Kentucky Field Crops News

Spanning 5 departments and 120 counties

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Martin-Gatton College of Agriculture, Food and Environment | Grain and Forage Center of Excellence

UK Wheat Science Group
UK Corn & Soybean Science Group

In This Issue

Could Bourbon Help Kentucky Producers Survive Another Trade War?

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Note: This article was originally written for UK Economic and Policy Update Newsletter

International markets support U.S. agriculture, particularly in Kentucky, which benefits from its proximity to the Mississippi River, enabling quick and low-cost transportation to Louisiana ports. From 2010 to 2023, an average of 63% of wheat receipts and 55% of soybean receipts were derived from exports, underscoring the reliance of these crops on global trade (Figure 1). In contrast, corn is less export-oriented, with just 19% of receipts linked to foreign buyers. This level of exposure makes Kentucky agriculture particularly sensitive to tariff changes and shifts in trade policy. During times of slow exports, strong local demand becomes essential.

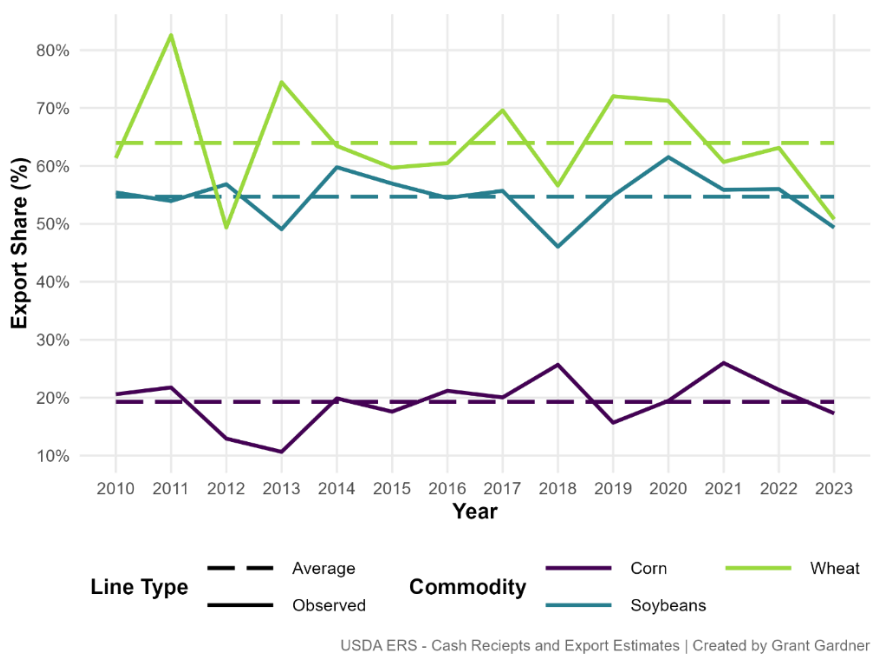

Figure 1: Export Contribution to Kentucky Ag Receipts: Observed vs. Long-Run Average Share by Commodity

While Kentucky lacks the ethanol production or soybean crush capacity found in much of the Midwest, it does have limited processing infrastructure that helps mitigate some export pressure. In terms of ethanol, Kentucky produces 55 million gallons per year compared to Iowa's nearly 5000 million gallons (EIA, 2024). Kentucky can additionally crush nearly 45% of its soybean supply (Gerlt, 2025). Use of grain crops for feed and milling also plays a role, but likely the most distinctive source of Kentucky demand is bourbon and whiskey production.

Recent research by Murphy (2024) indicates that Kentucky distilleries demand over 30 million bushels of corn and 2 million bushels of wheat annually. If sourced entirely within the state, whiskey production would consume nearly 13% of Kentucky's corn crop and 7% of its wheat. This level of demand provides a significant cushion for corn producers, especially when international markets are uncertain.

Table 1: Kentucky Distillery Demand and Average Production

	Distillery Demand (Bushels)	Average Kentucky Production (Bushels)	Distillery Demand (%)
Corn	32,063,769	247,291,667	13%
Wheat	2,181,502	29,446,667	7%

Corn prices are less likely to be affected by trade disputes due to this domestic demand, but Kentucky's other major cash crops—wheat and soybeans—remain highly export-dependent. Distilleries contribute some demand for wheat, especially as "wheated" bourbons gain popularity, but wheat still makes up only about 2% of the total grain used for whiskey distillation (Murphy, 2024). Soybeans, which are not used in whiskey at all, are the most exposed to price risks from retaliatory tariffs and global supply disruptions.

While grain demand from distilleries makes up sizeable portions of local use and helps support prices—especially for corn—Kentucky grain producers remain vulnerable to trade disruptions. Corn is partially shielded from global market volatility thanks to strong in-state demand from whiskey production. However, wheat and soybeans, which are more dependent on exports and have fewer local industrial uses, remain exposed to global price shocks and retaliatory tariffs.

Although Kentucky's distilling industry provides a valuable buffer for local corn and some wheat, it is not a silver bullet. The state's broader agricultural outlook remains closely tied to the ebb and flow of international markets. Future investments in soybean crushing, wheat milling, or other regional processing infrastructure could improve resilience by expanding local demand and lessening dependence on volatile export channels.

Sources:
Gerlt, S. (2025). Soybean Crush Expansion, 2025 Update. *American Soybean Association*. Retrieved May 8, 2025, from https://soygrowers.com/news-releases/soybean-crush-expansion-2025-update/

Murphy, R. (2024). FROM BUSHELS TO BARRELS: A DESCRIPTIVE ANALYSIS OF THE U.S. WHISKEY INDUSTRY. *Theses and Dissertations--Agricultural Economics*. https://doi.org/10.13023/etd.2024.489

U.S. Energy Information Administration (EIA). (2024). *U.S. Fuel Ethanol Plant Production Capacity*. https://www.eia.gov/petroleum/ethanolcapacity/

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Outbreaks of Slugs in Soybeans and Corn in Central and Northern Kentucky

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During the last three weeks of May and first week of June 2025, western, central, and northern Kentucky experienced intense rainfall, high relative humidity, moist soils, low nighttime temperatures, and cloudy mornings. These environmental conditions are highly favorable for slug outbreaks in corn and soybean fields. Sadly, reports of slug outbreaks surfaced in several Kentucky counties last week.

During the first two days of June, we visited multiple commercial corn and soybean fields and unfortunately confirmed that slug infestations are indeed occurring. Our field assessments verified slug activity in Clinton, Wayne, Nelson, Woodford, and Harrison counties (Figure 1). However, it is likely that many other counties in central and northern Kentucky are also experiencing, or will soon experience, similar outbreaks.

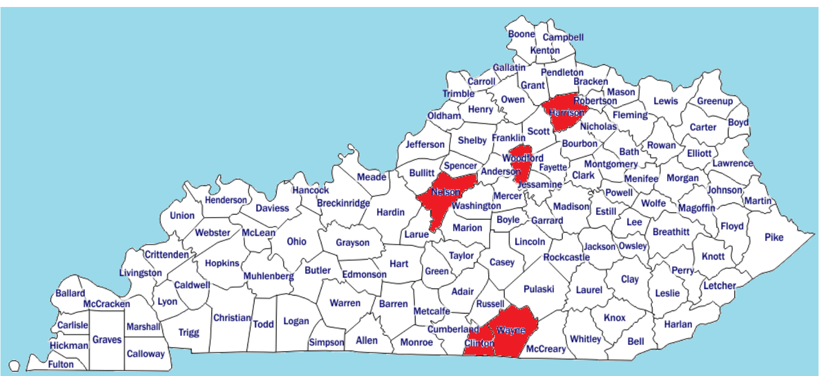

Figure 1. Counties on red where severe infestation of slugs have been observed in May and June 2025.

In soybean slugs can cause stand reduction, when the apical meristem is eaten in seedlings, and plants are killed, also, they can feed in cotyledons, and cause severe defoliation, they can even feed on turgent insecticide treated seeds (Figure 2). In addition, this is the first time we observed severe injuries in two corn fields including the reduction of plant stands. Corn damage can be distinguished by shallow and irregular feeding marks or holes in the leaves, while severe damage can be observed by ragged or split leaves (Figure 3).

Figure 2. (Left) Slug feeding on treated seed and (Right) snail feeding on soybean cotyledon. (Photos: R.T. Villanueva).

Figure 3. Damage of slugs on corn in Woodford Co. in 2025 (Photo: R.T. Villanueva).

On these recent visits to commercial fields, one farmer reported having dealt with slug problems for the past 15 years and he mentioned that he cannot produce soybeans if metaldehyde baits are not available. Another farmer mentioned having to replant his soybean field four times this season due to slug damage.

Farmers, consultants, and scouts need to be vigilant of this situation. The publication "Rain, Cloudy Days, and Low Temperatures May Cause Slug Outbreaks in Field Crops" on the Kentucky Pest News Blog of (May, 20, 2025) provides a helpful table listing molluscicides approved for slug and snail management in corn and soybeans.

Citation: Villanueva, R., Batista, F., 2025. Outbreaks of Slugs in Soybeans and Corn in Central and Northern Kentucky. Kentucky Field Crops News, Vol 1, Issue 6. University of Kentucky, June 13, 2025.

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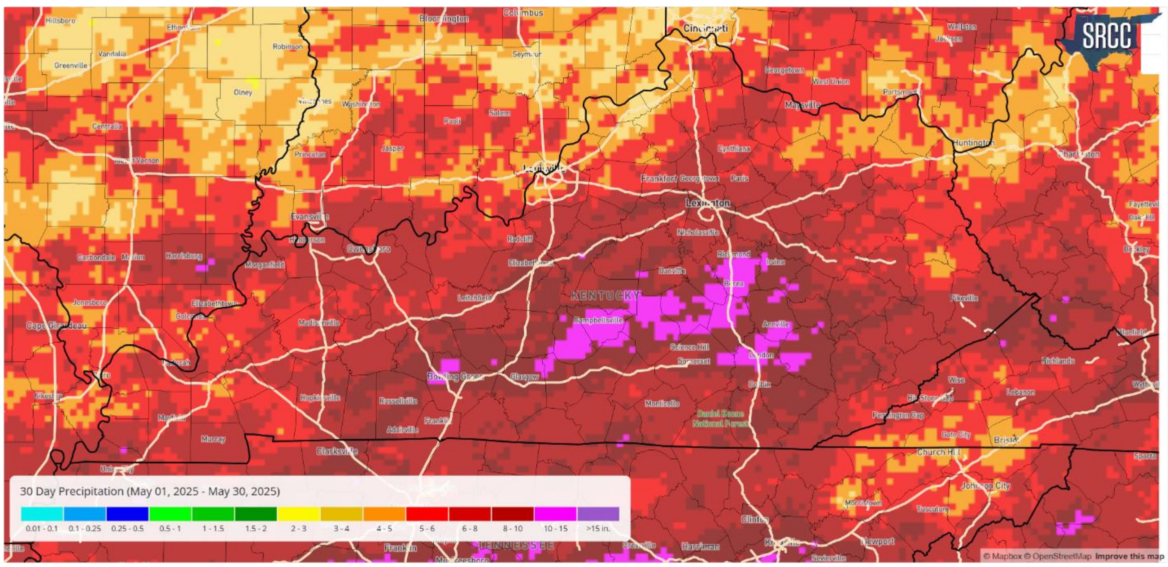
Exceptionally Wet Start to 2025 in Kentucky

Matt Dixon, UK Senior Meteorologist

Meteorological spring officially came to a close at the end of May—and what a wet season it was! Following the second-wettest April on record, May continued the trend with consistent rainfall across the state. The official statewide average came in at 6.75 inches, which is 1.66 inches above normal, tying it for the 14th wettest May on the 131-year record.

As shown in the map below, the heaviest rainfall totals were concentrated south of the Parkways, particularly across Central Kentucky. Some locations recorded over 10 inches of rain. The highest totals in our database came from the Campbellsville, Liberty, and McKee Mesonet stations, which reported 10.30, 10.32, and 10.30 inches, respectively.



When combining March, April, and May, Kentucky averaged 19.99 inches of precipitation for meteorological spring—nearly 5.5 inches above normal—ranking as the **4th wettest spring on record** (chart provided). I know spring planting has been a challenge for many this year, but honestly, I'd rather deal with a bit too much rain than face drought conditions!

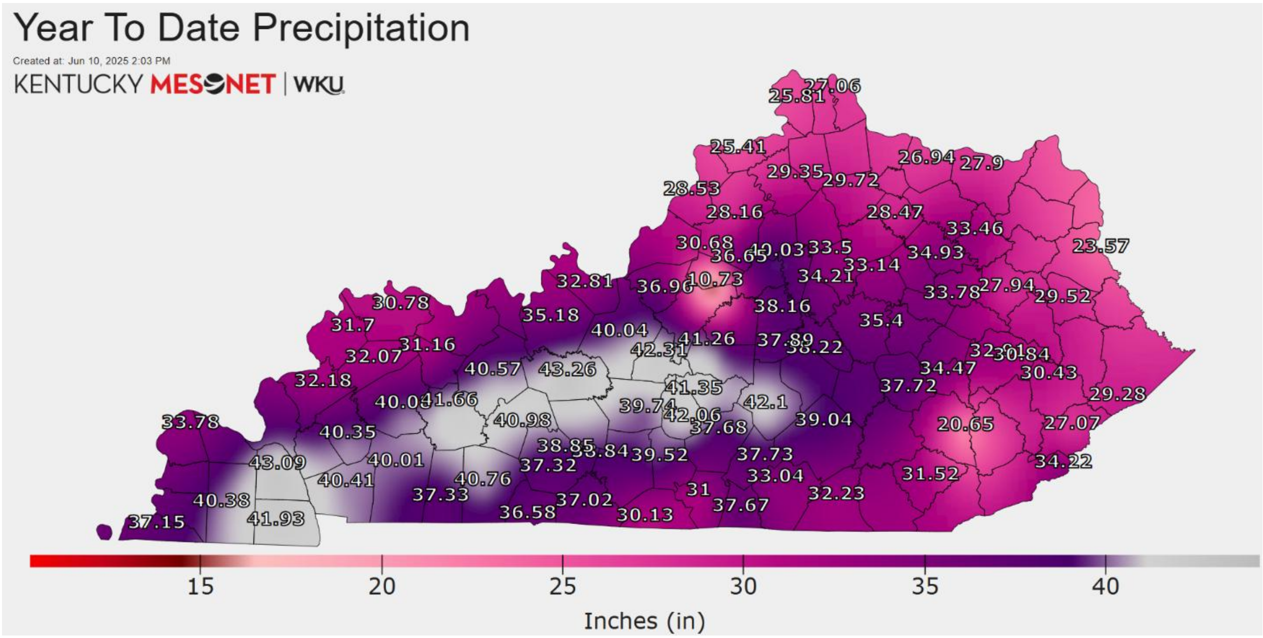
But it gets even more impressive: extending the data back to January 1st, 2025 now ranks as the wettest January–May period on record in Kentucky. Over those five months, the state has averaged 31.51 inches of precipitation, which is a remarkable 9.41 inches above normal.

Kentucky Top-10 Wettest Springs on Record (1895-2025)

Year	Rank	Prcp	Prcp Norm	Prcp Dep
2011	1	24.33	14.5	9.83
1935	2	21.82	14.5	7.32
1927	3	20.21	14.5	5.71
2025	4	19.99	14.5	5.49
1983	5	19.47	14.5	4.97
1975	6	19.26	14.5	4.76
1997	7	19.01	14.5	4.51
1912	8	18.73	14.5	4.23
1973	9	18.64	14.5	4.14
1984	10	18.62	14.5	4.12

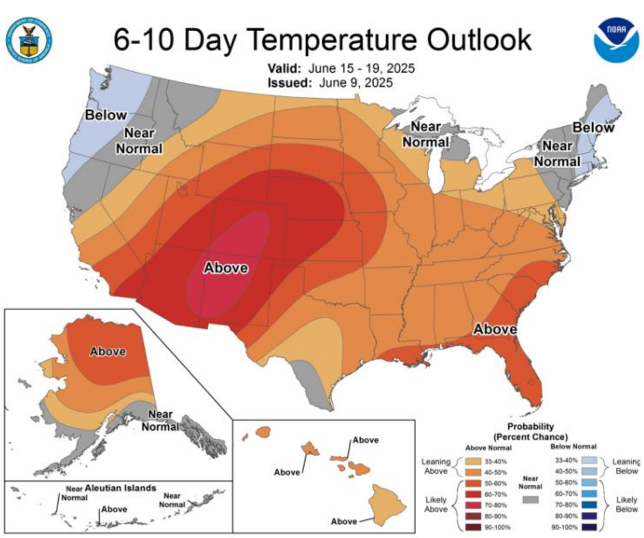
Data Courtesy: Midwestern Regional Climate Center cli-MATE toolkit: https://mrcc.purdue.edu/CLIMATE/

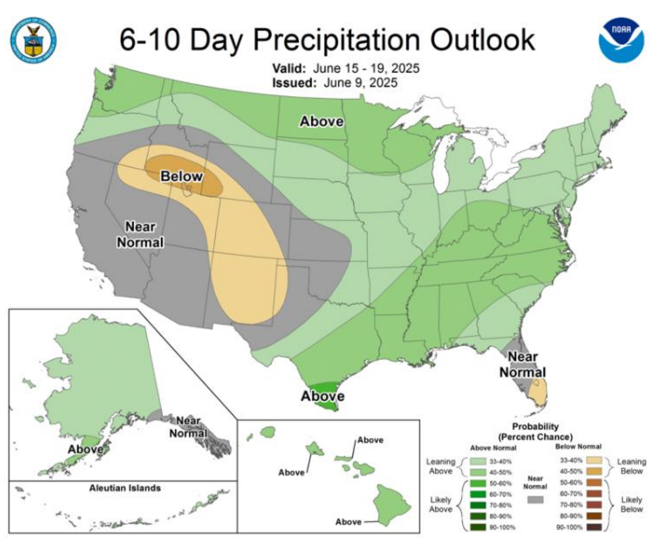
Looking at the year-to-date precipitation data from the [Kentucky Mesonet](https://www.kymesonet.org) (map below), many stations across the Pennyrile and Central Kentucky regions have already surpassed 40 inches. Grayson County leads the way with 43.26 inches. To put that in perspective, Kentucky's annual average is 50.36 inches—and we still have seven months to go. Bottom line: it's been an exceptionally wet start to the year.

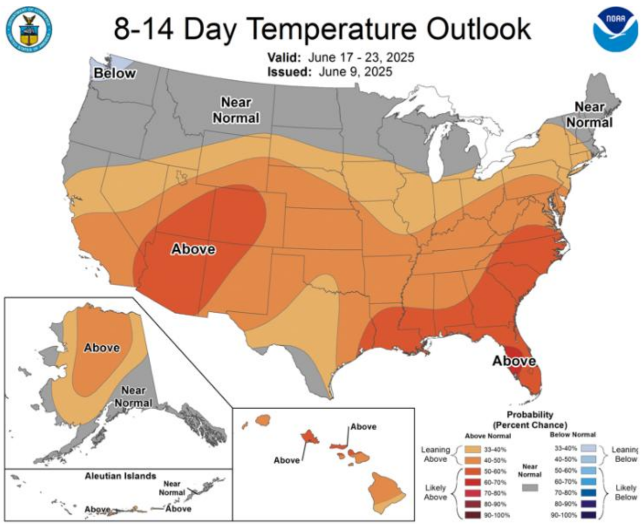


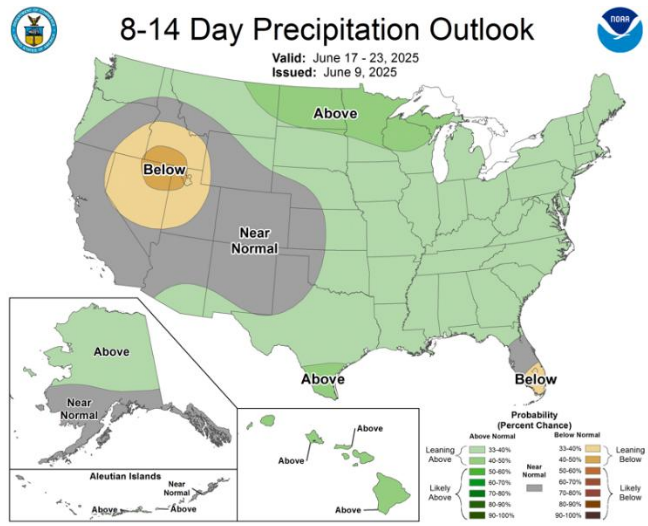
Will it continue? Forecasts and outlooks suggest that it will—along with the eventual return of summer heat (May's state average temperature was 1.1°F below normal, which has caused heat unit accumulations to fall behind schedule since May 1).

Below are the 6–10 day and 8–14 day outlooks, both of which lean toward above-normal temperatures and rainfall during those periods. Keep in mind: the darker the shading on the maps, the higher the confidence in the forecast. To put things in perspective, average highs this time of year typically range from the mid to upper 80s, while average lows fall in the low to mid 60s.

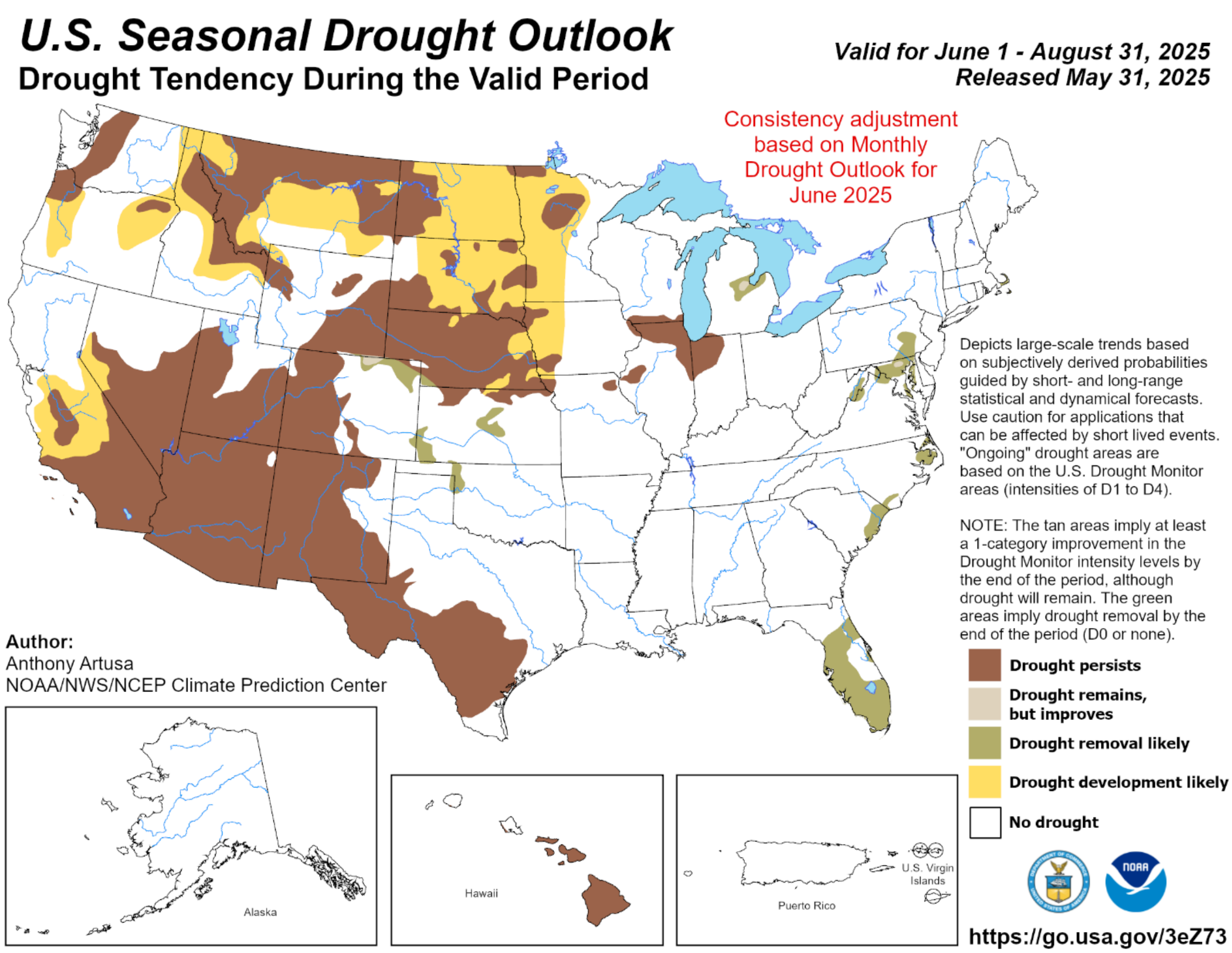








These outlooks are updated daily and can be viewed at the following link. Here, you can also find the monthly and seasonal outlooks. The summer outlook (June-August) is a little more indifferent when it come to precipitation, but saying that, the Climate Prediction Center just released their latest seasonal drought outlook (map below), which favors much of the Ohio Valley remaining drought free through the summer months. Thanks to our wet spring, soil moisture and streamflows are in relatively good shape as we head into the heart of summer. Here's to hoping it stays that way!



Citation: Dixon, M., 2025. Exceptionally Wet Start to 2025 in Kentucky. Kentucky Field Crops News, Vol 1, Issue 6. University of Kentucky, June 13, 2025.

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Kentucky Weather Alert App

This ad-free app from the UK Ag Weather Center is an excellent resource for staying safe and informed. It provides daily and hourly forecasts, high-resolution radar, National Weather Service alerts sent directly to your phone, and a link to this update. Without any distracting ads, this app can act as another reliable warning source during tonight's severe weather. Be sure to check it out by scanning or clicking the QR codes below to download the app on both iOS and Google Play platforms

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Cover Crop Options on Prevented Planting Acres in 2025

Chad Lee, Chris Teutsch, Erin Haramoto, J.D. Green, and Hanna Poffenbarger

Note: The first version of this article was released May 30, 2025 at: https://graincrops.ca.uky.edu/articles/cover-crop-options-prevented-planting-acres-2025 . The article for this newsletter was updated June 10, 2025.

As of the June 9, 2025 USDA Crop Progress Report, corn planting progress was only 88% which is 7 points behind the 5-year average of 95%. According to the United States Department of Agriculture Risk Management Agency (USDA RMA), the End of Planting Period for Corn in Kentucky is June 15, 2025 and the Final Planting date for corn in Kentucky is June 31, 2025 (USDA RMA Web Applications). For soybean, The End of Late Planting Period is July 10, 2025 for single crop and July 15, 2025 for double crop (USDA RMA Web Applications). The Final Planting Date for soybean is June 15, 2025 for single crop and June 25, 2025 for double crop.

Farmers may be considering prevented planting on a few fields this year. A summer cover crop can help manage weeds, take up nutrients already applied and build or maintain soil quality with healthy root systems.

Grass summer cover crop species: sorghum sudangrass hybrids and millets will establish and grow well in Kentucky (Table 1). Sorghum sudangrass will produce heavy biomass. Foxtail millet could be bushhogged in in the late boot stage and will not regrow.

Legume summer cover crop species: cowpea and sunn hemp both will establish well and help cover the soil (Table 1). Annual lespedeza is another option and will produce the lowest biomass of these three.

Other summer cover crop species: oilseed radish can grow over the summer, but it is harder to establish than the grasses.

Staying with one species type: If a farmer grows only a grass summer cover crop, then there are herbicide options to control broadleaf weeds should they escape the cover crop. If a farmer grows only a legume, then there are some grass herbicide options to control escapes in that crop.

Mixing Species: Mixing millet with cowpea or sunn hemp might provide excellent erosion prevention from the grass and some additional nitrogen from the legume. That additional nitrogen could be beneficial to a crop planted in the fall. The mixed species eliminates the ability to use a herbicide if other weeds escape.

The cover crop seed should be of high quality, easy to drill and provide excellent ground cover for most of the summer. “Cheap” cover crop seed that does not meet these criteria will cost too much. If the primary goal is weed suppression, then choose a cover crop with higher biomass potential. If higher biomass will lead to other challenges in the fall, then select a cover crop with less biomass potential. The Grain, Forage, and Cover Crop Guide for Kentucky (AGR-18) provides an excellent overview of the species listed above. Some of the species mentioned above are included in Table 1 here.

The Southern Cover Crop Council has a cover crop selector tool https://covercrop-selector.org/ . The farmer can specify their cover crop window, location, soil condition, and goals, and then read about the options that align with their system.

Your County ANR Extension Agent can help with options for summer cover crop and other decisions related to field management.

Your crop insurance agent should have specific details on the steps taken for Prevented Planting. Consult with your crop insurance agent and the USDA RMA for other questions regarding Prevented Planting and what is allowed with a cover crop.

Table 1. Selected Summer Cover Crop Options for Prevented Planting. Table Compiled from AGR-18: Grain, Forage, and Cover Crop Guide for Kentucky. See AGR-18 for more details.

Species	Seeding rate per acre	Seeding depth (inches)	Seeding date	Approximate Yield, Tons/Acre
Grasses				
Millet, Foxtail (German)	15 to 20 lb drilled; 20 to 30 lb broadcast	0.25 to 0.50	May 1 to Aug 1	1.0 to 3.0 T
Japanese millet	10 lb drilled; 20 lb broadcast	0.25 to 0.50	June to July	2.5 to 5.0 T
Millet, Pearl	summer cover crop: 10 lb drilled, 20 lb broadcast	0.25 to 0.50	June to July	2.5 to 5.0 T
Sudangrass	20 to 30 lb drilled; 20 to 30 lb broadcast	0.50 to 1.0	May 10 to Aug 1	2.0 to 5.0 T
Sorghum x Sudangrass Hybrids	summer cover crop: 15 lb drilled; 30 lb broadcast	0.5 to 1.5	Jun to Sep	4.0 to 5.0 T
Legumes				
Cowpeas	summer cover crop: 60 lb drilled; 100 lb broadcast	1.0	Jun to Jul	2.0 T
Lespedeza, Annual	20 to 25 lb alone; 10 to 15 lb mixtures	0.25	Feb 15 to Apr 1	1.0 to 2.5 T
Sunn hemp	30 lb drilled, 50 lb broadcast	0.50 to 1.0	June to Jul	2.0 to 7.5 T
Brassicas (Mustards)				
Turnips and related brassicas	3 to 6 lb	0.25	Apr 1 to Jun 1; Jun 15 to Nov 15	2 to 4 T

Resources:

Knott, C., E. Haramoto, J. Henning, C. Lee and R. Smith. AGR-18 Grain, Forage, and Cover Crop Guide for Kentucky. Univ. of Kentucky Cooperative Extension Service. Lexington. https://publications.ca.uky.edu/sites/publications.ca.uky.edu/files/AGR18.pdf

Southern Cover Crop Council Cover Crop Selector https://covercrop-selector.org/

USDA RMA Web Applications | Final Planting Dates https://webapp.rma.usda.gov/apps/actuarialinformationbrowser/DisplayCrop.aspx

USDA NASS Crop Progress Report. June 9, 2025. https://downloads.usda.library.cornell.edu/usda-esmis/files/8336h188j/zc77vq18h/pv63hz391/prog2325.pdf

USDA RMA First and Second Crop Rules https://old.rma.usda.gov/en/Fact-Sheets/National-Fact-Sheets/First-and-Second-Crop-Rules

Citation: Lee, C., Teutsch, C., Haramoto, E., Green, J.D., Poffenbarger, H., 2025. Cover Crop Options on Prevented Planting Acres in 2025. Kentucky Field Crops News, Vol 1, Issue 6. University of Kentucky, June 13, 2025.

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Photosynthesis – The Ultimate Yield Producer

Dennis B. Egli, UK Professor Emeritus

The keys to high yield include variety selection, planting date, population, fertilizer and control of weeds and pests. Photosynthesis doesn't make the list, but there is no yield without photosynthesis. High yield requires high photosynthesis.

Think about it – a corn producer plants about 20 pounds of seed per acre and, 100 to 120 days later, harvests 250 bushels (14,000 pounds) of corn and leaves about 14,000 pounds of leaves, stems and husks, plus an unknown amount of roots, in the field. That 20 pounds of seed produced more than 28,000 pounds of plant material per acre. That is the miracle of photosynthesis.

Years ago, scientists pondering how a small seed could produce a large plant, concluded that the sustenance for growth must come from the soil. But when they grew a willow tree in a large soil-filled pot they found no decrease in the weight of the soil, so they mistakenly concluded that growth came from water. Finally, in the early 1800's, they demonstrated that the increase in plant weight came from carbon dioxide in the air (with a small contribution from water) in the presence of sunlight – in other words, they discovered photosynthesis.

Photosynthesis in green plant tissues uses the energy in sunshine to convert carbon dioxide into simple sugars that are the building blocks for all plant tissues. Energy from respiration of these simple sugars is used to acquire nitrogen and to make starch, protein, oil, cellulose and all the many compounds that make up a plant.

Photosynthesis requires energy (from the sun), carbon dioxide, warm temperatures (but not too warm), water (mostly just evaporates from the leaves), and mineral nutrients to function.

Photosynthesis not only feeds us, but, for most of recorded history, it provided the energy to cook our food, heat our homes and, more recently, to move us from place to place. The plant tissues that ultimately, over geologic time, became coal and petroleum came from photosynthesis.

Photosynthesis of a field of corn or soybean reaches a maximum when the leaves completely cover the ground because only sunlight that is intercepted by the leaves is used in photosynthesis. Only weeds benefit from sunlight that reaches the soil. Maximum yield requires complete ground cover near the beginning of reproductive growth.

We don't often think about it, but crop management is all about providing the ideal environment for photosynthesis. We irrigate, fertilize, adjust row spacing, and control weeds and pests in large part to maximize photosynthesis. Managing for maximum yield is maximizing photosynthesis.

Biochemists tell us that there are two types of photosynthesis (there is a third, but it doesn't appear in any common crops). Most crops have C3-type photosynthesis (first stable product is a 3-carbon sugar) while only a few crops use the C4 system (first stable product is a 4-carbon sugar).

C4 crops have higher photosynthesis rates and a greater tolerance to high temperatures, while the photosynthesis rate of C3 crops increases when the carbon dioxide concentration in the air goes up. Carbon dioxide levels in the air increased from 280 ppm at the beginning of the industrial revolution to roughly 426 ppm today. This increase contributed to higher yields of C3 crops and is also causing climate change. C4 crops do not respond to higher carbon dioxide levels.

Interestingly, most of the crops that feed the world (rice, wheat, barley, soybean, peanuts, potatoes, all the grain legumes) have C3 photosynthesis, while the more productive C4 photosynthesis is found only in corn, sorghum, and millet.

The rate of photosynthesis – the amount of carbon fixed per acre per day – is directly related to the crop growth rate (pounds of dry matter per acre per day) and to yield – the higher the growth rate, the higher the yield.

Yield was reduced when we shaded soybean communities during reproductive growth to reduce the sunlight they received and photosynthesis (Egli, 1993). A 30% shade treatment reduced yield by 28%, while a 63% treatment reduced yield by 58% averaged over 2 years and 2 varieties. One could show the same response to water deficits or poor fertility. Reducing photosynthesis reduces yield.

The duration of photosynthesis is also important, especially during the seed-filling period – the longer the seed-filling period, the more time there is for photosynthesis and the higher the yield. There is evidence in several crops that selection for higher yield by plant breeders increased the length of the seed-filling period and yield. The length of the vegetative growth period is not always related to yield.

Photosynthesis – the ability of a green leaf to use energy in sunlight to fix carbon is the fundamental process that makes agriculture possible. Growing crops is basically a matter of managing photosynthesis. We will depend on photosynthesis as long as our food comes directly or indirectly from green plants. Strange as it may seem, this basic process that feeds us also produced the fossil fuels that may ultimately kill us if we continue to burn them, increasing the carbon dioxide concentration in the air and causing climate change.

Remember – “As long as you have food in your mouth, you have solved all questions for the time being.” (Franz Kafka, Novelist, 1883-1924).

Adapted from Egli, D.B. 2021. Applied Crop Physiology. Understanding the Fundamentals of Grain Crop Management. CABI.

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Egli, D.B. 1993. Cultivar maturity and potential yield of soybean. Field Crops Research 32: 147 -158.

Citation: Egli, D., 2025. Photosynthesis – The Ultimate Yield Producer. Kentucky Field Crops News, Vol 1, Issue 6. University of Kentucky, June 13, 2025.

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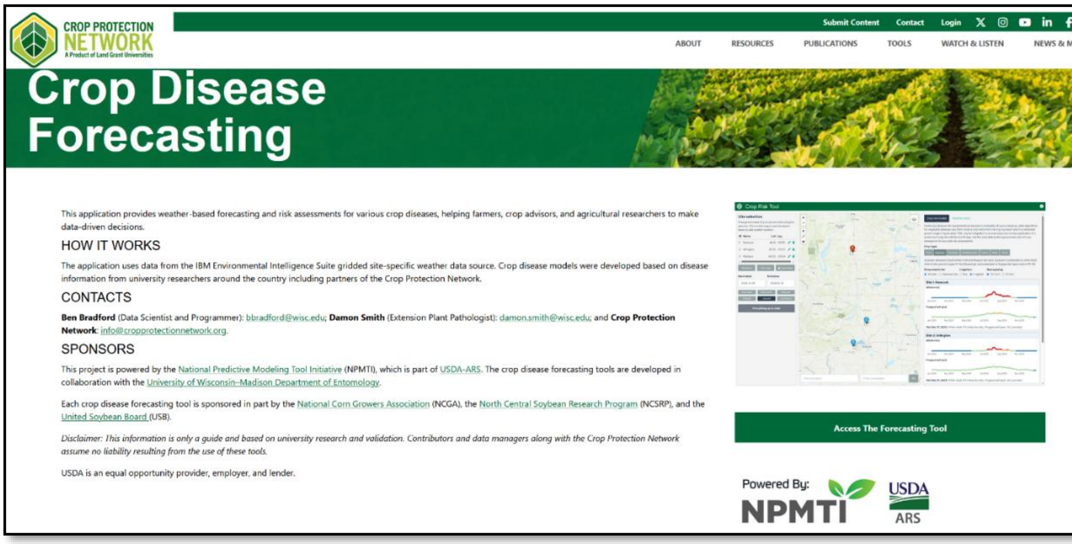
New Corn Disease Forecasting Tool Now Available

Kiersten Wise, UK Extension Plant Pathologist



Farmers and agricultural professionals now have access to a new tool to help assess corn disease risk: the Crop Risk Tool, available through the Crop Protection Network.

This interactive tool is built using data from multiple years of university research trials, including over 20 trials in Kentucky. Currently, it includes two models for corn diseases: gray leaf spot, an annually important disease in Kentucky, and tar spot, a disease that has recently emerged in the state. While tar spot has not yet caused significant yield losses in Kentucky, it remains a concern due to its impact in northern states.

The Crop Risk Tool uses local weather data to estimate the likelihood of disease development by evaluating both fungal spore presence and environmental conditions. Users can generate risk predictions on a weekly, monthly, or yearly or seasonal basis for specific locations. Risk is expressed as a percentage with higher values indicating a greater chance of disease development, while lower values suggest less favorable conditions for disease.

It is important to note that disease can still occur under low-risk conditions, though it is less likely to reach economically damaging levels. **The risk predictions are relevant when corn is at vulnerable growth stages, specifically from the 10-leaf collar (V10) to milk stage (R3).** High risk predictions outside of these stages typically do not require action. Like every prediction tool, the risk probabilities are not a guarantee but can be used as another source of information when making informed decisions about fungicide application for disease management.

An interesting feature of the tool is its ability to review historical risk data (Figure 1). For example, in Princeton, Kentucky, the 2024 model showed that:

- Gray leaf spot risk was highest between May and November, which aligns with actual observations during the growing season.
- Tar spot risk peaked in mid-May and mid-November, outside of the critical V10–R3 window, explaining why it didn't reach damaging levels despite being observed in the area.

The Crop Risk Tool is set to replace the Tarspotter app, which will be phased out. Users who previously relied on Tarspotter should now use this new tool for tar spot predictions.

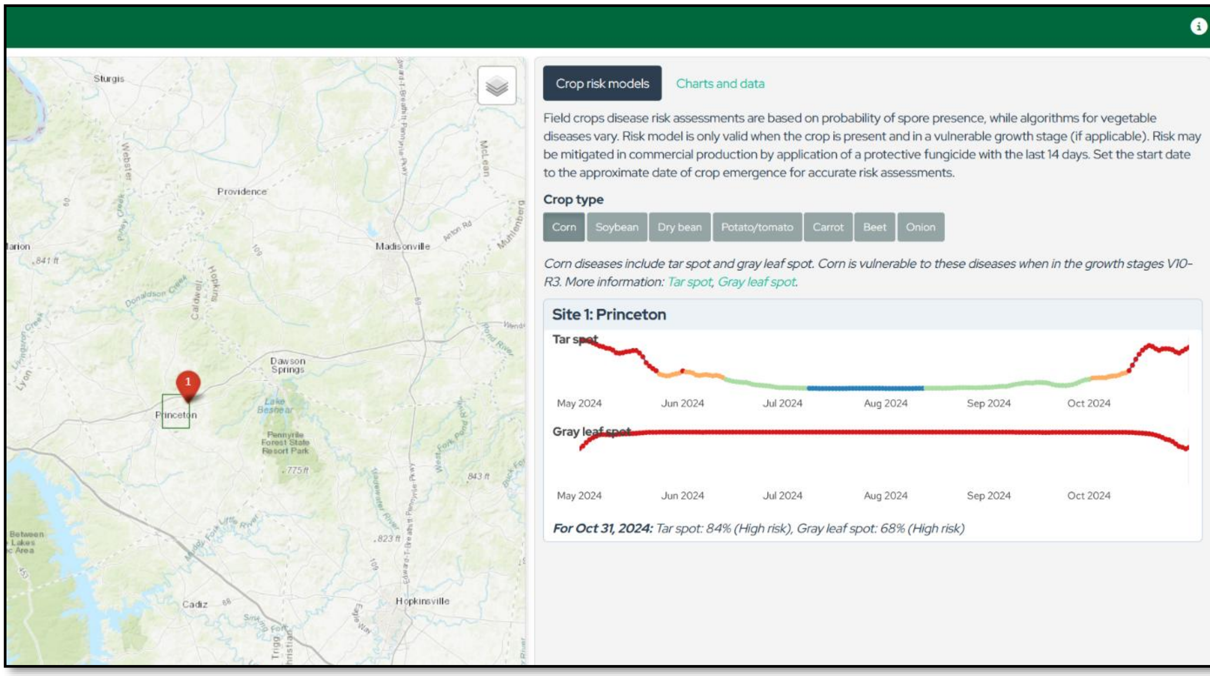


Figure 1: Example image of Crop Risk Tool model predicting risk of tar spot and gray leaf spot of corn development for the 2024 growing season in Princeton, KY.

Development and ongoing improvement of the Crop Risk Tool is funded by the National Predictive Modeling Tool Initiative (NPMTI) through the USDA-ARS and supported by the National Corn Growers Association. The tool is developed and managed by the University of Wisconsin-Madison, with ongoing contributions from Kentucky and other states to expand and refine disease models. New models for other corn diseases, including northern corn leaf blight and southern rust, are currently in progress. The tool will be updated annually with new university data to improve accuracy and expand coverage.

Citation: Wise, K., 2025. New Corn Disease Forecasting Tool Now Available. Kentucky Field Crops News, Vol 1, Issue 6. University of Kentucky, June 13, 2025.

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Scouting Soybeans for Stand Count and Future Fixes

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Planting soybeans has been a challenge across Kentucky for many farmers this spring. The frequent and often heavy rains combined with cooler and cloudier conditions have made both planting and early stand establishment more of a challenge this spring. Early assessment of soybean stands can help identify potential issues with the planter and determine if an adequate number of plants emerged to maximize soybean yield.

In recent years, the push to plant soybeans earlier has grown stronger. Early planting can offer advantages, but wetter springs are presenting new challenges. Excess moisture is not only delaying emergence in some fields, but also damaging stands, with seedlings emerging only to be drowned or destroyed soon after. As the season unfolds, careful evaluation of stand establishment and replant decisions becomes crucial. The success of your crop depends not just on when you planted, but on how you respond in the critical weeks that follow.

This leads to an important question: *Did I do well to begin with or is there something I need to correct?*

To answer that, it's time to get into your fields. Scout thoroughly and assess whether the foundation of your next soybean season is as strong as it should be. This is also a perfect moment to evaluate your planter's performance. What went well? What didn't? Are there adjustments you need to make before next season? The patterns you observe now will help guide improvements for next year.

As you walk your fields, one of the first things you might notice is uneven soybean stands or patchy emergence; without any obvious signs of pest or wildlife damage. This often tells a story about the planter. Common planter issues include planting a row too deep (Figure 1), planting an entire part of a field too deep, poor row closing, sidewall compaction and others.

Figure 1: Soybean field with missing rows (left) and soybean seeds buried 4 inches deep that caused the missing rows

While isolated issues may not seem significant across large fields, frequent inconsistencies can impact your final stand count, weed competition, and even the overall look of the field. These problems can snowball into yield losses. Make sure your planter is properly adjusted going into the next season. Evaluate seeding depth randomly in several spots next year to prevent a repeat of any issues you find this season. Fixing the small things during planting can lead to much bigger gains later.

Figure 2: The soybean plants emerged well but were destroyed by rodents/insects/slugs.

So, what about stand count? How many plants do you need to maintain yield? The good news is that evaluating soybean stand count is fairly straightforward. You can use any measuring stick of a known length (the longer, the better) or opt for tools like the Hula-Hoop method. Personally, I use a collapsible measuring stick that is 8.712 feet long; specifically calibrated for this purpose.

Here's how it works: I go to a random location in the field, place the stick along the rows and count the number of plants within four rows if 15 inches apart and two rows if 30 inches apart. Since four rows at 15-inch or two rows at 30-inch spacing and 8.712 feet in length equals 1/1000 of an acre, I simply multiply the number of plants I count by 1,000 to get the plant population per acre. For example, if I count 145 plants in that section:

145 ×1,000 =145,000 plants per acre

I repeat this process at least six times; more if possible; to account for field variability and improve accuracy. Knowing your average stand count helps you make informed decisions about whether a replant is necessary or if your crop is well on its way to a successful season.

Other agronomists prefer the Hula-Hoop method. It's a simple and effective way to estimate stand counts using a circular ring of known diameter, usually between 30 and 36 inches. Here's how it works:

You create or use a hoop with a fixed diameter, walk into the field (avoiding road edges, end rows, or heavily trafficked areas), and toss the hoop randomly in three to five spots that represent typical field conditions. At each spot, you count the number of soybean plants inside the ring. For example, let's say you use a hoop with a 30-inch diameter and toss it in five random spots. Your plant counts are 14, 17, 18, 16, and 15. That gives you an average of 16 plants per hoop. To convert this into plants per acre, you'll need to calculate the area of the hoop. From geometry, we know the area of a circle is:

$$A = \pi r^2.$$

In this equation A is the area, π (pi) is 3.14 and r is the radius of the hoop.

For a 30-inch diameter hoop, the radius is 15 inches or (1.25 feet).

$$A = 3.14 \times (1.25)^2 \approx 4.91\, sq\ ft \approx 0.000113\, ac.$$

Now that we know the number of plants and the area of the hoop, we can retrieve the number of plants per acre as $plants\ per\ acre = \frac{16}{0.000113} \approx 141{,}600$

So, Are You in Good Shape?

In the example above, your stand count is right where it should be; no cause for concern. The population of around 140,000 plants per acre is well within the optimal range for maximum yield.

According to the University of Kentucky Soybean Production Guide, a minimum of 100,000 harvestable plants per acre is generally sufficient to achieve maximum yield in full-season soybeans. If soybeans are planted early and there's no significant patchiness across the field, even populations as low as 70,000 plants per acre can still produce competitive yields.

However, if your stand count falls below that threshold, you may want to consider replanting. In such cases, carefully interplant additional soybeans into the existing stand, taking care to minimize damage to the plants already growing.

For double-crop soybeans, the population targets are different. Maximum yields are typically achieved with harvest populations between 140,000 and 180,000 plants per acre. Some researchers even recommend increasing seeding rates by 10,000 plants per acre for each week after May 20, to compensate for reduced growing time and environmental stress.

While it might feel uncertain to judge future performance based on early stand counts, these early numbers are directly linked to harvest population. A solid initial count offers valuable insight into what you can expect at harvest.

It's also worth noting that soybeans planted into drier soils, especially in double-crop or late-planted full-season systems, tend to have lower emergence. Combined with a shorter window between planting and flowering, these conditions result in smaller plants with fewer pods per node. That's why late-planted or double-crop soybeans often require higher seeding rates to reach yield potential.

References:

ID 249. A comprehensive guide to soybean Management in Kentucky. Cooperative Extension Services, Plant and Soil Science, University of Kentucky.

Table 1. Stand Counts based on a stick 8.712 (8 ft 8.5 inches) long

Stick Length, ft	8.712	8.712
Row Width, in	15	30
Number of Rows to Count	4	2
Area	1/1000 Acre	
80	80,000	80,000
100	100,000	100,000
120	120,000	120,000
140	140,000	140,000
160	160,000	160,000
180	180,000	180,000
200	200,000	200,000

Table 2. Stand Counts with the Hula Hoop Method

Ring Diameter, in	30	32	36	40
Radius, in	15	16	18	20
Radius, ft	1.25	1.33	1.5	1.67
Acres	0.000113	0.000128	0.000162	0.000200
Plants Per Hoop	Plants/Acre (Rounded to the Nearest Hundred)			
8	70,800			
10	88,500	78,100		
12	106,200	93,800	74,100	
14	123,900	109,400	86,400	70,000
16	141,600	125,000	98,800	80,000
18	159,300	140,600	111,100	90,000
20	177,000	156,300	123,500	100,000
22	194,700	171,900	135,800	110,000
24		187,500	148,100	120,000
26			160,500	130,000
28			172,800	140,000
30			185,200	150,000
32			197,500	160,000
34				170,000
36				180,000
38				190,000
40				200,000

Citation: Shamim, M.J., Lee, C, 2025. Scouting Soybeans for Stand Count and Future Fixes. Kentucky Field Crops News, Vol 1, Issue 6. University of Kentucky, June 13, 2025.

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Kentucky Wheat Yield Contest Changes for 2025

Chad Lee, UK Extension Grain Crops Specialist

The Kentucky Wheat Yield Contest has two major changes for 2025. The first change is a new harvest area size of 1.50 acres. The second change is the addition of Wheat Quality Awards.

The new harvest area of 1.50 acres matches with the National Wheat Yield Contest. This is a smaller harvest area than in previous years. For example, harvest passes 550 feet long and 120 feet wide equal 66,000 square feet or 1.52 acres. Harvest passes 550 feet long by 120 feet wide also equals 1.52 acres.

Both yield and wheat quality are extremely important to the success of soft red winter wheat in this area. Siemer Milling Company has graciously agreed to test the wheat samples and provide the University of Kentucky with the results. Each contest will submit a five-pound sample of wheat from the harvested area. Each grain sample will be sent to Colette Laurent, 348 University Drive, Princeton, KY 42445. Once Colette receives all samples, she will deliver them to Siemer Milling Company for testing.

The Kentucky Wheat Yield Contest is administered by the University of Kentucky with full support from the Kentucky Small Grain Growers, Siemer Milling Company, The Kentucky Wheat Yield Contest forms are available at https://graincrops.ca.uky.edu/ and https://graincrops.ca.uky.edu/kentucky-yield-contests .

Citation: Lee, C., 2025. Kentucky Wheat Yield Contest Changes for 2025. Kentucky Field Crops News, Vol 1, Issue 6. University of Kentucky, June 13, 2025.

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Help Us Improve Soybean Disease Management!

Kiersten Wise, UK Extension Plant Pathologist
Carl Bradley, UK Extension Plant Pathologist

The University of Kentucky is collaborating with the Crop Protection Network to survey soybean farmers, crop consultants, and others in agriculture to learn more about managing important soybean diseases, like sudden death syndrome. We invite you to participate in the 2025 Soybean Seedling and Stem Disease Survey. This short survey will take only a few minutes to complete and will help improve research and extension efforts for soybean disease management.

Take the survey here: https://app.smartsheet.com/b/form/d1f7a7a5060a4f578f04e1b16891c1b7

CROP PROTECTION NETWORK
A Product of Land Grant Universities

Participation in the survey is voluntary. Please fill out the survey only if you are 18 years of age or older. Your response to the survey is anonymous, which means no names, IP addresses, email addresses, or any other identifiable information will be collected with the survey responses. We will not know which responses are yours if you choose to participate. We appreciate your participation and feedback as we aim to improve soybean disease management resources.

Citation: Wise, K., Bradley, C., 2025. Help Us Improve Soybean Disease Management! Kentucky Field Crops News, Vol 1, Issue 5. University of Kentucky, May 16, 2025.

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UK Corn, Soybean & Tobacco Field Day

July 22, 2025

Registration begins: 7:00 CT
8:00 am-12:00 pm CT

UKREC FARM,
300 EXTENSION FARM RD.,
PRINCETON, KY 42445

TOPICS include:

AGRONOMICS AND ECONOMICS

- Economic Update
- Round Bale Economic Discussions
- Weed Science Update 2025
- Corn Needs for Nitrogen and Sulfur Following Cover Crops
- Foliar Fertilizer Rarely Increase Yield in Soybean Across the U.S

IPM

- Corn Disease Concerns for 2025
- Familiar and New Soybean Diseases to Look Out for in 2025
- Emerging Mollusk Pests & Insect Threats in Field Crops in Kentucky

SOILS

- NRCS Soil Health Updates
- Agr-1 Update: Corn N Rate Recommendations
- The Current Status of Sulfur Fertility for Row Crop Production

TOBACCO

- Red Leaf Burley Demonstration and UKREC Tobacco Research Update
- UT Tobacco Research Update
- Optimizing Plant Populations for Burley Tobacco
- Assessing Quadris Effectiveness in Target Spot Populations

Grain and Forage Center of Excellence
Martin-Gatton College of Agriculture, Food and Environment

Altria
Altria Client Services

KYCORN

Kentucky Soybean Board

UPCOMING EVENTS

KATS Planter Clinic (UKREC)	(TBD):
KATS Drone Pilot Certification Exam (Madisonville)	**NEW DATE** June 30-July 1st
CORN, SOYBEAN & TOBACCO FIELD DAY	**July 22nd**
KY High School Crop Scouting Competition	July 24th
KATS Field Crop Pest Management & Spray Clinic	August 28th

To sign up & receive the **Kentucky Field Crops News**, click the link: KFCN NEWSLETTER or scan the QR code.