jeopardizing early planted corn and wreaking havoc on horticultural interests, especially following early season warmth where phenological conditions may be advanced for this time of year. Winter (December 2019 – February 2020) averaged 2-8°F above average compared to climatological normal (1981-2010; Fig. 1). This warmth continued throughout March as well, with temperatures 4-8°F (west to east) above average.

Frost and Freeze Potential

With many areas in Ohio experiencing **hard freeze conditions** (air temperatures $\leq 28^{\circ}\text{F}$) last week (see *How cold is too cold (for winter wheat)?*), how unusual is an event like this in Ohio? What are Ohio's typical expectations regarding freeze conditions in April and May?

On average, locations throughout Ohio experience their last seasonal freeze (temperatures $\leq 32^{\circ}\text{F}$) from mid-April (southern Ohio) through mid-May (northeastern Ohio). Figure 1 shows the climatological date of a late last **hard freeze**, meaning that only 1 out of every 10 years does a hard freeze occur after this date. Across southern Ohio, a 28°F day occasionally occurs as late as April 20, with much later dates (as late as May 10th) across northeast Ohio.

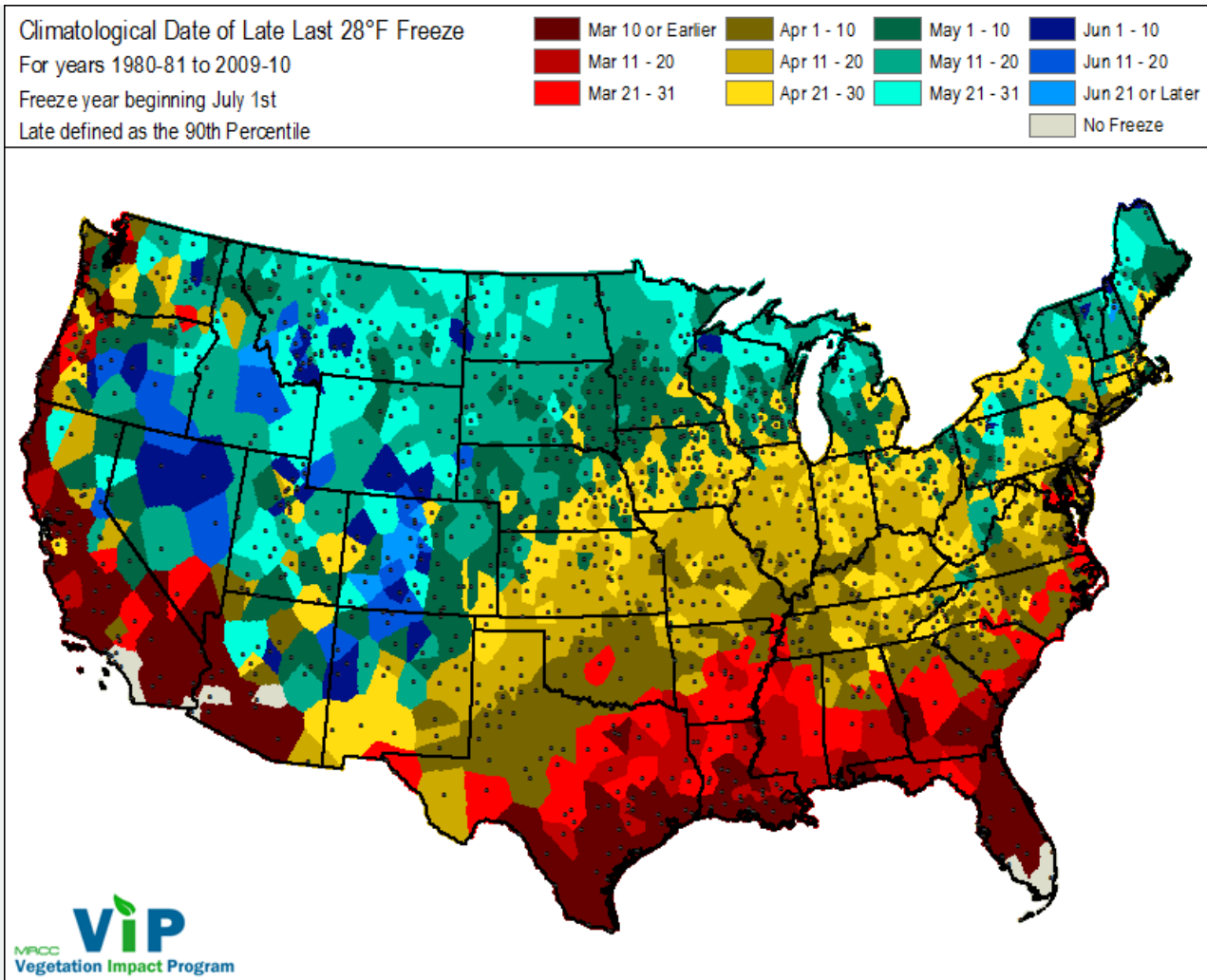


Figure 1: Climatological (1981-2010) dates for late last 28°F freeze, late defined at the 90th percentile. Figure courtesy of the Midwest Regional Climate Center (<https://mrcc.illinois.edu>)

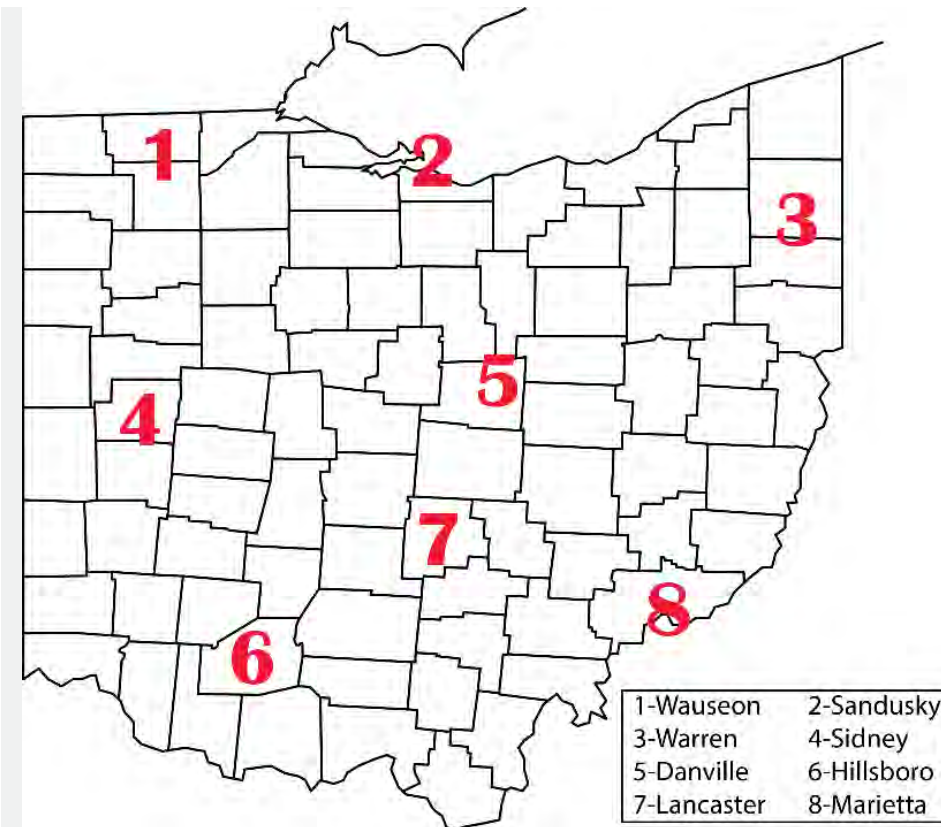


Figure 2: Selected locations around Ohio for freeze potential analysis displayed in Fig. 3.

For a state analysis, we have selected 8 locations from around Ohio to compare typical last seasonal freeze conditions (Figure 2). Figure 3 shows the probability of experiencing a later freeze in spring than indicating by the line graphs. All locations show probability based on the most recent 30-year period (1990-2019) except for 7-Lancaster (1996-2019). For each location, five temperatures are displayed (20°F-purple, 24°F-blue, 28°F-green, 32°F-yellow, and 36°F-red). For the purposes of this article we will focus on 32°F and 28°F. The bottom (x-axis) shows the probability that each of these temperatures will occur **after** a given date (indicated by the left or y-axis).

For 1-Wauseon, we see that there is a 50% climatological probability of experiencing a 32°F temperature (yellow) after April 27, and this probability decreases to 20% by May 10. The colder, more damaging temperature of 28°F occurs 50% of the time after April 16, with only a 20% chance of seeing 28°F after April 27. For a southern location like 8-Marietta, these dates occur earlier in the season. Here, there is a 50% climatological probability of experiencing a 32°F temperature after April 18 with 28°F occurring 50% of the time after April 2.

Besides latitudinal (north of south) position, what other factors can influence springtime minimum temperatures? Colder air is more dense than warmer air, meaning it wants to remain close to the ground and will flow over the terrain like a fluid to settle in areas of lower elevation. If your location is in a valley or low-lying area, the climatological dates will likely be shifted later to account for more freeze potential later in the spring. Water bodies are typically colder than the surrounding land areas in spring which may keep temperatures in the immediate vicinity a little colder. For 2020, water and soil temperatures are above average, so they are likely to have a moderating impact this year. Cloud cover and higher humidity in the spring will keep air temperatures warmer due to their absorption of terrestrial (from the surface) radiational effects. Finally, late season snowfall combined with clearing skies overnight can also cause the surface to cool rapidly and lead to damaging freeze potential as well. All of these factors should be considered when comparing your location to those selected in Fig. 3.

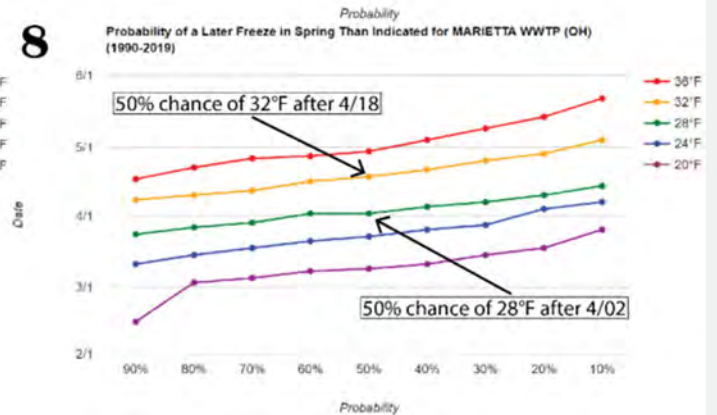
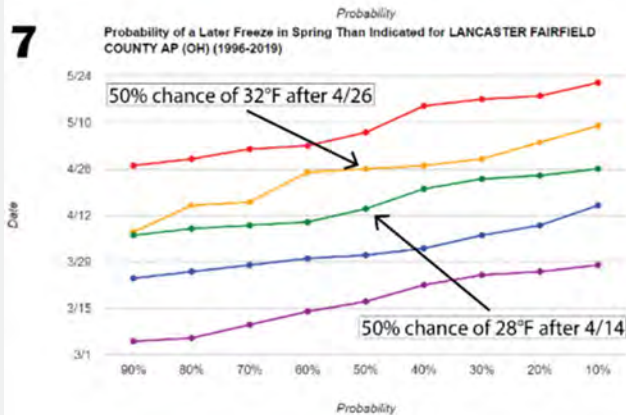
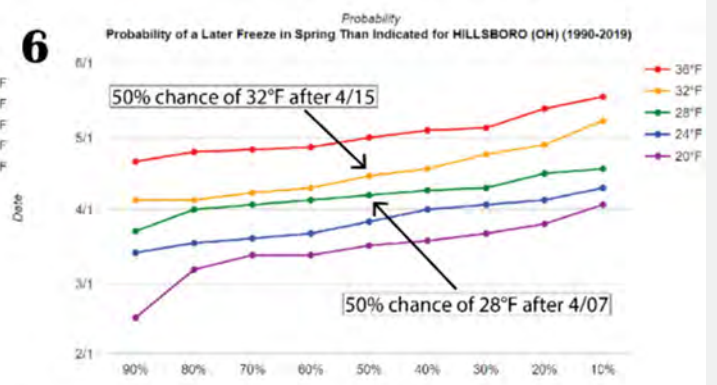
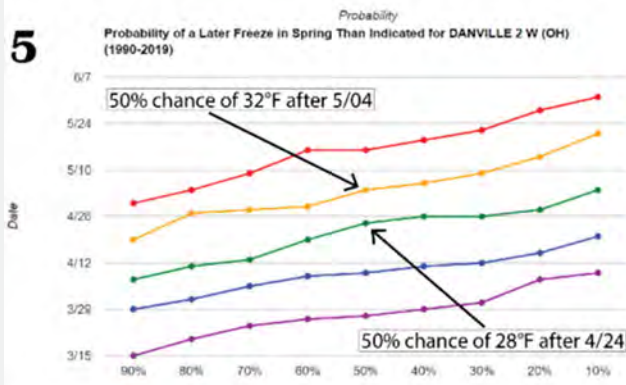
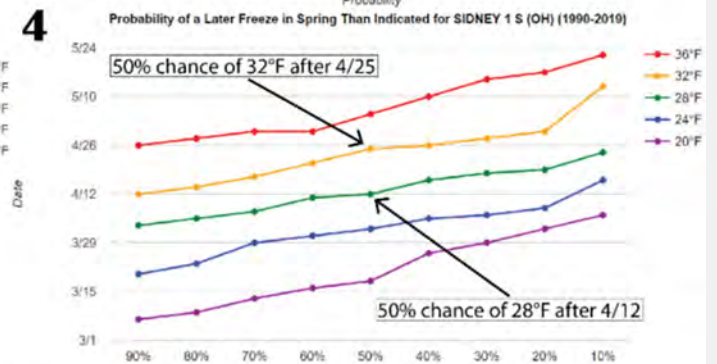
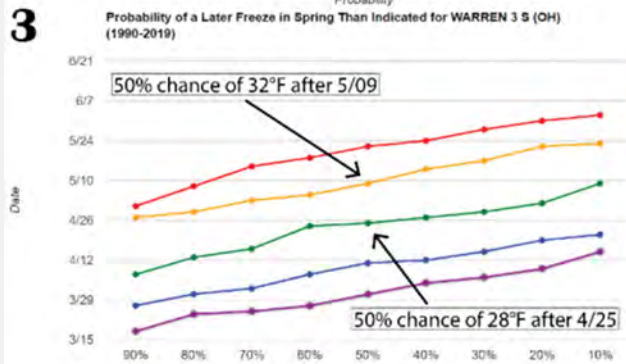
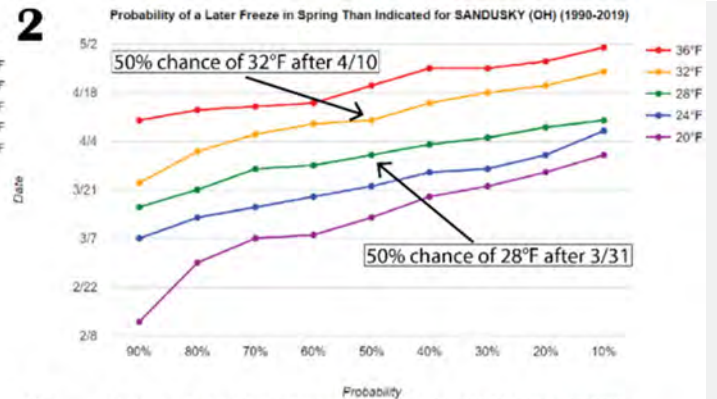
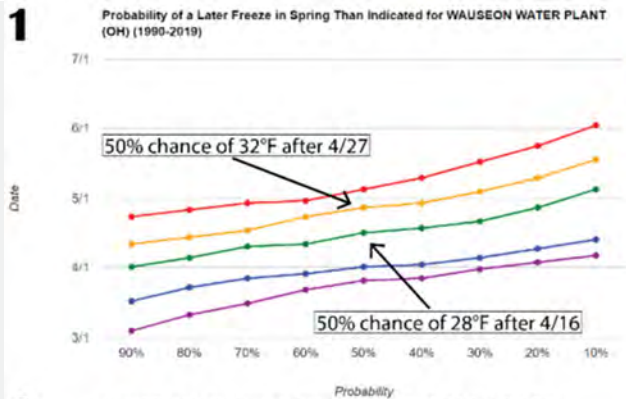


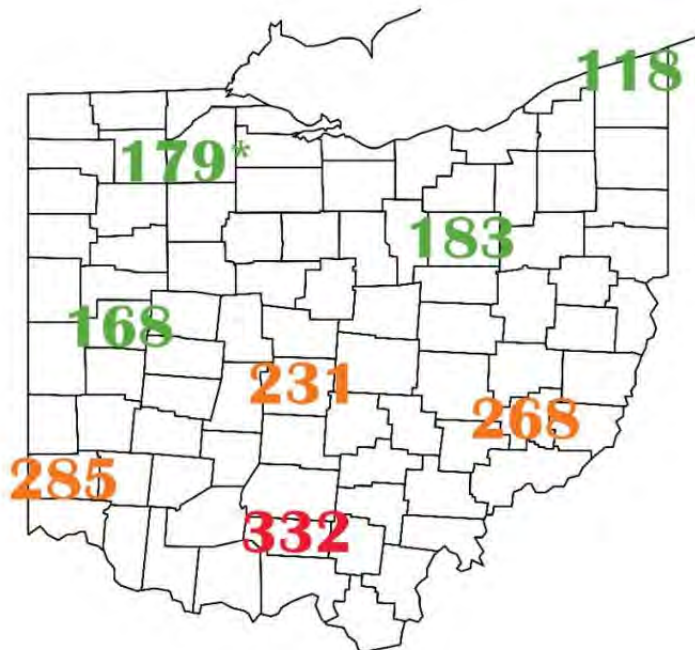
Figure 3: Probability of a later freeze in the spring for various locations (Fig. 2) around Ohio. Graphs generated by the Midwest Regional Climate Center (<http://mrcc.illinois.edu>).

Author(s):

[Aaron Wilson](#), [James Jasinski](#)

Alfalfa Weevil Update

Last week we reported that peak alfalfa weevil feeding damage occurs between 325 and 575 heat units (based on accumulation of heat units from January 1 with a base of 48°F). The cool temperatures over the past seven days have slowed the accumulation of heat units and thus weevil development, though southern Ohio is now at the lower end of this range. For more details on alfalfa weevil scouting and thresholds please see our April 13 article <https://agcrops.osu.edu/newsletter/corn-newsletter/2020-09/alfalfa-weevil-%E2%80%93-it%E2%80%99s-closer-you-think>



Accumulated growing degree days (base 48°F sine calculation method) for January 1-April 20 (*April 16), 2020 at several CFAES Ag Weather System (<https://www.oardc.ohio-state.edu/weather1/>) locations and additional NOAA stations around Ohio.

Author(s):

[Kelley Tilmon](#), [Aaron Wilson](#), [Mark Sulc](#), [Rory Lewandowski, CCA](#), [Andy Michel](#)

Slight Frost Injury on Forages



Frost injury on alfalfa. Photo credit: Mark Sulc

I have observed and received reports of only very slight frost burn on the tips of leaves of alfalfa and winter annual forage crops after the two cold nights last week in Ohio. On Monday, the alfalfa at the Western Agricultural Research Station looked excellent, with just scattered stems showing slight frost burn on the upper leaves. The 2019 late summer seedings also looked excellent. Italian ryegrass and winter wheat on the station showed just a little purpling on the upper leaf tips.

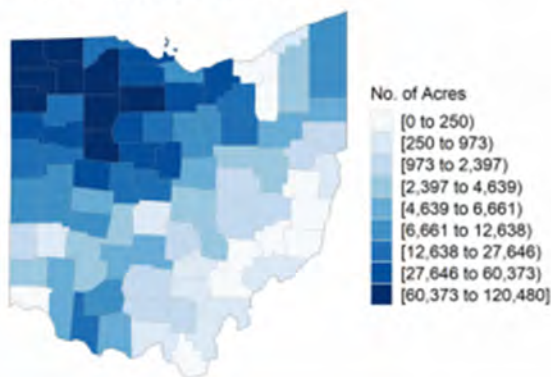
The situation could be a little more severe in certain pockets of the state, depending on the duration of the low night temperatures last week. However, reports from around the state indicate only slight damage to forage crops and they should grow right out of it with no significant effect on forage yields.

If more injury is observed in certain pockets, the recovery will be very dependent on the general health of the stand. The best recovery will be in younger stands where soil pH and fertility are in the optimal range, and the last cutting in 2019 was not taken by early September. If you have observed more severe injury, feel free to contact me with any questions you may have.

Author(s):
[Mark Sulc](#)

Worried about Fallow Syndrome? Assess the Risk with On-Farm Research

2019 Reported Prevented Planting Acres
by County as of October 1, 2019



Ohio Prevent Plant Acres 2019

Wet weather conditions last spring prevented Ohio farmers from planting over 1.5 million acres. When fields are left unplanted or fallow, there may be a decline in beneficial mycorrhizal fungi, which is commonly referred to as fallow syndrome. Mycorrhizae are beneficial fungi that colonize plant roots. They aid plants in scavenging for soil nutrients, by extending the root system via thread-like structures called hyphae. In return, plants provide sugars produced during photosynthesis to the mycorrhizae.

Stunting and phosphorus deficiency are common symptoms associated with fallow syndrome.



Phosphorus deficiency symptoms include purpling of leaves. Source: OSU Extension

The impact of fallow syndrome on crop yields is unclear and the extent that it will occur in 2020 remains a mystery. Ohio State eFields will be running a series of on-farm trials to investigate the yield impacts of fallow syndrome and the efficacy of potential remediation options, such as starter phosphorus applications and microbial inoculants. Information from this trial will be used to improve management recommendations for growers throughout the state.

At each field site, a starter phosphorus fertilizer treatment will be compared to a control with no phosphorus applied. Additionally, growers can include 3Bar Bio-YIELD® microbial inoculant and/or Valent MycoApply® EndoPrime® SC mycorrhizal inoculant in their trial.

If you have fields that were not planted in 2019 and will be planted to corn in 2020 and are interested in being involved in this trial, contact your local Agriculture and Natural Resources OSU Extension Educator. Fields with soil test phosphorus levels <30 ppm Mehlich-3 P, or ideally <20 ppm Mehlich-3P, are preferred.

eFields is a program at The Ohio State University program dedicated to advancing production agriculture through field-scale research. To learn more visit digitalag.osu.edu.

Author(s):

[Stephanie Karhoff](#), [Steve Culman](#), [Elizabeth Hawkins](#)

Cool weather to hang on for the rest of April

The cold pattern that was expected last week dropped soil temperatures and put a hold on most activities. Improvement will occur but it will be slow for the rest of April. A progressive west to northwest airflow will keep weak or weak/moderate systems passing through Ohio about every 2 days over the next week with generally light or light to moderate precipitation. The flow pattern supports temperatures remaining at or below normal for the rest of April but not as cold as last week. Precipitation is expected to be close to normal. Warmer weather is expected as the calendar turns to early May with above normal temperatures expected which is some good news.

TEMPERATURES

Temperatures will moderate for the rest of April with highs mostly in the 50s and 60s though northern Ohio may only see highs in the 40s Tuesday of this week. Low temperatures will be in the mid 30s to the 40s for the most part. For the rest of April temperatures will average about 5 degrees below normal. May temperatures will likely be near normal or slightly above normal but the start of May looks to be above normal temperatures by several degrees.

PRECIPITATION

Excessive rain is not expected the next 2+ weeks but frequent lighter rain is. Rainfall will average 1-3 inches the next two weeks with normal being 1.75 to 2 inches. Therefore, rainfall is considered near normal overall. A few wet snowflakes can not be ruled out Tuesday or this week in the northeast corner of Ohio. May is expected to see rainfall normal to slightly above normal. The blocking pattern over Alaska and northern Canada in 2019 which drove the active storm track from Japan to the Ohio Valley does not look to occur in 2020. This will result in fewer overall moderate to strong storm systems into May and June of 2020. The pattern is still active but just not as active as 2019.

FROST/FREEZE

We do see another freeze this Wednesday AM with lows in the mid 20s to lower 30s. Some additional frost and near freeze conditions can also be expected this upcoming Sunday into Monday mornings. Overall, the frost and freeze conditions going forward are considered pretty close to typical for Ohio in late April and early May. After this Wednesday the chances of hard freeze conditions begin to decrease.

SOIL TEMPERATURES

Soil temperatures dropped below 50 in most areas last week and will slowly work back toward that level for the rest of April though it may not reach that level in parts of the north and northeast section of the state.

SUMMER GROWING SEASON

There is uncertainty in the summer outlook but currently above normal temperatures are favored with rainfall going from above normal to start to normal or drier than normal in the later portions of summer.

The latest NOAA climate information can be found at: <https://www.cpc.ncep.noaa.gov>

The latest river and soil information can be found at: <https://www.weather.gov/ohrfc/>

The latest Water Resources Outlooks can be found at: <https://www.weather.gov/ohrfc/WRO>

Author(s):

[Jim Noel](#)

Time to stock up on nozzles is now! But, do you know which ones to buy?

This is the time of the year you must complete shopping for nozzles because the spraying season is just around the corner. Although nozzles are some of the least expensive components of a sprayer, they hold a high value in their ability to influence sprayer performance. Nozzles help determine the gallon per acre. They also influence the droplet size, which plays a significant role in achieving improved penetration into crop canopy and better coverage on the target pest, both affect the efficacy we expect from pesticides applied. When I get a question like, “what is the best nozzle I can buy?”, my answer is: it depends on the job on hand. One nozzle may be best for a given application situation, but it may be the worst nozzle to use for another situation. Sometimes, the choice of nozzle may be determined by the requirements given on the pesticide label.

Selecting the best nozzle requires careful consideration of many important factors including: sprayer operation parameters (such as application rate, spray pressure, travel speed); type of chemical sprayed (herbicides, insecticides, fungicides); mode of action of chemicals (systemic, contact); application type (broadcast, band, directed, air assisted); target crop (field crops, vegetables, vineyard, shrubs and trees, etc.); and spray drift risk. I will briefly cover some of these topics in this article. For detailed information on nozzle selection, I strongly recommend you read a new Ohio State University Extension Publication, entitled “Selecting the Best Nozzle for the Job”. In this publication, you will see step-by-step guidelines for selecting the most appropriate spray nozzle for a given application situation. The publication is available online at following web site: <http://ohioline.osu.edu/factsheet/fabe-528>

Which nozzle type is best your situation?



Each nozzle type is designed for a specific type of target and application. For example, a nozzle designed for broadcast spraying is not good for spraying pesticides over a narrow band. While one nozzle may be best for a given situation, it may be worst choice for another. For example, we at Ohio State University have conducted field experiments to determine which nozzles to choose for two different application situations: soybean diseases such as rust and white mold, and wheat diseases such as head scab and stem rust. We included 6-8 different nozzles in the experiments. We found out that while a twin-fan pattern nozzle was best for controlling wheat head scab, the same nozzle turned out to be the worst choice to protect soybeans against rust and white mold when the soybean canopy is tall and dense. So, before buying the nozzles and putting them on the boom, check the nozzle manufacturers’ catalogs which have charts showing which nozzle type will be best for a specific job. Check the websites of nozzle manufacturers to reach their catalogs.

Nozzle size

Once you determine the type of a nozzle you need to buy, you also must buy the right size of that nozzle which will satisfy the application rate (gallons per acre or gpa) you wish to use as you do your spraying at different travel speeds. Nozzle catalogs are filled with tables and charts showing application rates, given a nozzle’s flow rate (gallons per minute or gpm) delivered at various pressures (psi) and travel speeds (mph). However, the charts are only for a limited number of travel speed and nozzle spacing situations. Most

nozzle manufacturers have developed Apps for smart phones that provide you the exact nozzle flow rate required for any given set of application parameters, and identify a specific set of nozzle recommendations for the given application parameters. To find these Apps, simply visit the App Store in your smart phone or tablet and do a search under “Spray Nozzle Calculator”, or some other key words related to nozzle size selection.

Keep several types of nozzles on the boom

Remember that one specific type of nozzle will not be best for all applications. For this reason, it is best to have several types and sizes of nozzles on the boom so that you can switch to the “best” nozzle choice for a given spraying job. As shown in the pictures below, there are various types of sprayer components and setups you can buy to configure your boom so the new set up allows you to easily switch from one nozzle to another instantly.



Keep spray drift in mind when selecting nozzles

Spray drift (movement of pesticides by wind from the application site to an off- target site) is a serious problem for many reasons. Extensive information related to factors influencing creation of spray drift, is provided in the Ohio State University Extension publication FABE-525 (<http://ohioline.osu.edu/factsheet/fabe-525>). After wind speed and other weather-related conditions, choice of nozzles is the second most influential factor affecting drift. Research conducted at The Ohio State University and elsewhere clearly indicate that nozzles labeled as “*low-drift*” significantly reduce spray drift. If drift is, or becomes a concern, it may be best to switch from a conventional nozzle to a “*low-drift*” version of the same type nozzle with the same flow rate. This is another good reason to have more than one type of a nozzle on the boom.

Give special attention to choice of nozzles when applying pesticides containing 2,4-D and Dicamba

The labels of 2,4-D or Dicamba herbicides include specific requirements on which nozzle or nozzles must be used when spraying these products. The requirements also include a range of operating pressures for each one of these nozzles. These strict requirements are put on the labels to avoid off-target movement (drift) of spray droplets. Simple interpretation of these requirements is: you would be violating the pesticide label, therefore the law, if you use any other type and size of nozzle and operate these nozzles outside the

pressure ranges. Remember, the label is the law! So, it is your responsibility to comply with the requirements on pesticide labels. You can reach a list of currently approved nozzles and their operating pressure ranges on labels of the several commonly used 2,4-D and Dicamba products at this web site: <https://pested.osu.edu/sites/pested/files/imce/ApprovedNozzles.pdf>

The table at this site is provided mostly for information purposes and may not be up to date. So, check the manufacturers' websites, and read the product label for the most current information. Do not assume that you do not have to worry about checking the label because you had applied the same product in a previous year. A nozzle required for the same product last year may not be on the label this year, or the operating pressures might have been changed.

Some final thoughts

Nozzles are typically the least costly items on a sprayer, but they play a key role in the final outcome from a spraying job: achieving maximum efficacy from the pesticide applied while reducing the off-target (drift) movement of pesticides to minimum. Pesticides work well if the rates on labels are achieved during application. This can be achieved only if the right nozzle type and the proper size of the nozzles are on the sprayer, and the sprayer is operated properly.

Author(s):

[Erdal Ozkan](#)

Managing stored grain into summer



If you are storing more grain on farm this spring than usual, you are not alone. Over the last few weeks, we have heard from more producers who are considering holding grain longer into summer months than they normal would. We have also heard a few reports of spoiled grain as producers fill April contracts. Carrying grain into summer has been done for many years successfully but requires much more intensive management than winter grain storage.

Key advice for long term grain storage

1. If bins were not cored in early winter core bins now
2. Verify the moisture content of stored grain is at or below recommended levels
3. Monitor grain temperature every 3 or 4 weeks throughout storage paying special attention to insect activity and mold
4. Monitor the roof area for signs of condensation
5. Cover fans to keep the chimney effect from warming the grain
6. Provide roof ventilation at two levels above the surface of the grain, one vent should be close to the peak of the bin
7. Aerate bins on cool mornings every couple weeks as grain at the top of the bin becomes warm

The first management consideration is the moisture of your stored grain. If you plan to store grain into the warmer summer months, it is important to know the moisture content of your stored grain. Last fall some grain went into storage at a higher than ideal moisture content. If crop development was impacted by the unusual weather conditions in 2019, moisture tester readings can be off by up to 2 points. The recommended maximum storage moisture content for summer are shown below.

Crop	Maximum summer storage moisture %
Corn	13-14%
Soybean	11%
Wheat	13.5%

If your stored grain is currently at a higher moisture content, you should consider moving it to market or drying to these recommended storage moistures using natural drying, if possible. Using high temperature drying now is not recommended because recooling the grain for summer storage will be challenging.

The second consideration for maintaining stored grain into the summer is temperature. Historically, it was recommended to warm grain in the summer as ambient air temperatures increase, but this is no longer considered a best management practice. It is now recommended to keep grain as cool as possible for spring and summer grain storage. Warming grain to average outdoor summer temperatures can lead to increased potential for insect infestation and mold growth. Keeping grain temperature below 70°F lessens insect reproductive activity compared to 80°F but keeping this temperature below 60°F will greatly reduce insect activity. When grain temperatures are below 50°F, most insects are dormant.

Monitoring stored grain temperature through the summer will allow you catch potential problems. Grain is an excellent insulator, so it can be challenging to detect pockets of warm grain. If summer grain storage will be common on your farm, using multiple temperature monitoring cables throughout the bin is recommended. Since the grain at the top of the bin is often the warmest, a two foot thermometer can be used to check temperatures if monitoring cables are not installed. Grain temperature should be checked every couple weeks in the center and around the edges of the bin. Often the south side of the bin warms up before other sections. Increased temperature maybe a sign of mold growth or insect activity.

Proper ventilation is also important when keeping grain in summer months. Solar radiation warms the roof of the bin and the air below. Natural convection air currents within the bin cause air to rise along the walls and be drawn into the center of the bin, warming the grain. Natural ventilation of the air space above the grain can be used to help keep this space cool. Having vents in two areas above the grain with either a vent or fan at the peak assists with this ventilation. This works similar to attic vents in a home. Air enters at the bin eave openings and leaves at the peak vent helping to keep the area above the grain cool.

The bottom positive pressure ventilation fans can also be used to help keep the grain at the top of the bin cool. Running fans every three or four weeks on a cool morning for a couple days in a row can cool the grain at the top of the bin. The air entering the bottom of the bin is cooled by the cold grain and then cools the grain at the top. It is very important to select mornings when air is cool and dry. While we often do not cover bottom ventilation fans during winter grain storage this is much more important for summer storage. Openings at the bottom of the bin create a chimney effect throughout the entire grain mass. Warm air enters the bottom of the bin and as wind blows past the top of the bin the air is drawn up through the grain mass warming it up. Fan covers can be as simple as a tarp fastened over the fan or there are more durable fan covers available.

Keeping stored grain in condition during summer months will take more management than winter storage and the risk of spoilage is higher. Remember that stored grain cannot be kept in condition indefinitely. We strongly recommend you have a grain marketing plan for any grain you are keeping in storage.

Author(s):

[Jason Hartschuh, CCA](#), [Elizabeth Hawkins](#)

Other Articles

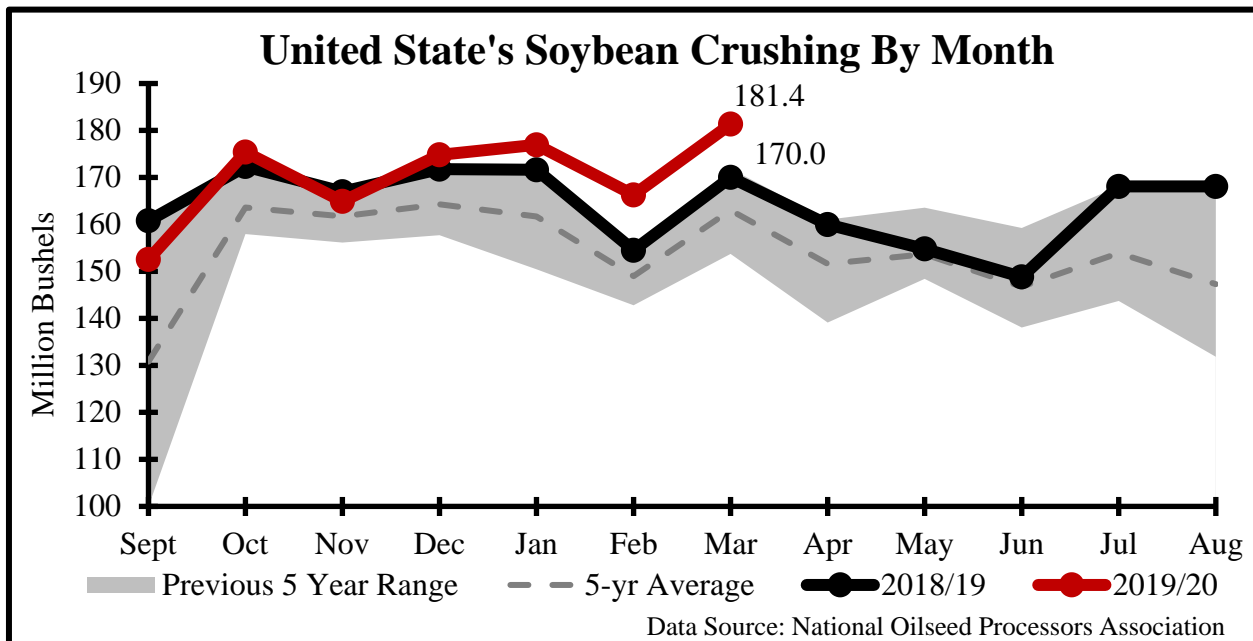
The March 2020 Soybean Crush Report is One for the Record Books

By Ben Brown

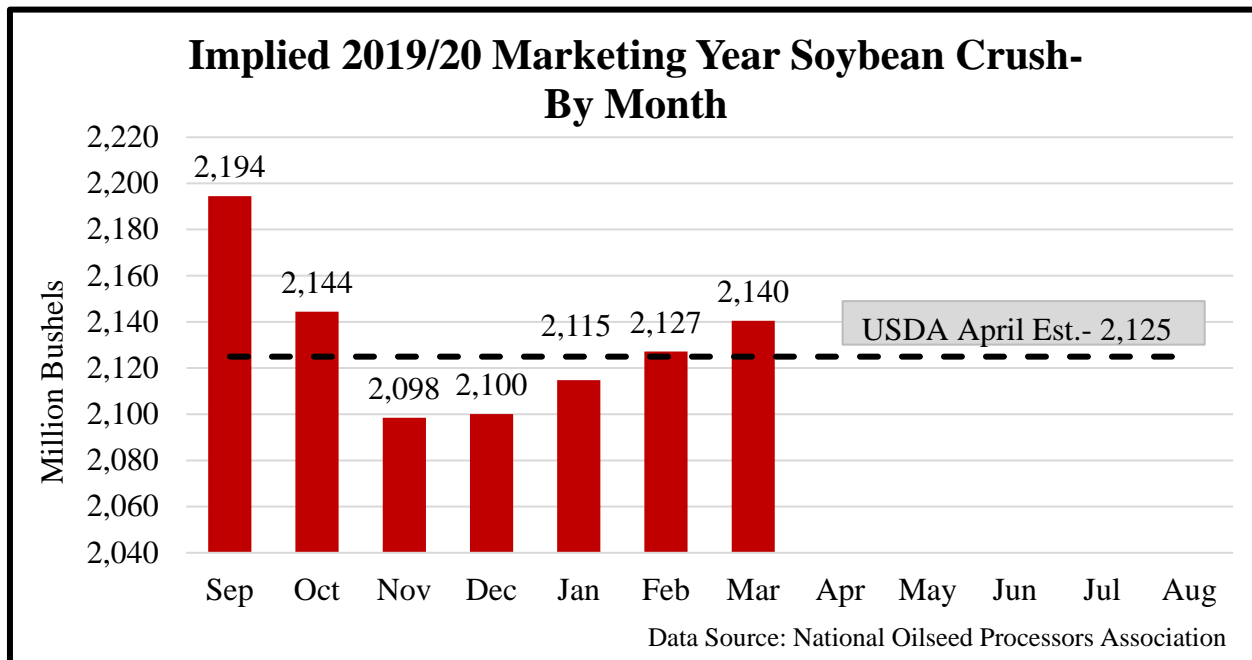
Department of Agricultural, Environmental and Development Economics

The Ohio State University – 4/16/2020

The National Oilseed Processors Association (NOPA) released their March 2020 soybean estimates on Wednesday April 15- a day that usually is not held in high regard due to US tax collections. That is until this year, when federal income tax filings could be deferred to the middle of July and NOPA released a report further solidifying one of the few bright spots in the agricultural marketplace amid COVID-19 disruptions. The report indicated that monthly soybean crushing by the organizations 13 members who account for approximately 95% of all crushed soybeans in the US reached a new monthly record of 181.374 million bushels, far exceeding any previous month and market analyst expectations for the month of 175.163 million bushels. The March total is the first month above 180 million bushels and bested the previous record set just two months earlier by 6.211 million bushels. Soybean crush during the 2019/20 marketing year has been supported by strong domestic and international demand for soybean meal and healthy crush margins with new records being broken in four out of seven reported months- October 2019, December 2019, January 2020 and March 2020.



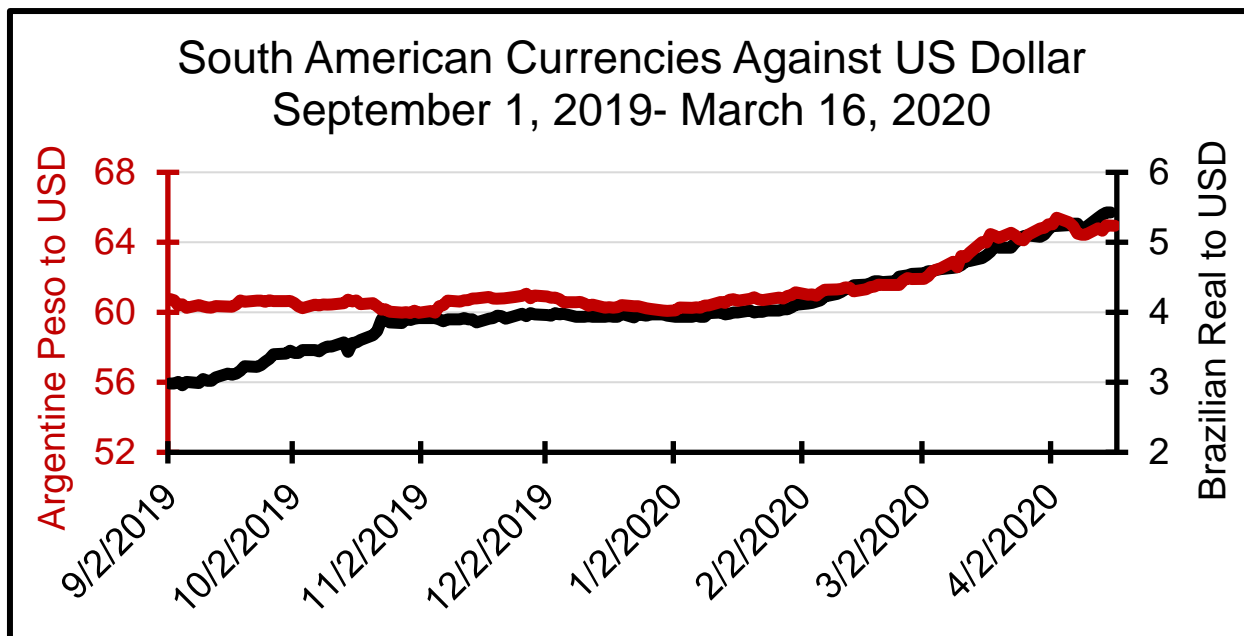
The USDA World Agricultural Supply and Demand Estimate (WASDE) report released April 9th increased 2019/20 marketing year crush by 20 million bushels from the February estimate to 2.125 billion bushels. This forecast would also be a record and 1.6% higher than last year's total. Only September and November have failed to exceed the monthly values from the prior marketing year. At 181.374 million bushels reported by NOPA and a consistent rate with recent monthly USDA crush reports, the March crush report is estimated at 192.5 million bushels. That puts the seven-month cumulative total for the current marketing year at 1.265 billion bushels, roughly 60% of the April WASDE forecast. US soybean crush needs 859.5 million bushels over the remainder of the marketing year or 172 million bushels each month to meet estimates. Monthly crushing has exceeded this value every month besides September, justifying USDAs April increase. The US crushed 851 million bushels between April and August a year ago. Cumulative soybean crush is currently 9 million bushels ahead of the seasonal pace needed to reach USDA's estimate of 2.125 billion bushels. The less than one percent advantage over seasonal adjustments implies 2.140 billion bushels. At this implied value, 2019/20 would be a 2.3% increase over 2018/19. This is not out of the question, but infrastructure capacity would be tested. US soybean crushing increased year over year by 8% in 2014/15 and 2017/18 when new infrastructure was built- the increase averaged 1.2% in other years. Current market conditions support USDA meeting and possibly exceeding the April WASDE Estimate if demand holds for the remainder of the marketing year.



Soybean meal prices have fallen in recent weeks with the rest of the agricultural commodities back to levels seen in early February on the futures market. Some cash markets have remained elevated as soybean meal demand replaces the lack of dried distillers grains in feed rations where appropriate. The May soybean meal contract closed at \$291.8/ton on April 16, 2020 roughly \$45 less than three weeks prior. The April WASDE report increased domestic soybean meal use three hundred thousand tons to 37.1 million tons, 2.7% above last years disappearance. With a national hog herd 4% larger than last March and a near record cattle on feed number elevated soybean meal for feed use seems likely to continue. One caution would be the announcement of pork and beef packing facilities either closing or slowing output as a result of COVID-19. Packing slowdowns decrease the demand for live animals and producers are forced to slow rate of gain in animal growth and thus feed usage. However, if packing plants start reopening and moving toward full speed soon and ethanol production remains suppressed, putting a limit on DDG availability, it is possible to see increased feed use for both soybean meal and corn.

Strong soybean meal exports are also supporting increased crushing. The April WASDE report increased the forecasted value for exports during the marketing year 250,000 tons. At 13.45 million tons the current marketing year is 104 thousand tons below the 2018/19 total after exports lagged heading into the start of the marketing year primary on strength of South American crushing and currency exchanges primarily between the US dollar, the Argentine Peso and the Brazilian Real. The Peso has depreciated 32% against the Dollar since August 1, 2019 with a similar drop to the Real. Through the first seven months of the marketing year, soybean meal exports sit 4% below the same period last year and total commitments are 3% below the three-year average;

however, that has improved from the weak sales and exports in November and December. Outstanding sales for the remainder of the marketing year are just over 2.7 million metric tons but remain 12% below outstanding sales at this time last year. Increased exports to Canada and Central American are only partially making up for decreased sales to Vietnam (-63%), the European Union (-40%) and Japan (-56%). Unless COVID-19 continues to cause logistical challenges in Argentina it is difficult to see how the US maintains the strong export sales experienced in March. It is possible to see a retraction to 13.35 million tons of soybean meal exports.



Soybean oil prices have found a little strength on technical support in the last couple weeks after being on a steady decline since the start of the calendar year. Soybean prices started the year at just over 35 cents per pound before bottoming out mid-March at 25 cents per pound. This was the lowest value for soybean oil since October 16, 2006. Soybean oil import forecasts have been reduced for China, India and Venezuela on weaker economic activity and reduced competitiveness for biodiesel to gasoline. However, reduced production in Argentina due to COVID-19 did allow the US to pick up some soybean oil sales. Price competitive palm oil prices out of Indonesia are putting pressure on soybean oil exports. World stocks to use of oils at 6.3% is 1.3% less than a year ago on increased palm, soybean and sunflower use. Accumulative export sales through the first seven months of the year sit 40% above the same period a year ago, but sales also started out the year very strong. Total commitments for the year sit 28% above the three-year average with outstanding sales of roughly 309,000 metric tons- 64% above a year ago with large sales to South Korea in March. Even with a reduction of 200 million pounds in the April WASDE, exports in 2019/20 are estimated to be almost 24% above last years oil exports. Given the strong export sales already this year it is likely that the US will exceed last years value, but

lingering COVID-19 impacts on biodiesel and economic activity globally make maintaining the rapid export pace unlikely.

COVID-19 has put a damper on strong domestic use of soybean oil. Current estimates are for a 474 million pound reduction in domestic disappearance of soybean oil to 22.4 billion pounds. Lack of motor fuel use continues to put downward pressure on biofuels eroding the forecast as people stay home.

The March NOPA crush values shattered monthly crushing records on increased demand for both meal, strong oil exports and healthy crush margins for processors. Historical pace would imply 2019/20 soybean crush at 2.140 billion bushels, but infrastructure constraints and declining demand for soybean oil compared to March could dampen soybean crush through the remaining six months. USDA raised soybean crush 20 million bushels in the April WASDE to 2.125 billion. At this time that adjustment is justified, but we might not see a crush report like March for a while.

Prepared by Jeff Stachler

Ohio State University Agriculture and Natural Resources Extension Educator, Auglaize County
stachler.1@osu.edu and 701-541-0043