Corn & Soybean News

COLLEGE OF AGRICULTURE, FOOD AND ENVIRONMENT
Grain and Forage Center of Excellence

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Corn Planting in 2020

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Corn traditionally is planted from April 1 through May 1 in Western Kentucky and April 15 to May 15 in Central and Eastern Kentucky. Proper planting is important to minimize risks to the crop later in the growing season. Here are some tips and important considerations as you ready your planters.

Before we get into this season, keep in mind that the previous six growing seasons have been among the wettest of the past 30 years. So far, 2020 has been considerably wet for much of the state. The National Weather Service is forecasting a warmer and wetter spring for 2020 (https://www.cpc.ncep.noaa.gov/products/predictions/long_range/seasonal.php?lead=1).

In addition, longer forecasts also predict warmer and wetter conditions. Therefore, current weather conditions and a comparison of previous growing seasons could change the way you approach this planting season.

Usually, we determine seeding rates based on the likelihood of the soil having adequate moisture when pollination and seed fill occur later in the season. UK research has shown when our corn crop has adequate water, higher populations increase yields. However, when corn lacks water, higher populations hurt yields. Because soil depth is an indicator of soil water availability, your soil depth should factor into your seeding rate. Deep soils can handle higher populations of 32,000 to 36,000 seeds per acre. Whereas, shallower soils require lower seeding rates. If you plant on heavily eroded hillsides, your rate should be less than 26,000 seeds per acre. Irrigated fields can handle much higher populations, up to 42,000 seeds per acre in 30-inch rows.

Corn should be planted at a uniform depth, typically between 1.5 to 2 inches into the soil to allow for even emergence. Shallow planted corn has a higher risk for late-season lodging, developing a potassium deficiency in early development, and overall slower plant development, all of which can result in lower yield. Properly adjusted row closing equipment will help ensure that seeding depth is even.

In 2019, corn planted early performed better than corn planted late in Kentucky. Much of the state experienced dry weather conditions in parts of July and August. Early planted corn had completed the majority of seed fill when the dry weather occurred, thus limiting yield reductions. Whereas, corn planted in mid-May or later was in the early stages of seed fill and suffered from the dry weather. While planting early last year worked well; it does not guarantee that planting early this year is the best option. In most years, soil conditions and the short-term forecast that are favorable for excellent emergence probably are more important than a calendar date.

Planting into wet soils or "mudding in" corn increases the risk for sidewall compaction. Compaction restricts root growth and hurts your yields far more than a later planting date. However, if wet soil conditions continue throughout much of the spring, consider using a spiked-tooth closing wheel and backing off on the planter down pressure. Last year, the spring was so wet that many fields were mudded in. However, relatively few fields reported sidewall compaction issues. The above normal rainfall after planting likely helped alleviate the initial sidewall compaction. The worst-case scenario is planting into wet soils and then getting about two weeks of very hot and dry weather immediately after planting, which dries out the seed zone and causes sidewall compaction. These conditions result in enough water for seed germination, but not enough to help the roots break through the sidewall compaction.

If we are going to plant in riskier conditions, it's important that we try to reduce our risks up front and be prepared to scout fields for problems as the season progresses. Take the time to make sure your planting equipment and any sensors that it may have are functioning properly and that you are achieving proper planting depth, closed rows and correct seed placement in each field. Double checking your work takes time, but it could help you avoid potential problems later. Producers who pay attention to detail are more likely to end up with better stands, which result in better yields.

If the spring is going to be warmer and wetter as the National Weather Service is forecasting, then a split application of nitrogen is also a wise management decision. Split-applied nitrogen will reduce the risk of early-season nitrogen loss caused by heavy rainfall events. Simply applying more nitrogen up front to account for the potential of losing nitrogen early is not a sound management strategy.

More information on corn planting is available from your local county extension agent with the University of Kentucky Cooperative Extension Service.

Management of Soybean Cyst Nematode Starts with Soil Sampling

Carl A. Bradley
Extension Plant Pathologist

The soybean cyst nematode (SCN) (Figure 1) causes greater annual yield losses in Kentucky than any other pathogen of soybean. The last time a formal survey was conducted by the University of Kentucky in 2006 and 2007, approximately 76% of soybean fields in the state were infested with SCN. Preliminary results from a new on-going SCN survey initiated in 2019 show that 84% of Kentucky fields are infested with SCN. Although above-ground symptoms (stunting and yellowing) caused by SCN can occasionally be observed, affected soybean plants generally appear to be healthy. Unfortunately, "healthy-looking" soybean plants that are infected by SCN can still have a 30% yield reduction.

Management of SCN has gotten much more complex in the last few years, since SCN populations have adapted to the use of SCN-resistant soybean varieties. The primary source of SCN resistance used by commercial soybean breeding programs came from a soybean germplasm line known as "PI 88788". This source of resistance was highly effective in managing SCN for several years, but prolific use of soybean varieties with the PI 88788 background has selected for SCN populations that are able to overcome this source of resistance. In the 2006-2007 University of Kentucky SCN survey, the PI 88788 source of SCN resistance was not very effective against approximately 60% of the SCN populations in Kentucky, making management of this pathogen much more complex than before.

As complex as it is, management of SCN is still doable, and is important for maintaining and increasing soybean yields. Below are the main steps for managing SCN:

- **Test your fields to know the number of SCN eggs in your field.** The best times to sample for SCN in your fields is in the Fall or in the Spring (before planting). A Fact Sheet on sampling for SCN is available here: https://plantpathology.ca.uky.edu/files/ppfs-ag-s-09.pdf. Although the University of Kentucky does not currently have an active SCN Laboratory, samples can be sent to either the University of Illinois Plant Clinic (https://web.extension.illinois.edu/plantclinic/) or the University of Missouri SCN Diagnostics Lab (https://scndiagnostics.com/). This Spring, the Kentucky Soybean Board is sponsoring free SCN testing for Kentucky farmers. With this program, a limited number of samples for each county can be tested for free. Please check with your local County Extension Office for more information about the limited free SCN testing program.

- **Rotate resistant varieties.** If varieties are available that utilize sources of SCN resistance other than PI 88788 (such as Peking or Hartwig), then rotate the source of resistance every time you plant soybean in a field. Unfortunately, most of the soybean varieties adapted for planting in Kentucky utilize only the PI 88788 source of resistance. However, it is still important to rotate to different resistant soybean varieties, even though they are utilizing the same source of resistance. SCN is good at adaptation, so switching soybean varieties will help.

- **Rotate to non-host crops.** Rotating fields to a non-host crop, such as corn or grain sorghum, will help reduce SCN populations in a fields. Wheat is another non-host crop that may help lower SCN populations by having it in the rotation. Several years ago, Dr. Don Hershman with the University of Kentucky evaluated the effect of wheat residue on SCN populations. His research found that planting soybeans into fields with standing wheat stubble reduced SCN populations at the end of the growing season. More information about that research can be found here: https://plantpathology.ca.uky.edu/files/ppfs-ag-s-08.pdf

- **Consider using a nematode-protectant seed treatment.** Several nematode-protectant seed treatment products are now available on the market. Although the effects of these seed treatments have not always been consistent in field research trials, they are additional tools that can be used along with resistant varieties to help manage this important pathogen.

A multi-state initiative funded by the Soybean Checkoff Program known as the SCN Coalition began recently. The primary purpose of the SCN Coalition is to help promote awareness of the damage caused by SCN and the importance in managing this pathogen. More information about the SCN Coalition is available on their website at: https://www.thescncoalition.com/. Be on the lookout for information from the SCN Coalition about this important pathogen.

Figure 1. Females of the soybean cyst nematode (white to yellow-colored oval shaped objects attached to roots) infecting soybean roots. (Photo courtesy Dr. Greg Tylka, Iowa State University).

To PRE or Not to PRE? at early burndown

Travis Legleiter
Extension Weed Scientist

In my field visits over the last three years in Kentucky I have noticed a trend among some farmers who are struggling with season long control of waterhemp or Palmer amaranth. If you have ever heard me talk about waterhemp and Palmer amaranth control, hopefully it was obvious that I heavily promote the use of preemergence residual herbicides. I'd like to say I have been effective as most farmers who I visit in the field are quick to mention their preemergence herbicide products. Although, often that is when my ego is deflated as I hear them tell me the products and timing of application. It's at that time when I realize I may have missed a critical point of emphasis: timing of the residual herbicide application for Palmer amaranth and waterhemp control.

The problem often occurs when a farmer is tempted to put all of their residual herbicides into the early spring burndown. Being a largely no-till state, early spring burndowns are extremely common in Kentucky. The justification to combine a residual herbicide into the early spring burndown is to keep the field clean up to planting and potentially eliminate another sprayer pass across the field at planting. This is a sound practice that has historically worked very well for farmers, but the introduction of waterhemp and Palmer amaranth throws a wrench into the equation. When we talk about using residual herbicides for Palmer amaranth and waterhemp, the focus should be to get as much utility out of that residual herbicide during the growing season (after soybean planting) as possible. Thus, I would rather a residual herbicide for waterhemp and Palmer amaranth be applied at soybean planting rather than in the early spring. Residual herbicides that are applied in the early spring can do wonders for keeping a field clean of winter annuals and early emerging summer annuals, but unfortunately waterhemp and Palmer amaranth primarily emerge after soybean planting. Most residual herbicides typically suppress emergence for 4 to 6 weeks. Thus, if your residual is applied in early April the majority of that residual herbicide is gone when Palmer amaranth and waterhemp hit their peak emergence timings.

I am not discouraging early burndowns or even the use of a residual herbicide in early burndowns, rather encouraging farmers to think about which residual product to use in the early spring burndown. The use of an ALS-inhibitor based product such as Canopy, Firstshot, Crusher,or Leadoff (just to name a few) in the early burndown will provide residual control and suppression of winter annuals and early emerging summer annuals to keep a field relatively clean up to planting. I encourage the use of these products with this specific goal in mind, but the reality is that another residual herbicide will need to be applied at soybean planting to control Palmer amaranth and waterhemp.

Be Aware of Maximum Cumulative Rates

If you do plan to use a residual in the early spring burndown followed by an at-planting residual, make sure you are not exceeding maximum cumulative rates for an active ingredient that might be present in both products (especially ALS-inhibitors). Residual herbicide active ingredients have maximum cumulative rates to be applied within a given growing season. If your two residuals happen to have a similar active, make sure you do not exceed those limits or select alternative residuals that do not have similar active ingredients.

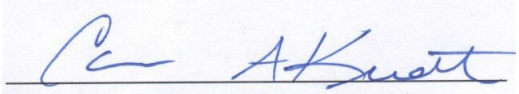
A second issue that I often face when visiting farmers is that they often use residual herbicides that only contain one effective site of action for controlling waterhemp and Palmer amaranth. Complete control of waterhemp and Palmer amaranth starts with a robust residual herbicide that contains at least 2 effective SOA (sites of action) from groups 14, 15, and/or 5. There are numerous residual herbicides available with more than one site of action, but the key is to know which sites of action are in the mix. For example a number of residual products contain a group 14 mixed with an ALS-inhibitor (group 2). While these are no doubt good products and are better than no residual at all, the reality is that these products only providing one effective site of action for controlling waterhemp and Palmer amaranth as ALS-resistance is widespread in waterhemp and Palmer amaranth. A complete list of premix products that contain at least 2 effective SOA for Palmer amaranth and waterhemp control is included in Table 1.

The rub of the situation often occurs when a farmer starts adding up all the input cost including the cost to run an additional sprayer pass across the field at planting. The dollar signs can really start to rack up, especially when you consider that some of the premix residuals for waterhemp and Palmer control can cost up to $30 per acre. As input cost adds up a famer must decide where to make cuts and often that cut naturally happens to the expensive at planting multi-SOA preemerge product. In my opinion that $20 to $30 is the best money a farmer can spend when considering season long waterhemp or Palmer amaranth control and when considering long term herbicide resistance management. The other decision a farmer might make is to move the expensive multi-SOA residual into the early burndown, as eluded to early in the article. I would again argue that this can be a waste of the farmers hard earned money as that robust multi-SOA residual is only controlling early emerging summer annuals before planting and missing its true potential of controlling waterhemp and Palmer amaranth during the soybean growing season.

BOTTOM LINE: I encourage the use of residual herbicide in early spring burndowns, but would limit those residuals to a few of the ALS-inhibitor based herbicides (mentioned above) whose strengths are controlling winter annuals and early emerging summer annuals. Then a multiple effective SOA residual (listed in Table 1) should be applied at planting to provide in-season control of waterhemp and Palmer amaranth. This will maximize the strengths of each of these products and keeps Extension Weed Scientist from visiting and taking pictures of your field when late season waterhemp escapes happen. If a cut is needed to reduce input cost, I would encourage you to cut the early burndown residuals first.

University of Kentucky
College of Agriculture, Food and Environment
Cooperative Extension Service

Chad Lee, Extension Grain Crops Specialist



Carrie Knott, Extension Grain Crops Specialist

Table 1. Premix residual herbicides that contain at least two effective sites of action for control of waterhemp and Palmer amaranth.

Premix Residual	Single Active Trade Name Products in Premix *Active Ingredients [SOA Group #]*
Authority Elite / BroadAxe XC	Spartan + Dual II Magnum *sulfentrazone [14] + S-metolachlor [15]*
Authority Supreme / Authority Edge	Spartan + Zidua *sulfentrazone [14] + pyroxasulfone [15]*
Authority MTZ	Spartan + metribuzin *sulfentrazone [14] + metribuzin [5]*
Trivence	Valor + metribuzin + Classic *flumioxazin [14] + metribuzin [5] + chlorimuron [2]**
Fierce	Valor + Zidua *flumioxazin [14] + pyroxasulfone [15]*
Fierce XLT	Valor + Zidua + Classic *flumioxazin [14] + pyroxasulfone [15] + chlorimuron [2]**
Fierce MTZ	Valor + Zidua + metribuzin *flumioxazin [14] + pyroxasulfone [15] + metribuzin [5]*
Panther Pro	Valor + metribuzin + Pursuit *flumioxazin [14] + metribuzin [5] + imazethapyr [2]**
Prefix	Flexstar + Dual II Magnum *fomesafen [14] + S-metolachlor [15]*
Warrant Ultra	Flexstar + Warrant *fomesafen [14] + acetochlor [15]*
Intimidator	Flexstar + Dual II Magnum + metribuzin *fomesafen [14] + S-metolachlor [15] + metribuzin [5]*
Boundary	Dual II Magnum + metribuzin *S-metolachlor [15] + metribuzin [5]*
*** Group 2 (ALS-inhibiting) herbicides are not considered effective on waterhemp and Palmer amaranth due to widespread ALS-resistance in these species**	

2020 Corn and Soybean Fungicide Efficacy Guides Now Available

Kiersten Wise, Department of Plant Pathology
Carl Bradley, Department of Plant Pathology

The 2020 fungicide efficacy tables for foliar diseases of corn and soybean, and for soybean seedling diseases have been updated, and are now available through the Crop Protection Network website: https://cropprotectionnetwork.org/resources/publications

These tables are updated annually based on data provided by United States Extension plant pathologists, with efficacy determined through replicated research trials across a broad geographic area. Kentucky research trial data are included in the development of these national fungicide efficacy ratings.

The ratings in these guides reflect the efficacy of a fungicide against a given disease, and are not rating yield response to a fungicide. It is an applicators legal responsibility to read and follow label directions. Updated tables include:

Fungicide Efficacy for Control of Corn Diseases
Fungicide Efficacy for Control of Soybean Seedling Diseases
Fungicide Efficacy for Control of Soybean Foliar Diseases

Crop Scouting Clinic set for May 28

The University of Kentucky KATS program plans on holding a Crop Scouting Clinic on May 28, 2020. Registration will open May 1, 2020. Go to http://kats.ca.uky.edu/ for registration link.

Topics will include:

scouting for insect pests on corn and soybeans

soil nutrients and crop growth

Scouting for soybean and corn diseases

Corn and soybean growth stages

weed id

NOTE: With the uncertainty of the Covid-19 pandemic, plans for this event may change. Updated information will be found at kats.ca.uky.edu or you may contact Lori Rogers lori.rogers@uky.edu

COVID-19 Pandemic

PLANT DISEASE DIAGNOSTIC LABORATORY

Plans for Plant Disease Diagnosis During the COVID-19 Threat

Carl Bradley, Extension Plant Pathologist
Nicole Gauthier, Extension Plant Pathologist
Brenda Kennedy, Plant Diagnostician
Sara Long, Plant Diagnostician
Emily Pfeufer, Extension Plant Pathologist
Paul Vincelli, Extension Plant Pathologist
Kiersten Wise, Extension Plant Pathologist

We, the members of the University of Kentucky Extension Plant Pathology Team, appreciate the high regard Kentuckians have for our plant diagnostic services. Year-round, we work hard to support our fellow citizens in their diverse plant production systems.

The COVID-19 Pandemic of 2020 has created extremely challenging circumstances for all Americans. With consideration of both our responsibilities as plant doctors for the Commonwealth and our responsibilities to safeguard our own health and that of others, we have prepared guidelines for managing our responsibilities during this pandemic.

For your information, the Plant Disease Diagnostic Laboratories (PDDL) at both Princeton and Lexington had been closed (for reasons unrelated to COVID-19) but reopened on 30 March 2020. We anticipate that the **PDDL labs will operate as follows, until future notice:**

- Only commercial samples delivered via postal mail or courier service, and originating from County Extension Offices, will be evaluated. (Exceptions will be made for hemp samples when there is agent involvement; guidelines can be found **here** and through your local Extension office.)
- Walk-in (drop-off) samples will NOT be received by either the PDDL in Lexington or the PDDL in Princeton.
- It is critically important that County Extension Agents/County Extension Offices receive the samples so they can then be mailed to the PDDL.
- Samples directly from the public will not be evaluated.
- No out-of-state samples will be received during this time.
- Of course, our circumstances are highly fluid, so the scenario under which we operate, and our operation guidelines, may change with little notice.

We appreciate your understanding in these most difficult times.

COVID-19 Pandemic

KY SOIL TESTING LAB

DIVISION OF REGULATORY SERVICES

Plan for the University of Kentucky Soil Test Laboratory (STL) in Lexington and Princeton, KY during the COVID-19 threat

Our labs at Division of Regulatory Services have remained open because University administration has deemed our work essential since it is associated with food production and safety.

We are practicing social distancing, avoiding close physical space, as well as cleaning surfaces frequently used by others.

Dropping off samples

The future is unknown on how long we will remain open. We are currently in full operation receiving and testing samples to serve our clientele until we receive directives otherwise. During our current operation, we will follow this plan to minimize social contact:

I. Buildings are closed to outside visitors. Samples and proper paperwork can be dropped off by Extension Office personnel or other clients having an account with us.

   A) Samples brought to Lexington should be placed in the file cabinet in back of the building.

   B) Samples brought to Princeton should be placed on the cart on the loading dock.

II. Samples can be mailed to either the Lexington or Princeton labs.

USEFUL RESOURCES

College of Agriculture, Food and Environment

WHEAT SCIENCE GROUP

http://wheatscience.ca.uky.edu/home

KyGRAINS.info

Kentucky Pest News

Entomology · Plant Pathology · Weed Science

UK KENTUCKY

http://kentuckypestnews.wordpress.com/

Crops Marketing and Management Update

http://www.uky.edu/Ag/AgEcon/extcmmu.php

KATS

Kentucky Agriculture Training School

University of Kentucky
College of Agriculture,
Food and Environment
Cooperative Extension Service

Research and Education Center
PO Box 469
Princeton, KY 42445-0469

RETURN SERVICE REQUESTED

Please note: The University of Kentucky Research and Education Center/Grain and Forage Center of Excellence is moving forward with its summer educational programming in a COVID-19 safe manner. We look forward to your participation in our educational programming. Please check https://wheatscience.ca.uky.edu and https://www.kygrains.info for updates.

DATE	EVENT	LOCATION
May 12	UK Wheat Field Day	Virtual
May 28	KATS—Crop Scouting Clinic	TBA
June 18	KATS—Mid-Season	TBA
June 30	Pest Management Field Day	TBA
July 16	KATS—Spray Clinic	TBA
July 28	UK Corn, Soybean & Tobacco Field Day	TBA
July 30	High School Crop Scouting Competition	TBA
Aug. 27	KATS End of Season	TBA