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

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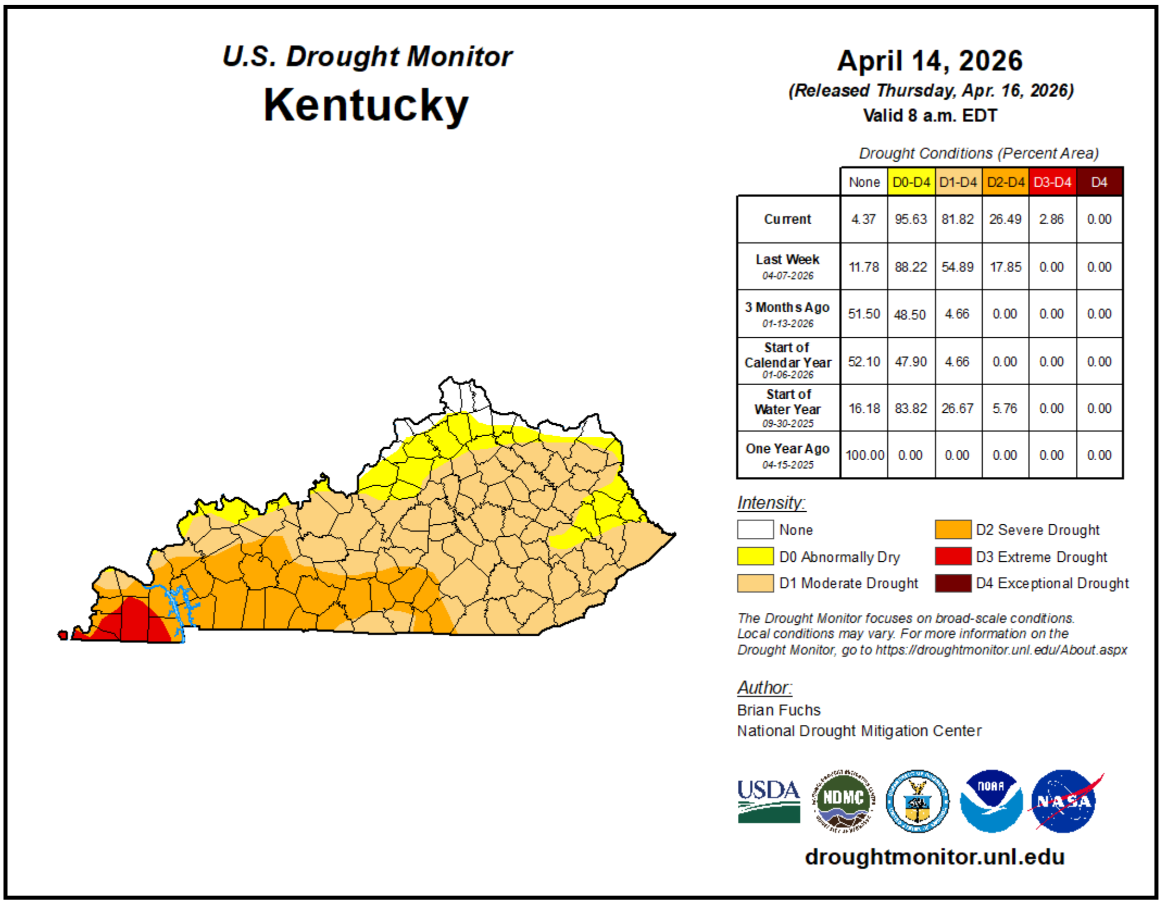
Assessing Drought in Kentucky: Where We Are, How It Compares, and What to Expect

Matthew Dixon, UK Senior Meteorologist

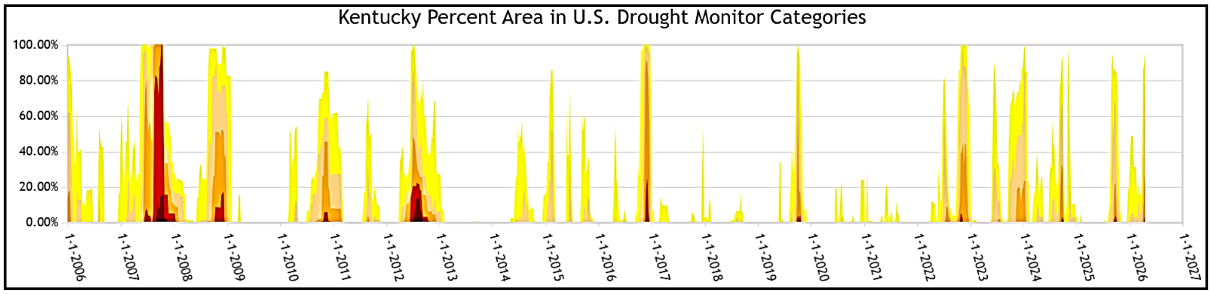
The latest update of the U.S. Drought Monitor was released on April 16th and as expected, drought conditions continue to worsen. Nearly 82 percent of the state is now experiencing some level of drought. Severity increases from east to west, with a small area of Extreme Drought now present across portions of the Southern Purchase, the second most severe drought classification.

Since the U.S. Drought Monitor began in 2000, this represents the largest extent of drought coverage ever observed in Kentucky during the month of April. In fact, this is the first time on record that severe or extreme drought conditions have ever appeared during this month. Bottom line, this is a highly unusual situation for Kentucky and has naturally raised concerns about what it may mean for the upcoming growing season. To address that question, it helps to look at how we arrived in this situation, how current conditions compare historically, and what forecasts and outlooks expect moving forward.



First and foremost, drought conditions are nothing new to the Bluegrass State over recent years. The U.S. Drought Monitor time series product shown below provides a historical record of drought conditions across the state since 2000 and is particularly useful for examining how often drought occurs and how long it tends to persist.

Over the past decade, Kentucky has generally experienced wetter than normal conditions, which has helped limit the duration and severity of drought events. When drought has occurred, it's typically been short lived and most common during the fall, which is climatologically the driest time of year. These events have primarily resulted in short-term agricultural impacts. In terms of grain crops, dryness has accelerated dry down, impacted seed fill, hindered cover crop establishment, and increased fire risk.



One reason Kentucky has largely avoided extended hydrologic drought in recent years is that winters have been consistently wet, allowing soils, streams, and groundwater to recharge ahead of the upcoming growing season. Unfortunately, that pattern did not hold this past winter.

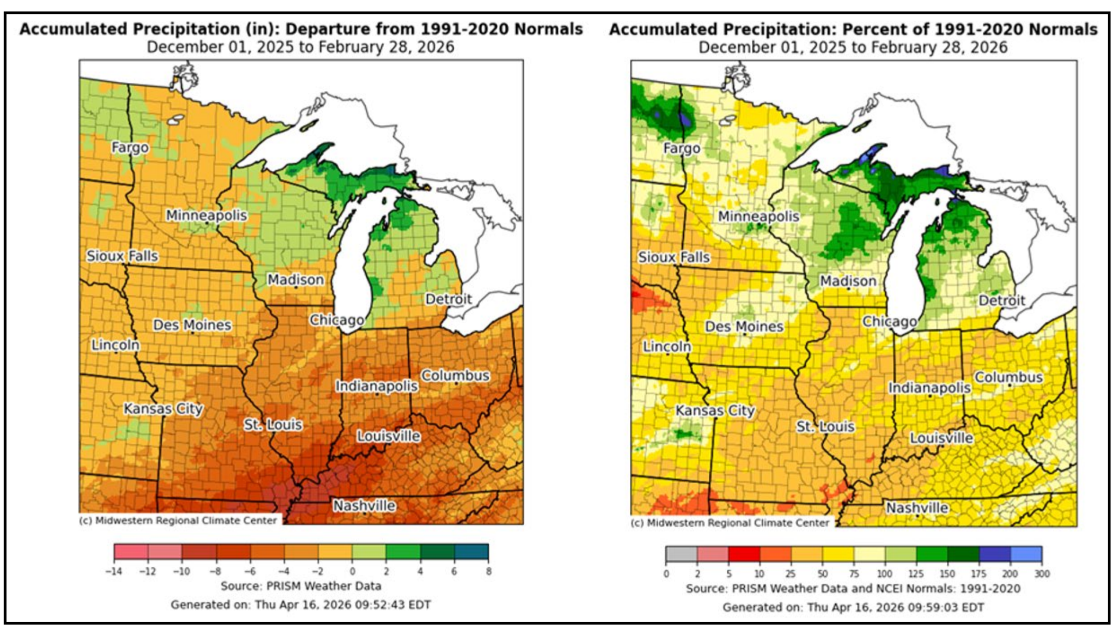
Eight of the past ten winters, December through February, featured above average precipitation statewide (table below). Only two fell on the dry side of the spectrum, including the 2025–26 winter, when the statewide precipitation average was more than 5.5 inches below normal. This ranks as the fifth driest winter on record in Kentucky, with data extending back to 1895.

Kentucky Winter Climate Summary: Temperature and Precipitation (Past 10 Years)

Year	Temp	Temp Norm	Temp Dep	Prcp	Prcp Norm	Prcp Dep	Prcp Norm %
2016 - 2017	41.4	36.9	4.5	12.29	12.03	0.26	102
2017 - 2018	36.8	36.9	-0.1	14.38	12.03	2.35	120
2018 - 2019	39.3	36.9	2.4	19.71	12.03	7.68	164
2019 - 2020	40.7	36.9	3.8	16.99	12.03	4.96	141
2020 - 2021	35.1	36.9	-1.8	12.12	12.03	0.09	101
2021 - 2022	39.1	36.9	2.2	15.96	12.03	3.93	133
2022 - 2023	42.0	36.9	5.1	13.25	12.03	1.22	110
2023 - 2024	40.3	36.9	3.4	11.79	12.03	-0.24	98
2024 - 2025	35.9	36.9	-1.0	16.56	12.03	4.53	138
2025 - 2026	35.7	36.9	-1.2	6.41	12.03	-5.62	53

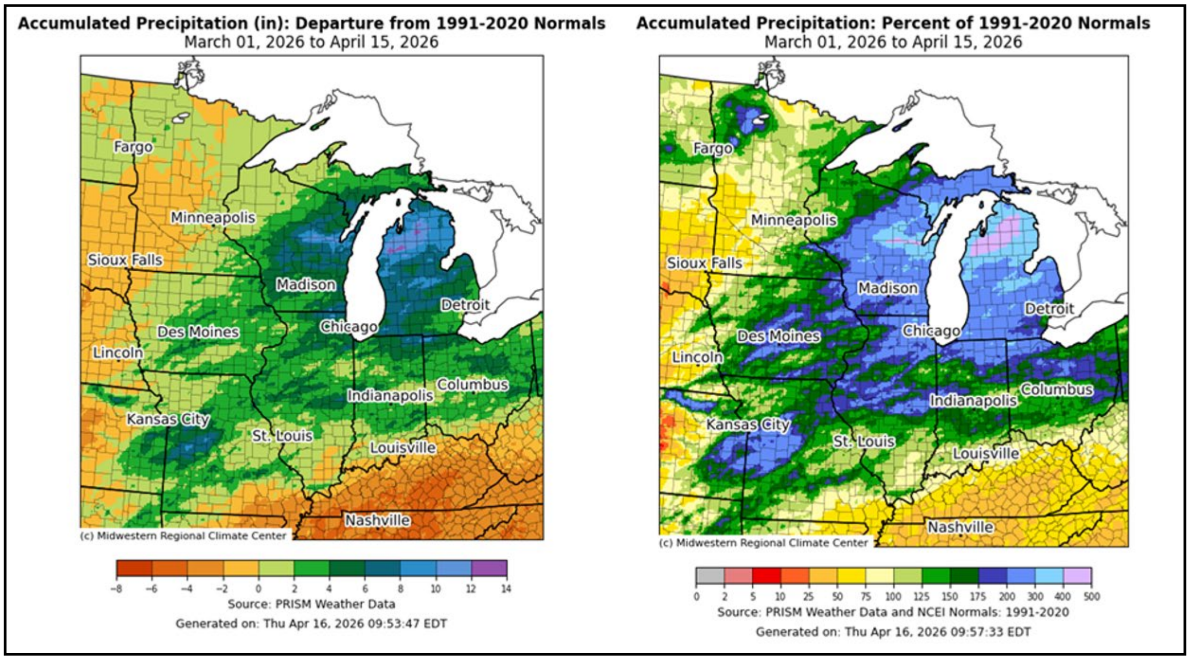
Source: Midwestern Regional Climate Center Application Tools Environment, URL: https://mrcc.purdue.edu/newclimate/home

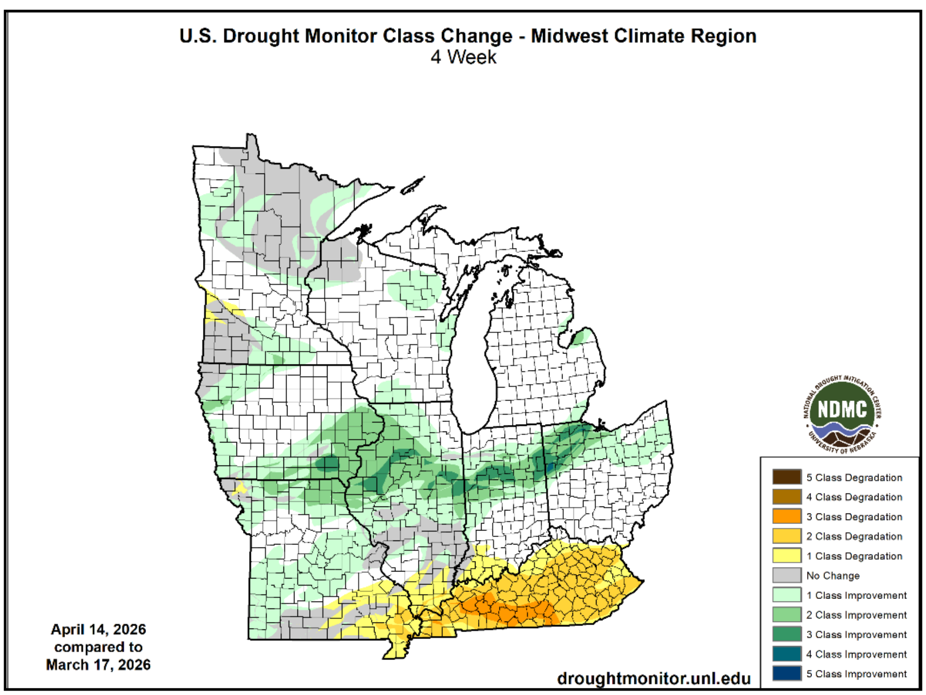
Conditions were even more severe in Western Kentucky. As shown in the maps below, precipitation departures ranged from 4 to more than 6 inches below normal across the western half of the state, meaning much of the region received only 25 to 50 percent of its normal winter precipitation.



The dry pattern persisted into early spring. March precipitation averaged 3.24 inches statewide, roughly 1.5 inches below normal. April has brought little relief. Through April 15, data from the UK Ag Weather Center indicates the state has only averaged 0.79 inches, another 1.5 inch deficit over that period.

These shortfalls continue to accumulate. While areas to the north, including Illinois, Indiana, and Ohio, have seen recovery over the past month and a half, Kentucky has moved in the opposite direction, adding another 2 to 4 inches of precipitation deficit heading into planting season. According to the U.S. Drought Monitor Class Change Map shown below, portions of Kentucky have degraded by as many as three drought categories over the past four weeks, while parts of Illinois, Indiana, and Ohio have improved by a similar margin.





When precipitation totals from December through March are combined, data from 2025-26 ranks as the fifth driest December to March on record (data back to 1895). In western Kentucky, however, this same period was the driest on record. This climate division averaged just 7.39 inches, more than 9.5 inches below normal (table below).

Western Kentucky Climate Division Summary: Precipitation (December - March)					
Year	Rank	Prcp	Prcp Norm	Prcp Dep	Prcp % Norm
2025 - 2026	1	7.39	17.02	-9.63	43
1940 - 1941	2	7.97	17.02	-9.05	47
1980 - 1981	3	9.04	17.02	-7.98	53
1917 - 1918	4	9.42	17.02	-7.6	55
1910 - 1911	5	9.92	17.02	-7.1	58
1927 - 1928	6	10.11	17.02	-6.91	59
1985 - 1986	7	10.13	17.02	-6.89	60
1935 - 1936	8	10.41	17.02	-6.61	61
1976 - 1977	9	10.42	17.02	-6.6	61
1925 - 1926	10	10.78	17.02	-6.24	63
Source: Midwestern Regional Climate Center Application Tools Environment, URL: https://mrcc.purdue.edu/newclimate/home					

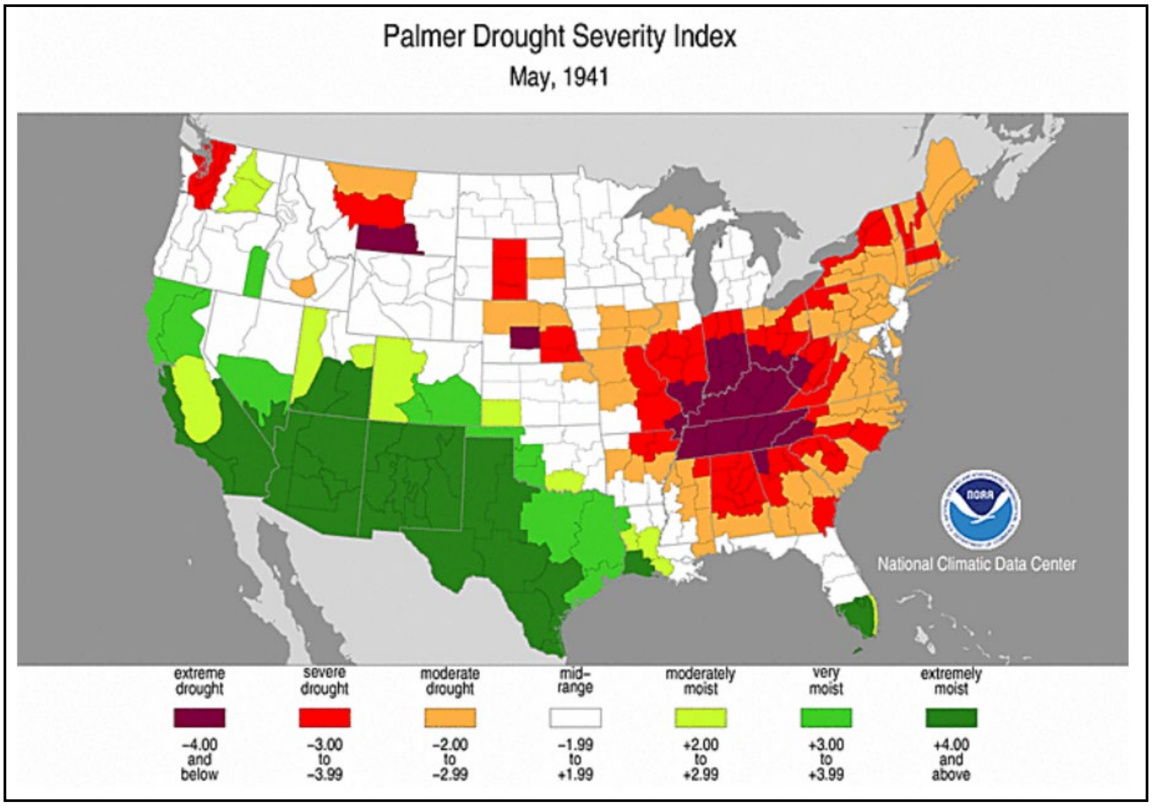
In addition to limited precipitation, temperatures have ran well above normal. March 2026 ranked as the fourth warmest March on record in Kentucky. Comparisons to 2012 are understandable, though March 2012 was roughly three degrees warmer than this year.

Warm conditions have continued into April. Through April 15, statewide temperatures are averaging nearly 10 degrees above normal. Typical highs for this time of year are in the mid 60s to low 70s. This early warmth has increased evaporative demand and at the same time, triggered earlier vegetation green up, increasing water use at a time when moisture is already limited. The combination of prolonged dryness and early season warmth has pushed soil moisture lower and driven streamflows well below normal for mid April. Across much of western Kentucky, pond levels are visibly reduced, often three feet or more below typical spring levels.

Does a dry start guarantee a dry summer? Historically, the answer is not necessarily. While the driest December to March period on record is concerning, history shows mixed outcomes for late spring and summer drought severity. Several years in the top ten mentioned above did not result in widespread or persistent summer drought.

Using the Palmer Drought Severity Index and the top-10 table above, only 1936 and 1941 (map below) featured extreme drought following a dry spring. Other years, 1911, 1918, 1926, 1977, and 1986, experienced varying levels of moderate drought, while 1928 and 1981 reversed course with sustained above normal rainfall. In fact, across June 1928, the state averaged 11.67 inches. Among all the years, 1918 may most closely resemble 2026 when March temperatures are considered.

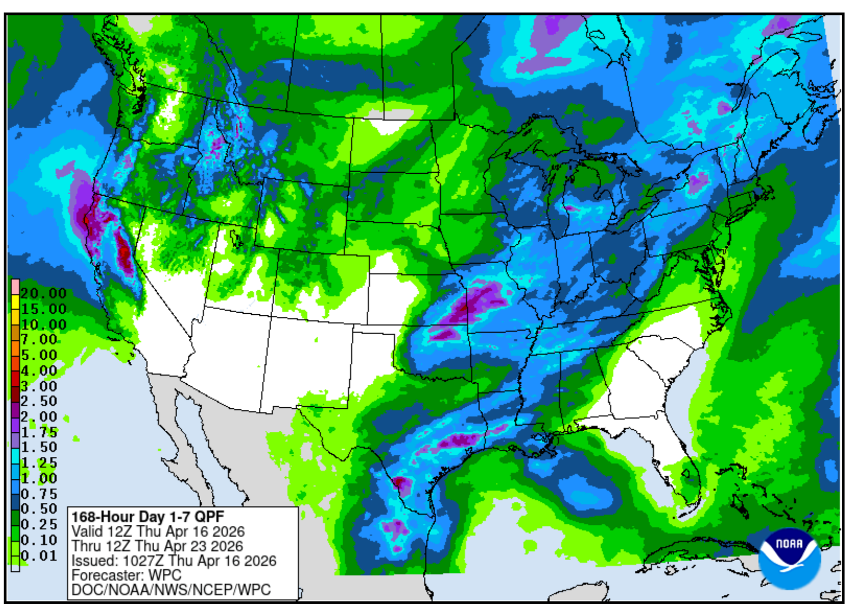
It's also important to remember that Kentucky today is generally wetter than it was during the early and mid 20th century. Overall, a dry start to the year does not guarantee a major drought this summer, but it does increase vulnerability.

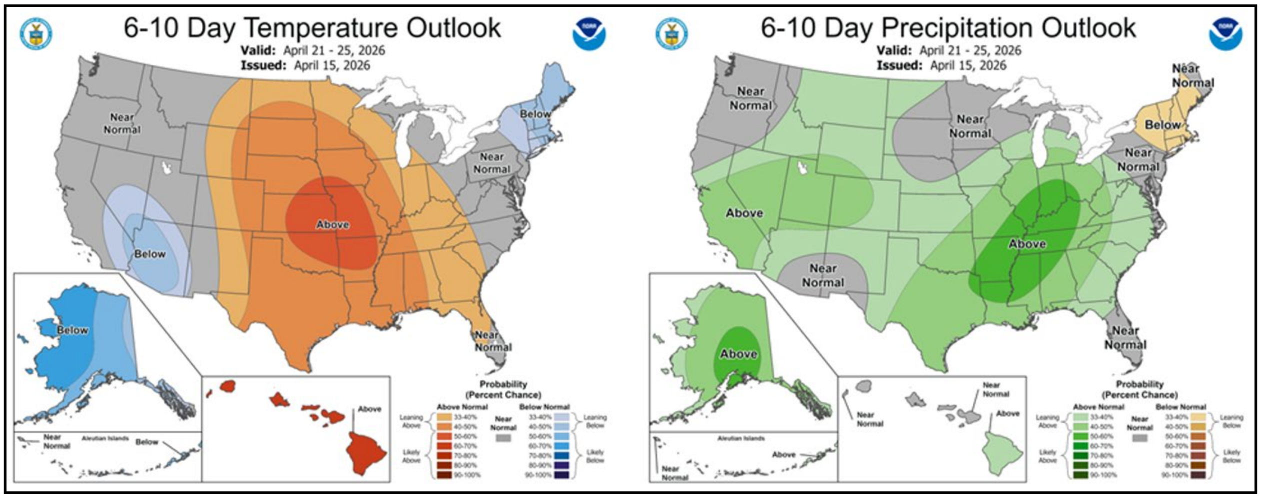


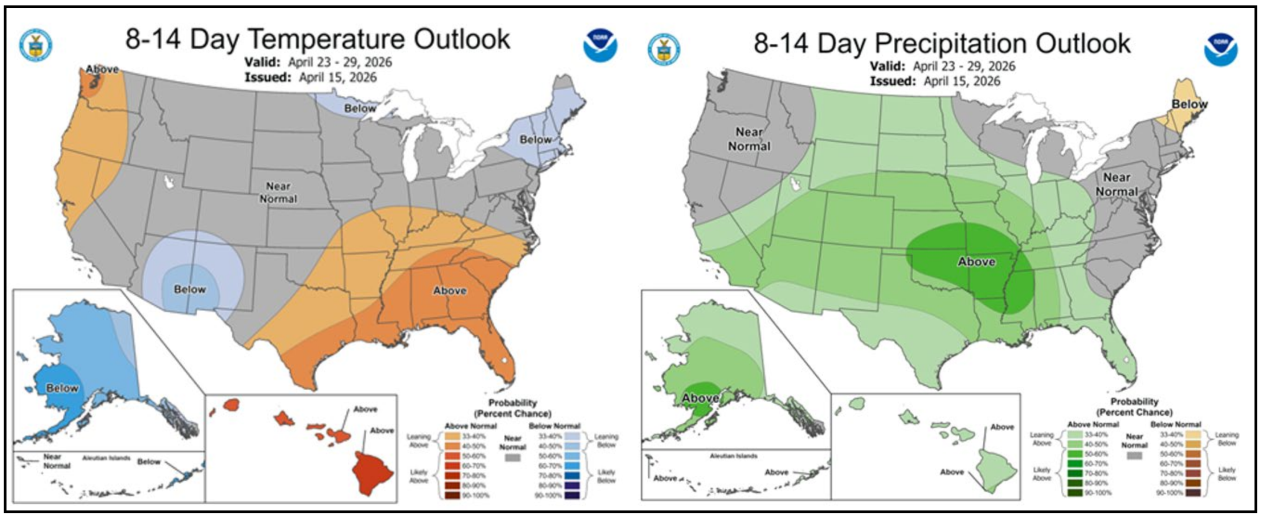
Moving forward, a pattern shift will be critical. While short term rain chances exist, outlooks suggest an increased likelihood of wetter conditions later in April (maps below). The Climate Prediction Center's 6 to 10 day outlook, valid April 21st to 25th, shows elevated confidence in above normal precipitation across the region.

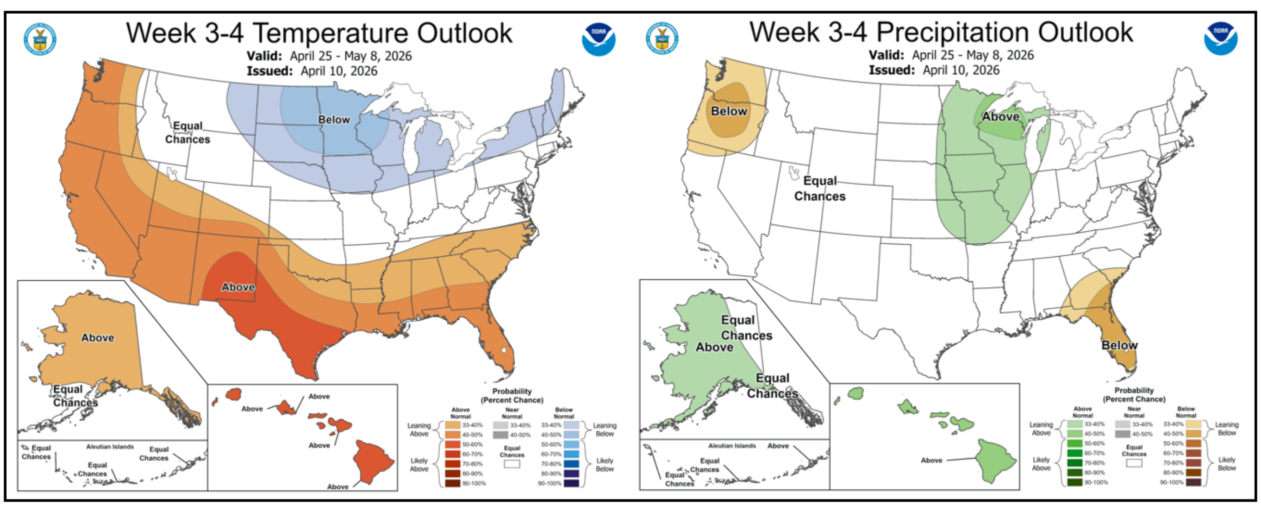
Confidence decreases in the 8 to 14 day period, though guidance continues to lean toward above normal precipitation alongside continued above normal temperatures. Beyond that timeframe, uncertainty increases substantially.

While near term rainfall would provide timely benefits for newly planted crops, it will take a sustained period of above normal precipitation to fully recover the deficits that have accumulated during the first quarter of 2026. Fortunately, Kentucky is now in its climatologically wettest season, providing reason for cautious optimism moving forward.









Citation: Dixon, M., 2026. Assessing Drought in Kentucky: Where We Are, How It Compares, and What to Expect. Kentucky Field Crops News, Vol 2, Issue 04. University of Kentucky, April 17, 2026.

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Fertilizer Costs Are Squeezing Farmers This Spring — Here's What You Need to Know

Dr. Grant Gardner, UK Extension Economist

Based on American Farm Bureau Federation Fertilizer Availability Survey, April 2026

Fertilizer markets have tightened notably this spring, adding additional cost pressure for producers during a critical point in the production cycle. Recent survey evidence from the American Farm Bureau Federation, based on more than 5,700 farmer responses collected April 3–11, indicates that price variability has returned to levels not observed since Russia's invasion of Ukraine.

The current episode appears to be driven by supply-side disruptions tied to the closure of the Strait of Hormuz amid escalating geopolitical tensions in the Middle East. This is particularly consequential given that countries in and around the Persian Gulf account for approximately 49% of global urea exports and 30% of global ammonia exports. Disruptions to this trade corridor constrain available supply in global markets, placing upward pressure on fertilizer prices and increasing input cost uncertainty for producers.

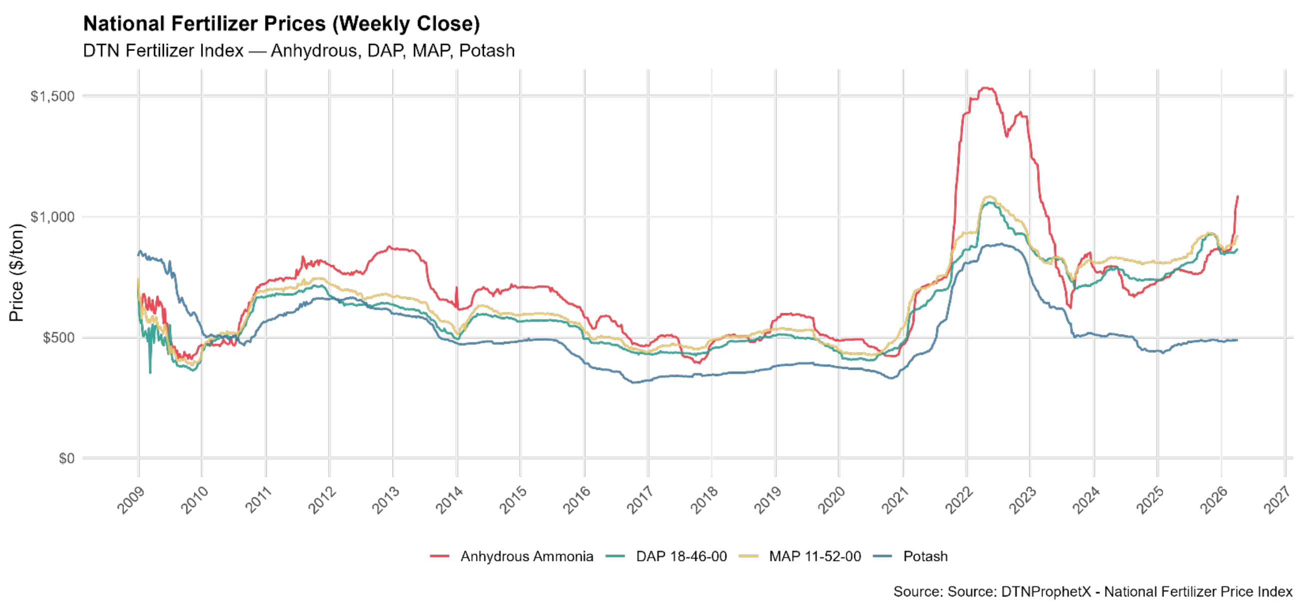

Figure 1. Fertilizer prices (Anhydrous Ammonia, DAP 18-46-00, MAP 11-52-00, Potash) from 2009 to early 2026. Prices surged to historic highs in 2022 following Russia's invasion of Ukraine and are rising again in 2026.

How Much Have Prices Risen?

Since late February, Farm Bureau estimates nitrogen fertilizer markets have experienced a sharp upward adjustment, with prices increasing by more than 30%. Urea prices alone have risen approximately 47%, representing the largest month-to-month percentage increase observed for that product. Over the same period, farm diesel prices have increased by roughly 46%, raising costs across both field operations and input transportation.

Taken together, combined fuel and fertilizer expenses are estimated to be 20% to 40% higher, depending on the specific operation and input mix. These increases represent more than marginal cost adjustments. For producers already facing multiple years of compressed margins, the magnitude and speed of this input cost increases materially affect profitability and short-term financial positioning.

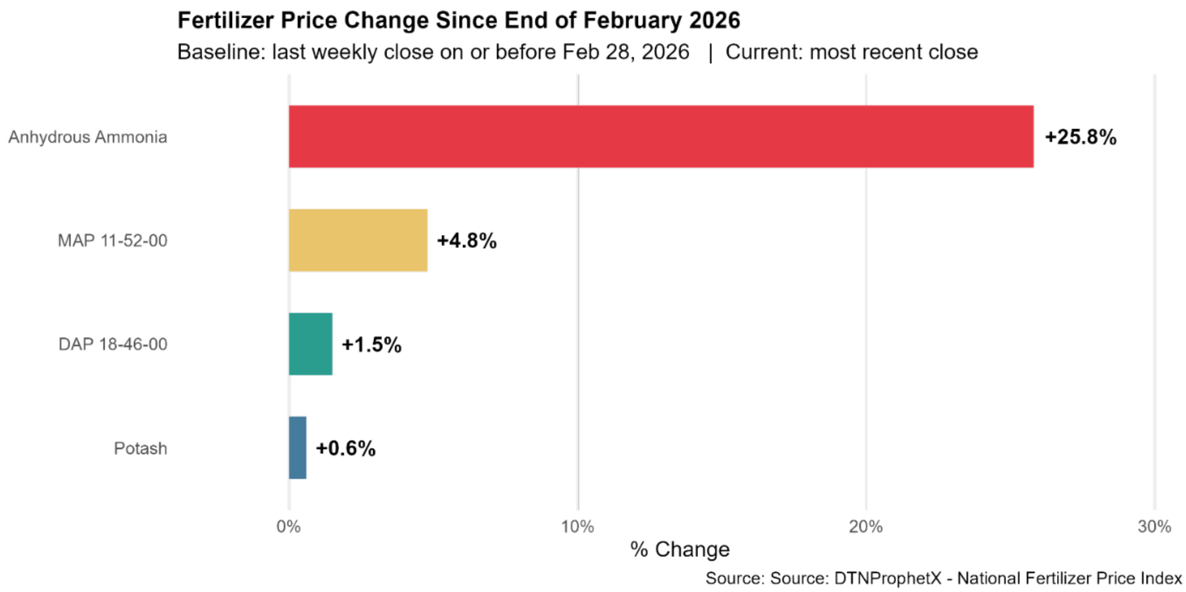

Figure 2. Fertilizer price increases since end of February 2026, by product (%). Anhydrous Ammonia has seen the largest increase at approximately 28%, followed by MAP 11-52-00 (~8%) and DAP 18-46-00 (~3%). Potash prices have remained relatively stable.

Each Input Has Its Own Story

Not all fertilizer products have responded uniformly. Long-run price patterns for key inputs, including anhydrous ammonia, DAP (18-46-00), MAP (11-52-00), and potash, highlight important differences in both volatility and underlying cost drivers. Anhydrous ammonia, a nitrogen-based fertilizer closely linked to natural gas feedstock costs, experienced the most pronounced price spike in 2022 and is again leading the current upward movement.

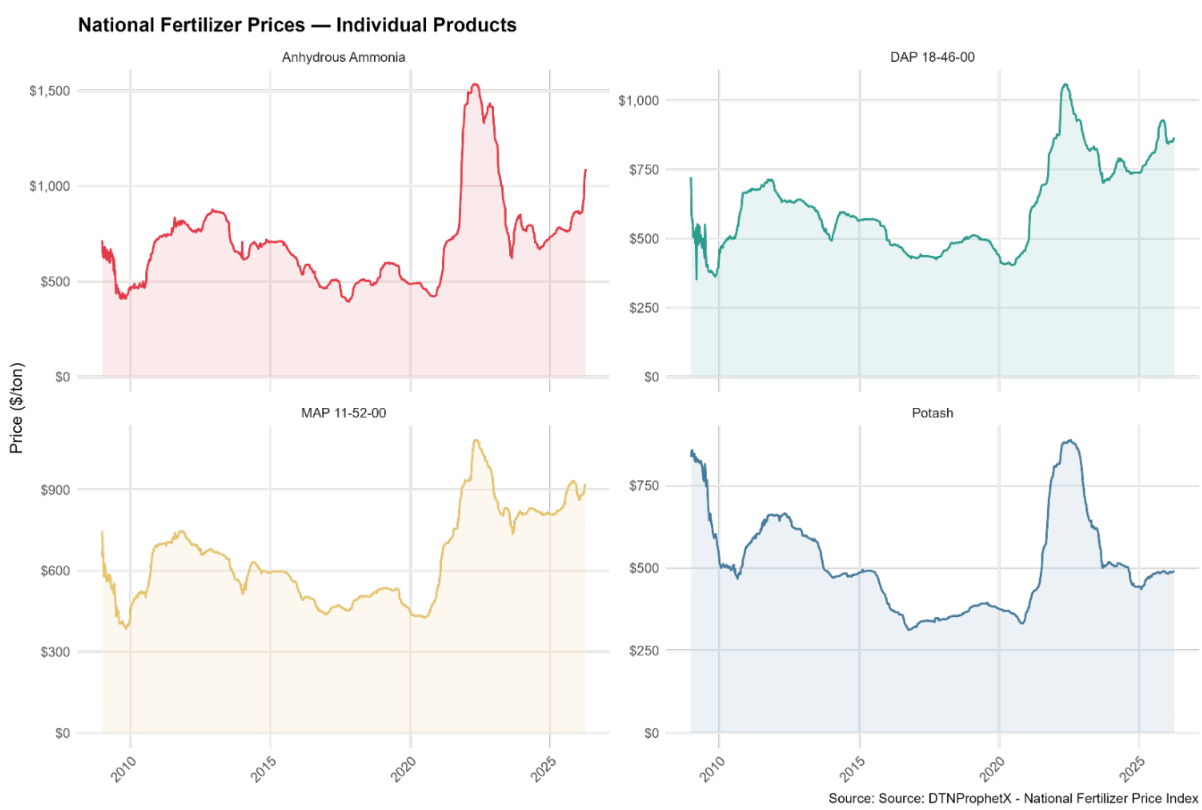

Figure 3. Individual price histories for Anhydrous Ammonia, DAP 18-46-00, MAP 11-52-00, and Potash. Shaded areas highlight the most recent pricing period.

Phosphate and potash products have followed a similar general trajectory, though with comparatively lower volatility. This distinction reflects differences in production processes and input dependencies. Nitrogen fertilizers are particularly sensitive to energy market conditions because natural gas serves as the primary feedstock for ammonia production. As energy prices increase, production costs for nitrogen fertilizers rise accordingly, and these higher costs are transmitted downstream to producers through elevated fertilizer prices.

Where You Farm Matters

The American Farm Bureau Federation survey also highlights meaningful regional differences in producer preparedness heading into the growing season. In the Midwest, where corn–soybean rotations dominate, pre-booking rates were highest, with approximately 67% of producers having secured fertilizer prior to the recent price increases. Pre-purchasing is more common in the Corn Belt, where scale and relatively predictable crop rotations support forward procurement strategies.

In contrast, only 19% of Southern producers reported pre-booking fertilizer. Operations in the South, which often include crops such as cotton, rice, peanuts, and corn, are more likely to purchase inputs closer to application. While this approach can provide flexibility under stable market conditions, it increases exposure to price risk during periods of rapid market adjustment. Producers in the Northeast and West fall between these extremes, with pre-booking rates of approximately 30% and 31%, respectively.

Farm size further differentiates exposure. Smaller operations consistently report lower pre-booking rates across all regions. For example, in the Midwest, 49% of farms under 500 acres pre-booked fertilizer compared to 77% of farms exceeding 500 acres. This disparity is even more pronounced in the Northeast and South, indicating that smaller operations are disproportionately exposed to recent input price increases.

Financial Conditions on the Farm

The American Farm Bureau Federation survey provides a stark assessment of current farm financial conditions. Ninety-four percent of respondents report that their financial position has either worsened or remained unchanged relative to the previous year, while only 6% indicate improvement. Nearly 60% report an outright deterioration in financial conditions, with elevated fertilizer and fuel costs cited as primary drivers.

Input affordability is emerging as a central constraint. Approximately 70% of respondents indicate they are unable to afford the full quantity of fertilizer required for the current production season, with that figure rising to 78% among Southern producers. The constraint is even more pronounced for rice, cotton, and peanut operations, where more than 80% of producers report being unable to apply fertilizer at recommended rates. These crops are disproportionately concentrated in regions with lower rates of pre-booking, further amplifying exposure to recent price increases.

Reductions in fertilizer application have direct implications for yield potential. At scale, this represents not only a farm-level adjustment but also a broader supply-side concern with potential implications for aggregate production. Early indications of how these constraints are influencing producer behavior will likely emerge in forthcoming reports from the United States Department of Agriculture, including the May WASDE and the June 30 Acreage report, which will provide initial signals on planting decisions and input use for the 2026 crop year.

What to Watch

The duration of disruptions in the Middle East, and the pace at which key shipping lanes return to normal operations, will be central in determining input cost trajectories for the remainder of the production season. While the United States is the world's largest oil and gas producer, fuel and fertilizer markets remain globally integrated, limiting the extent to which domestic production can shield U.S. producers from international price shocks.

In response, the American Farm Bureau Federation has urged the administration to extend protections for agricultural input shipments, including fertilizer, across major shipping routes, complementing safeguards already announced for energy shipments. At the same time, policymakers in Congress have begun discussing targeted economic relief measures aimed at helping producers absorb unanticipated input cost increases.

In the near term, producer response will be critical. Maintaining detailed cost records, proactively communicating with lenders, and staying engaged with local farm policy organizations are practical steps that can help manage financial exposure as market conditions continue to evolve.

Sources:

American Farm Bureau Federation Fertilizer Availability Survey, April 3–11, 2026.
https://www.fb.org/market-intel/farm-bureau-survey-reveals-real-impact-of-fertilizer-availability-and-price

DTNProphetX. Fertilizer Price Data. 2026.

Citation: Gardner, G., 2026. Fertilizer Costs Are Squeezing Farmers This Spring — Here's What You Need to Know. Kentucky Field Crops News, Vol 2, Issue 04. University of Kentucky, April 17, 2026.

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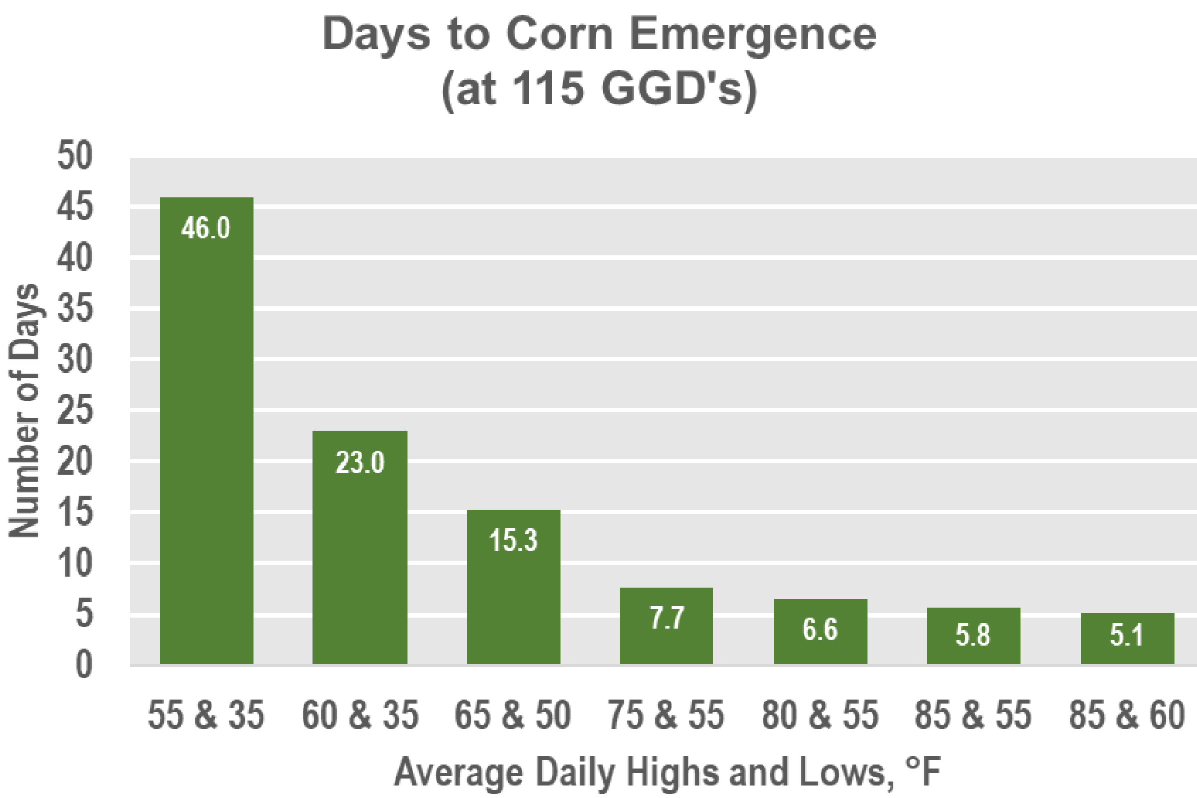
Corn Planting in 2026

Dr. Chad Lee, UK Extension Grain Crops Specialist

Weather conditions are generally acceptable to start planting corn in Kentucky by April 1. Current research and farm data suggest that corn planting can start at the end of March and go through June 1. By the time of this newsletter release, a large percentage of corn acres are already planted in Kentucky.

Generally, the conditions are more important than the calendar. Soil moisture below field capacity and soil temperatures at or above 50 F for 3 to 4 days with a good forecast are good conditions for corn planting. However, if corn planting occurs at warmer temperatures, corn will germinate more quickly, and often, more uniformly. For example, if the average daily temperatures are 50F and 65F, then corn will take about 15 days to emerge. If average daily temperatures are 55F and 80F, then corn will take about 6 or 7 days to emerge.



Uniform seeding depth is critical to uniform corn emergence. Seeding depths of 1.5 to 2 inches are ideal in most silt loam soils of Kentucky. In the sand lenses along some of the major rivers, seeds can be as deep as 3 inches. If seed is placed shallower than 1.5 inches, the plants may not anchor properly and could lodge later. Shallow seed placement usually results in potassium deficiency symptoms when corn plants are about V4 to V6. Usually, those symptoms disappear by about V8 growth stage.

While seed monitors do an excellent job of tracking seed spacing nothing fully replaces visually inspecting seed depth and spacing behind the planter and making certain that closing wheels (or press wheels) are working properly.

Since spring in Kentucky usually follows a roller coaster of air temperatures and rain events, if soil conditions become risky for planting corn, switch to soybeans. Soybeans are less sensitive to early season stress and less sensitive to large shifts in final plant populations.

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Citation: Lee, C., 2026. Corn Planting in 2026**.** Kentucky Field Crops News, Vol 2, Issue 04. University of Kentucky, April 17, 2026.

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Early Planting and the Uniformity of Seedling Emergence of Corn and Soybean

Dr. Dennis Egli, UK Professor Emeritus

It's that time of the year – producers are done tinkering with their planters and are ready to hit the field, hoping to get that perfect 'picket fence' stand where every plant is equally spaced and all the seedings emerge at the same time. Producers are also planting earlier these days which means that they are probably planting into colder soils.

Is there a conflict between planting early and uniform stands? Does planting early result in less uniform seedling emergence?

We investigated the uniformity of emergence in a series of greenhouse and growth chamber experiments with corn and soybean. We used 19 corn seed lots (9 were treated with fungicides, 7 with insecticides and 3 were un-treated) and 5 soybean seed lots (all untreated). Germination of the corn seed lots were all, except one, greater than 95%. All soybean seed lots germinated above 90%.We planted the seeds by hand and carefully controlled soil water levels to create near ideal conditions for emergence. We counted emerged seedlings every 6 to 8 hours until emergence was complete to evaluate uniformity. Temperatures in the greenhouse and growth chambers were adjusted to create variation in the time from planting to seedling emergence.

When corn seeds were planted 1.5 inches deep in warm soil (~75F), the first seed lots emerged 96 hours (4 days) after planting and emergence was very uniform (most of the seedlings emerged in a 24-hour window). Lowering the soil temperature (~60F) delayed emergence with some seed lots not emerging until 288 hours (12 days) after planting. The window when most seeds emerged increased to 96 hours (4 days). Reducing the temperature delayed emergence of corn seedlings and significantly decreased the uniformity of emergence.

Soybean showed similar results. With warm soil temperatures (~72F) and a 1.5 inch planting depth, 50% emergence occurred, on the average, 96 hours (4 days) after planting with very uniform emergence. Most of the seedlings emerged in a 37 hour (1.5 days) window. Lowering the soil temperature (~64F) delayed emergence to 188 hours (7.8 days) after planting and increased the emergence window to an average of 76 hours (3.2 days).

Deeper planting (2.4 vs. 1.0 inch) delayed emergence and reduced uniformity of emergence of soybean, but, interestingly, planting depth (1.5 vs 3.0 inches) had no significant effect on corn.

These results were consistent across seed lots. Delaying emergence decreased the uniformity of emergence. Ideal temperatures produced that 'picket fence' stand but slowing emergence with lower temperatures (simulating the potential effect of very-early planting) decreased uniformity.

This decrease in uniformity occurred in ideal conditions for emergence (planting by hand to get near-perfect depth control and seed - soil contact, optimum soil water levels, no soil crusting); conditions that would be hard to replicate in the field, even with the best planter technology available.

The bottom line – planting early in cool soils delays emergence and decreases uniformity. Will this reduction in uniformity affect yield? If it is large enough, it will reduce corn, but not soybean yield.

This difference between species is entirely a matter of plasticity. Corn has lost most of its plasticity, meaning it's limited in how much it can increase the number of seeds per plant as uniformity decreases. Plants that emerge late are shaded by early emergers, so they grow slower and produce fewer seeds. Plants that emerge first get more sunshine, grow faster, and produce more seeds. The key question is – can the early emergers produce enough seeds to compensate for the lost seeds on the late emergers? In most cases they cannot. The number of seeds each plant can produce is limited by the size of the ear (lack of plasticity), so, the early emergers cannot produce enough extra seeds, and total seeds per acre and yield are reduced. Hybrids that produce a second ear may be better able to produce enough seeds on the early emergers in non-uniform stands to compensate for the loss of seeds on the late emergers, thereby preventing yield loss.

The soybean plant, on the other hand, is very plastic; it can easily adjust pod and seed numbers to changes in the plant's growth rate. The early emergers can easily produce enough pods and seeds to compensate for the reductions on the late emerging plants so that pods and seeds per acre and yield are not affected by non-uniformity. It's all a matter of plasticity.

Producers plant early to get higher yields, but, if the early planting delays emergence, the resulting decrease in uniformity may take some of the edge off the yield advantage from early planting for corn, but not for soybean. Planting soybean before corn makes sense since the decrease in uniformity associated with lower temperatures (more likely in very early plantings) and delayed emergence will not affect soybean yield. But it's probably not a good idea to plant either crop when soil temperatures are too low, because reduced emergence can reduce the yield of either crop. Always remember – "Facts do not cease to exist because they are ignored" Aldous Huxley, novelist (1894 – 1963).

Adapted from:

Egli, D.B., B. Hamman, and M. Rucker. 2010. Seed vigor and uniformity of seedling emergence in soybean. Seed Technology 32: 87-95.

Egli, D.B. and M. Rucker. 2012. Seed vigor and the uniformity of emergence of corn seedlings. Crop Science 52: 2774-2782.

Citation: Egli, D., 2026 Early Planting and the Uniformity of Seedling Emergence of Corn and Soybean**.** Kentucky Field Crops News, Vol 2, Issue 04. University of Kentucky, April 17, 2026.

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Brazil's Expanding Corn Ethanol Sector and Global Corn Markets

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Brazil's rapid expansion in corn-based ethanol production carries meaningful implications for U.S. corn markets. While Brazil has long been viewed primarily as a sugarcane ethanol producer, its growing reliance on safrinha corn is reshaping domestic grain flows and potentially altering its role in global trade. If more Brazilian corn is absorbed internally by ethanol plants and the feed sector, export availability could tighten, easing direct competition with U.S. corn in some years while also introducing new volatility into global supply dynamics. This article examines what is driving Brazil's corn ethanol boom, where investment is occurring, how production capacity is projected to evolve through 2034, and what these structural shifts could mean for both Brazilian producers and U.S. market participants.

Brazil is the world's second-largest ethanol producer (RFA, 2025). Unlike the U.S., where corn dominates, Brazil's production has historically relied on sugarcane (Figure 1). However, in 2024, roughly 20% of total ethanol output came from corn (EPE, 2025).

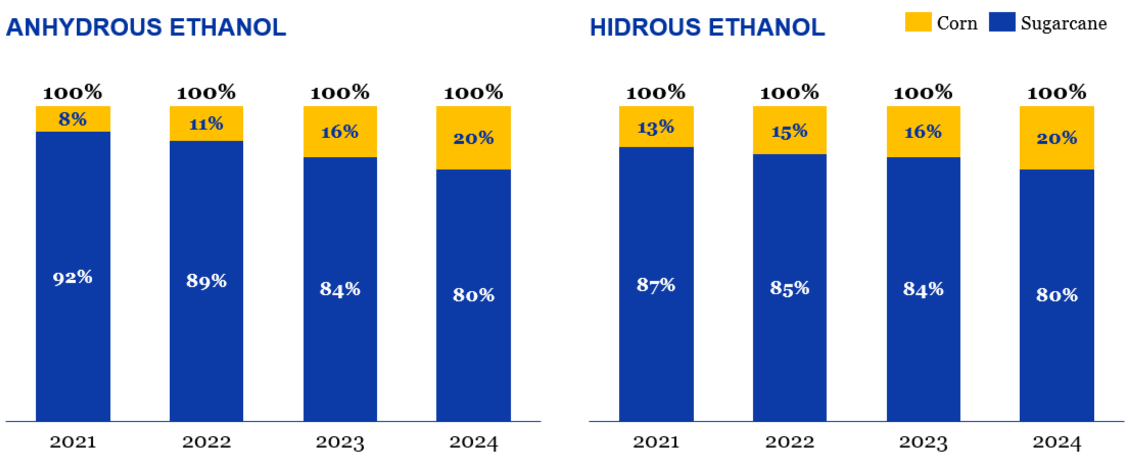

Figure 1. Bar chart showing Brazil's ethanol production share by feedstock from 2021 to 2024. Sugarcane accounts for 92% in 2021 and declines to 80% by 2024 in hydrous ethanol, while corn increases from 8% to 20%, indicating growing corn participation in total ethanol output. Made by the author based on Brazilian Energy Research Company (EPE, 2025).

What is fueling this corn-based ethanol boom in Brazil? The answer lies in the safrinha, or second corn crop. In Brazil's Center-West region (Mato Grosso, Mato Grosso do Sul, Goiás, and the Federal District), safrinha corn is planted after soybeans are harvested, typically between January and April, and harvested between June and September (USDA, 2025).

Figure 2 indicates that Mato Grosso (MT) accounts for roughly half of Brazil's second-crop corn production. When considering the entire Center-West region, this share rises to about 71% of total safrinha production.

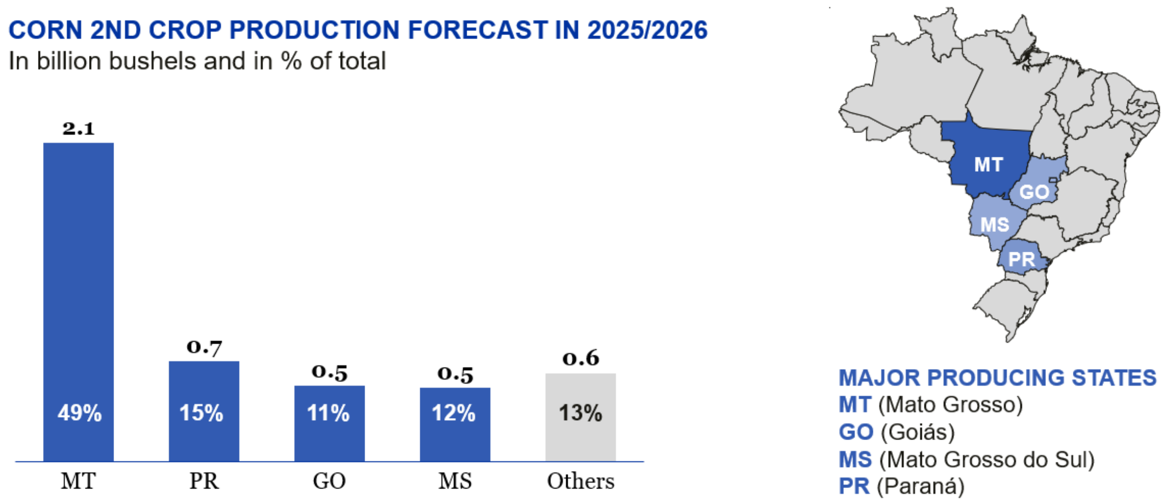

Figure 2. Bar chart and map showing Brazil's 2025/26 second-crop corn production. Mato Grosso produces 2.1 billion bushels, representing 49% of total safrinha output. The broader Center-West region accounts for approximately 72% of total production. Made by the authors based on CONAB (2025).

According to EPE (2025), corn ethanol production has surged in recent years. In addition to ethanol, plants generate valuable co-products such as corn oil and distillers dried grains with solubles (DDGS), providing additional revenue streams beyond fuel production. Sugarcane remains Brazil's dominant ethanol feedstock due to its multi-year harvest cycle, internal energy generation from bagasse, and favorable lifecycle carbon profile. However, because sugarcane must be processed shortly after harvest, production is largely limited to the April–November window (Globo Rural, 2024). Corn ethanol, by contrast, allows year-round plant operation since grain can be stored, giving mills greater flexibility in managing input costs and smoothing production.

Figure 3 illustrates projected ethanol production capacity in Brazil by feedstock under three growth scenarios through 2034 (EPE, 2025). Across all scenarios, sugarcane milling capacity remains relatively stable. The primary source of variation lies in corn ethanol investment. Corn processing capacity begins at roughly 21 million tons in 2025 and rises to between 30 and 43 million tons by 2034, depending on investment conditions. In short, projected growth in Brazil's ethanol supply is driven primarily by corn-based expansion rather than additional sugarcane capacity.

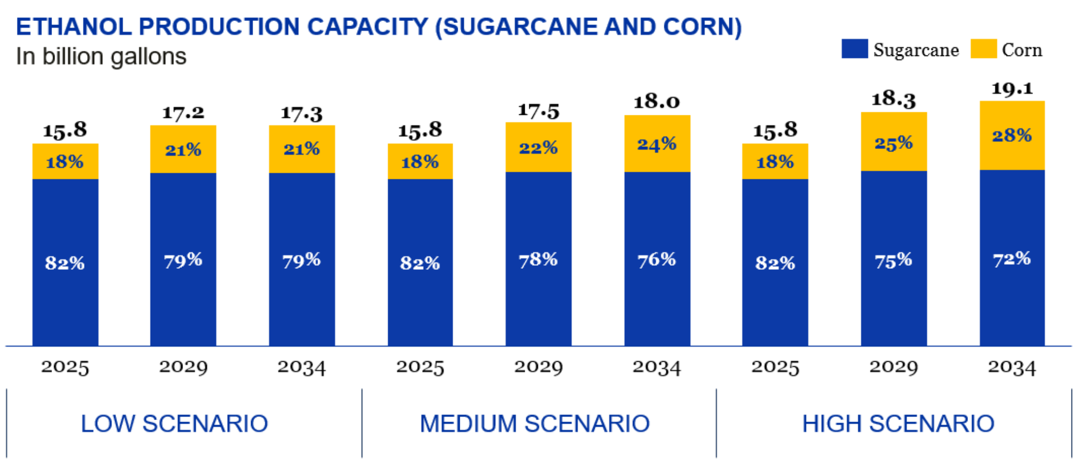

Figure 3. Stacked bar chart projecting Brazil's ethanol production capacity through 2034 under low, medium, and high growth scenarios. Sugarcane remains the dominant source across all scenarios, while corn's share increases from roughly 18% in 2025 to as high as 28% under the high-growth scenario. Made by the author based on Brazilian Energy Research Company (EPE, 2025).

By contrast, the low-growth scenario assumes weaker market conditions. Some mill closures offset new sugarcane capacity, corn investment slows sharply, grain processing rises only 10 million tons, and second-generation ethanol (E2G) production reaches just 0.7 billion liters.

This is reinforced in Figure 4 which shows that sugarcane milling capacity changes only marginally through 2034, while projected ethanol growth depends primarily on expanded corn processing. The scale of future corn-based investment ultimately determines how much total ethanol supply increases.

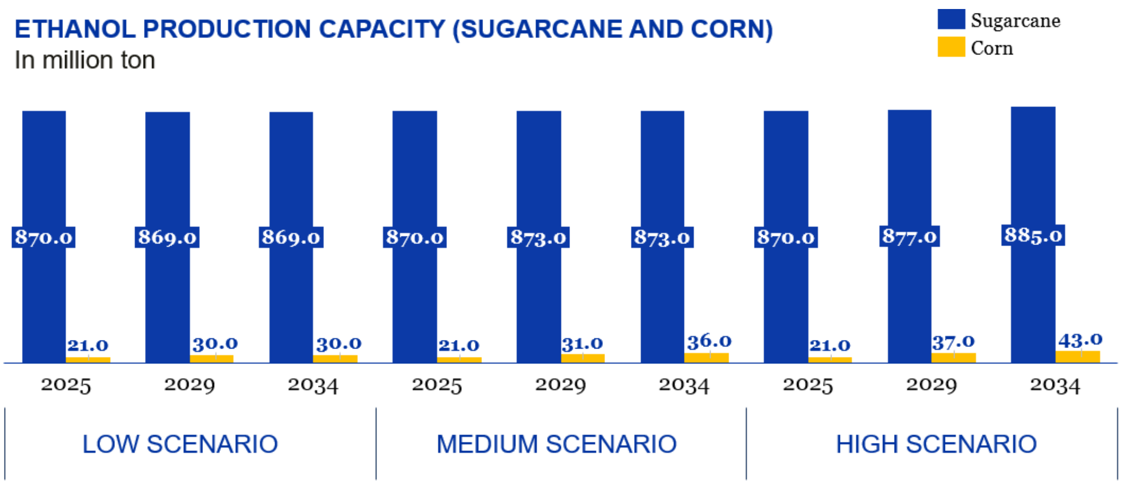

Figure 4. Bar chart showing sugarcane milling capacity and corn processing capacity from 2025 to 2034 under three growth scenarios. Sugarcane capacity remains near 870 million tons across scenarios, while corn processing expands from 21 million tons in 2025 to between 30 and 43 million tons by 2034, depending on investment levels. Made by the author based on Brazilian Energy Research Company (EPE, 2025).

Of the 24 operating corn ethanol plants in Brazil, 20 are located in the Center-West region, with Mato Grosso leading in both existing and planned capacity. Most new investment is concentrated near Brazil's largest safrinha production areas (Figure 5). Despite record safrinha production in 2024/25, domestic corn prices have remained relatively stable. Expanding ethanol demand, particularly in northern Mato Grosso, has supported local prices, at times exceeding export parity levels. Regions more dependent on exports have faced greater downward pressure, underscoring the growing influence of domestic ethanol consumption on market stability (Notícias Agrícolas, 2025).

Figure 5. Map of Brazil displaying locations of operating and planned corn ethanol plants. Most facilities are concentrated in the Center-West region, particularly Mato Grosso, reflecting proximity to major second-crop corn production areas. União Nacional do Etanol de Milho (2025).

Domestic demand for corn in Brazil is transforming local market dynamics. Not long ago, corn was considered a secondary or "bonus" crop, but with stronger demand, farmers are now selling ahead of harvest, much like they do with soybeans. This stronger domestic market provides producers with confidence that both prices and demand will remain firm, which can influence their planting decisions in upcoming seasons. As more corn stays within the domestic market, driven by ethanol production and the feed industry, Brazil's role in the international corn trade is expected to shift, potentially reducing exports and easing competition with U.S. corn in global markets (Colussi, Schnitkey, and Paulson 2025).

Brazil's expanding corn ethanol sector is reshaping domestic grain flows and creating new market dynamics. As more corn is absorbed by the ethanol and feed industries, export availability may fluctuate, influencing global trade balances. For U.S. farmers and market observers, these shifts are worth monitoring closely, as changes in Brazil's internal demand could indirectly affect international price trends and future movements in corn futures markets.

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High Frequency of Aphids in Winter Canola fields in Western Kentucky

Dr. Felipe Batista, UK Postdoctoral Fellow
Dr. Ric Bessin, UK Extension Entomology Specialist

During recent visits to Canola fields, we observed infestations of the turnip aphid (also known as mustard aphid) in all fields we evaluated across three different counties in western Kentucky (Graves, Marshall, and Caldwell counties) (Figure 1-5). This spring has been drier than normal across the region, with rainfall well below average. Water-stressed plants may favor sap-feeding pests such as aphids, as drought conditions can increase the concentration of free amino acids in plant sap, improving their nutritional quality for these insects.

Aphids Identification

Three aphid species are commonly found in canola: turnip aphid (*Lipaphis erysimi*), green peach aphid (*Myzus persicae*), and cabbage aphid (*Brevicoryne brassicae*). All may occur on leaves and racemes.

- **Green peach aphid**: pale green, around 1/8 inch, long and slender cornicles (2x cauda lenght), typically found on underside of leaves, colonies more scattered.
- **Cabbage aphid**: dark green, 1/12-inch, thick white waxy coating, short cornicles (shorter than cauda), dense colonies, usually found on upper leaves surface and racemes.
- **Turnip aphid**: dark green, 1/16-inch, light waxy coating, medium cornicles (1.5x cauda length), dense colonies, present mainly on racemes (Figure 2).

Figure 1. Canola plants infested with turnip aphids. Observations from Graves, Marshall, and Caldwell counties, Western KY, 2026. Photos: Felipe C. Batista.

Figure 2. Close-up of turnip aphids collected from canola fields. Specimens from Graves County, Western KY, 2026. Photos: Felipe C. Batista.

Scouting and decision-making

The main risk at this point is a potential increase in aphid populations if conditions remain favorable. Scouting should be based on visual inspection across multiple areas of the field, estimating the percentage of infested plants. The **threshold** for Turnip aphids on canola is around **20% of plants infested** with colonies of 25 or more aphids. If aphids are present but below threshold, increase scouting frequency to monitor population growth.

Management

In most fields, infestation levels ranged from low to moderate and a significant presence of natural enemies was noted, including lady beetles (Figure 3), syrphid larvae (Figure 4), and parasitoids (both wasps and aphid mummies) (Figure 5). These beneficial insects help to slow population growth, reducing or delaying the need for insecticide applications. Unnecessary insecticide applications should be avoided when populations are below thresholds, especially considering the presence of active natural enemies in all evaluated fields.

Figure 3. Multicolored Asian lady beetle (right) and seven-spotted lady beetle (left) feeding on aphids in canola fields. Observed in Graves, Marshall, and Caldwell counties, Western KY, 2026. Photos: Felipe C. Batista.

Figure 4. Syrphid fly larvae (red circles) and adult (yellow circle) in canola fields. Observed in Graves, Marshall, and Caldwell counties, Western KY, 2026. Photos: Felipe C. Batista.

Figure 5. Parasitoid wasps (red circles) and aphid mummies (bottom) in canola fields. Observations recorded in Graves, Marshall, and Caldwell counties, Western KY, 2026. Photos: Felipe C. Batista.

If the infestation reaches 20% of plants, treatment may be necessary. Formulations with flonicamid, or sulfoxaflor are reported as being more selective for aphids natural enemies. Always follow label directions and consult your local extension agent before making insecticide applications.

More Information

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Citation : Batista, F., Bessin, R., 2026. High Frequency of Aphids in Winter Canola fields in Western Kentucky. Kentucky Field Crops News, Vol 2, Issue 04. University of Kentucky, April 17, 2026.

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What We Learned from This Spring's Winter Canola

Dr. Mohammad Shamim, UK Extension Associate

Canola is grown as a spring crop in northern regions of the United States and as a winter crop across the southern and Midwestern regions. For winter canola to survive freezing temperatures, proper fall establishment is critical. Plants should reach the rosette stage with at least a 4/10 - 5/10 inches of stem diameter before winter. When cold temperatures set in gradually, canola undergoes winter hardening, which improves its tolerance to freezing conditions. However, as temperatures warm in late winter and early spring, canola resumes active growth but becomes more sensitive to cold stress. Freezing temperatures lasting more than a couple of hours can damage actively growing tissue, particularly leaves, and extended exposure may reduce crop vigor, yield potential, even kill canola.

In mid-March this year, temperatures dropped suddenly to 21°F for a few hours during the early morning before recovering to the mid-30s by midday. This event occurred during the bolting stage, when plants are more vulnerable to cold injury. While some leaf burn was expected, the brief duration of freezing temperatures limited long-term damage. Following the cold spell, the crop showed visible stress.

Damaged leaves initially masked new growth, giving the field a more severe appearance than the actual level of injury. In addition, a lack of rainfall slowed recovery. However, canola demonstrated strong regrowth potential, and new leaves replaced those injured by the freeze within a short period.

Varietal differences were also evident. The Pioneer PT-314 variety, which has been promoted for its shatter resistance, tends to mature earlier than PT-303. As a result, PT-314 was at a more advanced growth stage during the cold event and experienced greater leaf injury. In contrast, PT-303, being slightly less developed, showed comparatively less damage.

Figure 1. PT-314 (left) and PT-303 (right) following the mid-March cold spell. Images were taken on March 26, 2026 showing differential leaf injury and recovery between the two varieties.

This cold spell did come with some cost. Plant growth was effectively paused for more than a week as canola redirected its resources toward producing new leaves following the freeze injury. By April 10, the new leaves had fully replaced the damaged foliage, and fields had transitioned to a uniform yellow canopy as flowering progressed.

One noticeable impact of the cold event is reduced plant height. Canola stands this year are shorter compared to last season. Although the Pioneer PT-314 variety is rated to have a similar height as PT-303, current observations may suggest otherwise. With PT-314 nearing the end of the flowering stage, plant height remains noticeably lower than what was observed last year for PT-303.

Reduced plant height may limit the number of pods formed along the raceme, which could translate into some loss in yield potential. In contrast, PT-303 is currently at full bloom, and with timely rainfall, further development will happen and will help negate the yield loss concerns associated with reduced plant stature caused by the earlier cold stress.

Figure 2. PT 314 is a relatively early maturity shatter-resistant (center) compared to PT-303 (both sides).

In general, canola planted in tilled fields with good residue management developed more uniform and visually appealing canopies. In contrast, no-till canola following soybean showed some stand establishment challenges, along with increased pressure from henbit. As a result, canopy closure in these fields was less uniform compared to canola planted after corn in tilled systems.

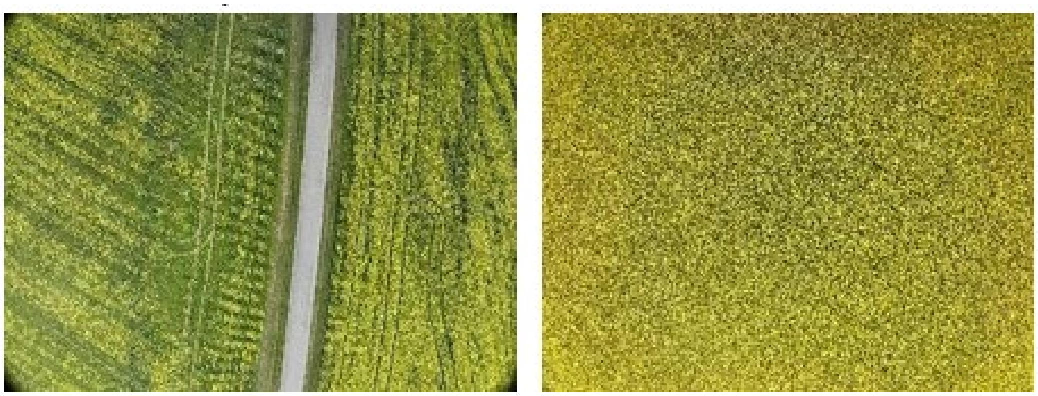

Figure 3. (Left) No-till canola following soybean (left side of the road) compared with tilled canola following corn (right side of the road). (Right) Canola planted after corn under a minimum tillage system with two tillage passes. Canola establishment was noticeably better following corn compared to soybean. Increased henbit pressure is visible in the no-till soybean system on the left side of the image.

Canola planted after October 1 showed reduced vigor compared to fields planted from mid-September through the last week of September. Timely planting remains critical for achieving adequate fall growth and winter survival.

Residue management also played a key role in stand establishment. Heavy corn residue accumulation, particularly in low-lying areas where water ponding occurred, negatively affected canola emergence and early growth. Improving surface drainage and properly managing corn residue can significantly enhance stand establishment and overall crop performance. Based on my observations from numerous fields, planting canola between September 15 and 25 is recommended for more consistent establishment.

Figure 4. (Left) Canola planted on October 10. (Right) Canola planted in late September. Delayed planting, low-lying areas with water accumulation, and heavy corn residue contributed to uneven stands and patchy canopy development in the later-planted field. Both fields were prepared using a high-speed disc.

Canola planted in 30 inches row width was not able to close canopy, thus we can expect these fields to have lower yield potential compared to 15 to 20 inches canola.

Figure 5. Canola is planted 30 inches row after corn. The field was tilled and had no weed pressure early in the season. Empty spaces have been increasingly occupied by weeds though.

White mold was reported in several areas this season; however, I observed infections in only two fields near Benton, KY, with one field showing severe disease pressure. This particular field had a history of waterlogging, which likely contributed to disease development.

Initially, the level of infection suggested significant yield loss. However, the field demonstrated notable resilience following timely fungicide application. By April 10, infected plants had senesced, and disease symptoms were no longer evident in the remaining healthy crop.

Figure 6. (Left) White mold infected canola on March 26. (Center) the same canola field with the picture taken on Apr 10. (Right) white mold infection of canola (the stem base is rotten despite the leaves and upper stem look green). Early fungicide application may reduce the severity of the disease.

So far, insect and disease pressure has remained relatively low across most fields. White mold and common insect pests, such as cabbage worms, have not been widely observed. However, some growers have reported infestations of turnip aphids.

While there is no well-defined economic threshold for aphids in canola, heavy infestations during the flowering stage may result in yield loss. One challenge with aphid management is their ability to rapidly develop resistance to insecticides. As a result, preventive strategies are critical. The use of insecticide seed treatments can help reduce early-season infestations and minimize the need for foliar applications. In addition, managing the "green bridge" by controlling alternate host weeds is an important step in reducing aphid pressure. Consult your entomologist for further directions in case of sever infestation.

Figure 7. Turnip (likely) aphid infestation reported in Benton, KY as of Apr 14. Photo by Rand Davis.

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2026 UK Wheat Field Day

May 12, 2026

9:00 am – 12:00 pm CT

UK Research and Education Center -
300 Extension Farm Rd., Princeton KY

Register for free *by April 30*
to guarantee your lunch.
(click link below or scan QR Code)
2026 Wheat Field Day Registration

Topics include:

Breeding Updates – Dr. Dave Van Sanford & Dr. Lauren Brzozowski

2026 - 27 Wheat and Canola Outlook - Dr. Grant Gardner

Wheat Yields are Related to Head Number - Dr. Chad Lee & Allie Mutter

Drone Application Coverage – Dr. Tim Stombaugh

Winter Wheat Variety Trial Tour - Bill Bruening

Yield Enhancement Network - Dennis Pennington

Residual Herbicides in Wheat – Dr. Travis Legleiter

Insect Updates in Kentucky Wheat – Dr. Felipe Batista

Disease Management Update for Wheat and Canola - Dr. Carl Bradley

Canola Management Pitfalls: Planting Date, Fertility, and Harvest Readiness – Dr. Mohammad Shamim

Educational Credits:
CCA: *PM 1.0, CM 1.0*
Pesticide applicator:
2 hrs. Cat 1a (Ag Plant)
1 hr. Cat 10 (Dem & Research)

Martin-Gatton College of Agriculture, Food and Environment
UK Wheat Science Group

Lunch Provided by:
Kentucky Small Grain Growers' Association

Wheat Yield Enhancement Network - YEN

Are you a wheat farmer and have asked yourself:

- How can I unlock the secret to greater wheat yield?
- What are the maximum wheat yields I can attain?
- What inputs/agronomic practices boost wheat yield the most?

Then the wheat YEN program may be for you!

Join us for an "Open House" the evening of May 12, 2026.

The YEN program coordinators, farmer participants, and crop consultants that have assisted Kentucky farmers with their entries will be on site to discuss and answer questions about YEN.

For more information on the wheat YEN program, visit https://greatlakesyen.com/.

Specific details on the event will be available at the University of Kentucky Research and Education Center's website. https://ukrec.mgcafe.uky.edu/events

The YEN program in Kentucky is a collaboration between the Great Lakes YEN program, Ky Small Grain Growers' Association, and researchers at the University of Kentucky.

2026 KATS Crop Scouting Clinic

The Kentucky Agriculture Training School will hold an Interactive Crop Scouting Clinic next month. Held on May 28, 2026, in Princeton, KY, the clinic runs from 8:30 AM to 3:30 PM (CDT) and includes lunch. This workshop will include topics such as corn and soybean diseases and growth staging, scouting for insect pests, weed ID and soil nutrition. This is a hands-on workshop that is ideal for agriculture interns, new and experienced producers, ag agents, as well as others looking to sharpen their skills. Pre-registration is required and space is limited. The cost is $105 and CEU credits are offered.

For more information contact Lori Rogers (lori.rogers@uky.edu) or visit https://2026KATSCropScoutingClinic.eventbrite.com.

Upcoming Events

2026

UK Wheat Field Day, Princeton, KY
May 12, 2026

Crop Scouting Clinic, Princeton, KY
May 28, 2026

Pest Management Field Day, Princeton, KY
June 25, 2026

UK Corn, Soybean and Tobacco Field Day, Princeton, KY
July 21, 2026

High School Crop Scouting Competition, Princeton, KY
July 23, 2026

Drone Pilot Certification Workshop, Madisonville, KY
TBA 2026

2027

Kentucky Crop Health Conference, Bowling Green, KY
Feb 4, 2027