Issue #26 – December 10th, 2025

In This Issue:

From South to North: Indiana's Corn Progress Update – Last 2025 USDA Crop Progress Report

(Bruno Scheffer, Jeferson Pimentel, Dan Quinn & Betsy Bower)

According to the last USDA Crop Progress report, Indiana had **97% of corn harvested**, slightly below last year (99%) and slightly ahead of the 5-year average (95%). Most U.S. states are done harvesting and only Pennsylvania (89%) and North Dakota (89%) were below 90% harvest progress, while the 18-state average was 96%. Probably by the time this newsletter is published, all harvest will be completed. See more in **interactive maps 1.**

Nov 24 was the last weekly Crop Progress report issued for the 2025 season from USDA. The first weekly report for 2026 will be released in early April 2026.

Also, during the first two weeks of December, NASS will survey approximately 75,000 United States producers. One of USDA's largest survey efforts, the responses will provide the final information about 2025 U.S. row crops, focusing on harvested acreage, production, and storage. The USDA team will post the last report on **January 12th**.

➡ Let us know if we can help.

Interactive Maps 1. U.S. Corn **Harvest** Progress (USDA-NASS)
Click on the dates below to see the corn harvest progress over time and the average:

Nov 23, 2024	Nov 16, 2025	Nov 23, 2025	Average (2020-2024)

Purdue Corn Team Research Update

(Alex Helms, Megan Bourns, Betsy Bower, Narciso Zapata, & Daniel Quinn)

Can potassium (K) in pop-up starter have a positive impact on yield?

For years, agronomists have highlighted the importance of having nitrogen (N) and phosphorus (P), with a potential mention of zinc (Zn), in a pop-up starter. Even though a corn seed contains enough nutrition to carry the plant through about V4 stage (the first 4 fully collared leaves), corn will still respond to added nutrients placed near the seed. Pop-up starter can: supply readily available nutrients when cool soils slow N and P mineralization, improve early root and plant growth, help corn push through early-season stress like cold and wet conditions, and support fast, even growth as the plant moves toward reproductive stages.

What about Potassium (K)?

When potassium is discussed in starter fertilizer, it's usually in the context of a 2x2 system, where the most consistent yield bump shows up in low-testing K soils. Traditional K fertilizer sources have a high salt index and placing them too close to the seed can hurt germination and early emergence. This explains why K has rarely been considered for pop-up systems.

But the big question is: **Could a very small amount of K in a pop-up (less than 5 lbs of actual K per acre) safely improve yield?** And are there safer, lower-salt K products that can be placed near the seed without causing damage?

To start answering those questions, a long-term potassium trial was initiated in two fields at SEPAC in 2019 and later expanded to one field each at DPAC and NEPAC in 2020, with another existing site at PPAC. The purpose of the long-term study is to evaluate economic optimum fertilizer rates by applying various potash treatments in fields where the soils test very low in potassium. An early evaluation of this data on how to profitably farm soils that tests low in K was summarized by Camberato and Helms (2021).

As we continue to learn how to manage these low testing soils, we have started adding 'sub-treatments' to the main potash treatment to determine if certain products and management strategies can improve our profit over the standard potash application. Although these exceptionally low soil test potassium levels are not common across most Midwestern corn and soybean acres, it's not uncommon for some areas in a field to test low in potassium, especially in fields coming out of hay crops or fields that were managed without regular soil testing.

In an article published by A&L Great Lakes Laboratory, their soil data showed nearly 10% of soils in the great lake region tested by A&L to be deficient in soil potassium in 2017, while overall average soil test potassium declined from 1996 to 2017 (A&L Great Lakes, 2018). This is not surprising, especially in fields with a high degree of variability and where farmers apply a straight crop removal rate for the average of the field. The field average crop yield rarely reflects the highest and lowest yielding areas within a field, which often have very different crop K removal compared to the field average. When potash is applied to match only the field average removal, those high yielding zones are essentially mining the soil K year after year. It's easy to see how soil test levels can start sliding in those areas.

Given that challenge, it can be tough to find solid and appropriate recommendations on how to profitably manage these low testing soils, particularly when potash prices are high. With an emphasis on the 4 R's of fertilization, we began asking whether there is a better source and placement of potassium that could help manage these soils testing low in potassium beyond the traditional potash fertilizer.

Purdue Research

In 2024, corn was no-till planted on May 24th at SEPAC. Potash treatments of 0, 75, 150, 225, and 300 pounds per acre were broadcast prior to planting. The main potash treatments were spilt with the use of an in-furrow application of EnzUp K DS (NPKS analysis 5-0-49-8; Brandt) and applied at a rate of 7 pounds per acre.

Potash increased yield, but the response began to plateau above 150 lbs/acre, with maximum yields near 240 bu/acre at the 225 and 300 lbs/acre rates. Interestingly, adding EnzUp K DS increased yield across all potash rates by an average of 15 bu/acre. The biggest bump came at the lowest potash treatments (0 and 75 lbs/acre), where EnzUp K DS increased yield by 23 bu/acre on average. Even at the higher potash rates (where yield response had mostly leveled off) the product still provided an average 9 bu/acre increase across the 150, 225, and 300 lbs/acre treatments.

With the interesting results identified in 2024 at SEPAC, the Enzup K DS treatments were applied in a similar manner at SEPAC, DPAC, NEPAC, and PPAC in 2025. However, the PPAC location did not have any potash treatments applied. To better understand why corn responded to EnzUp K DS even when yields no longer responded to higher potash rates, a more intensive sampling plan was used. Tissue samples were collected at V7 and R1 stages at all four locations.

While tissue K concentrations increased with potash rate at both growth stages, there were no consistent nutrient concentration differences with or without EnzUp K DS (Table 1). This was despite clear visual differences in plant size and appearance at all sites except NEPAC, where soil K levels averaged about 150 ppm across all potash treatments. Visual K deficiency was most obvious in the 0 lbs/acre potash treatment (Figure 1) and became less evident at higher potash treatments.

R1 Leaf Sampling		V7 Whole Plant Sampling	
Potash Treatment	**R1 Leaf K %**	**Potash Treatment**	**V7 Plant K %**
0	1.24	0	1.14
75	1.49	75	1.48
150	1.98	150	2.05
225	2.19	225	2.57
300	2.34	300	2.92
EnzUP K Applied	**R1 Leaf K %**	**EnzUP K Applied**	**V7 Plant K %**
Yes	1.86	Yes	2.07
No	1.83	No	1.95

Table 1. 2025 Plant tissue analysis of SEPAC, DPAC, and NEPAC combined

A possible explanation for this discrepancy between the tissue data and visual differences is that the tissue test

Figure 1. Picture of SEPAC with EnzUP K applied to the right and no popup applied to the left in the 0 lbs/acre potash treatment.

measures the nutrient concentration in the sampled plant part, but does not reflect the absolute amount of nutrient in the plant. A small, stunted plant may show higher nutrient concentration simply because the nutrient is held in the small amount of biomass sampled. Meanwhile, a larger more robust plant with more total nutrient uptake may have nutrients diluted across greater biomass showing similar concentrations in the tissue test (A&L Great Lakes, 2021). This phenomenon may suppress small differences in treatment effect although yield differences may still occur. Figure 2 shows the dramatic difference in plant size at PPAC.

Figure 2. Corn plant from a 0 lbs/acre potash treatment (left) and corn plant from a 0 lbs/acre potash treatment with the addition of Enzup K DS (right). Plants are the same growth stage. Photo credit Stephen Boyer, Superintendent of PPAC.

Collected wet weights of R1 ear leaf samples (15 leaves per plot) at SEPAC also supported this observation. As shown in Table 2, the untreated plots had lower biomass than the EnzUp K DS plots, especially in the 0 lbs/acre potash treatment. However, even at the higher

potash treatments, the addition of EnzUp K DS resulted in an average 4% increase in sample weight across the top three potash treatments. As noted previously, the 2024 corn yields at SEPAC began to plateau at potash rates greater than 150 lbs/acre, so the greater weight of EnzUp K DS samples collected in 2025 may be an explanation of the yield response in 2024.

Wet Weight in Grams of R1 Sample Ear Leaf Sample			
Potash Treatment	Enzup K DS	Control	Percent Difference
0	231.1	167.0	28%
75	282.6	275.2	3%
150	297.2	293.7	1%
225	313.4	288.4	8%
300	314.8	304.0	3%

Table 2. R1 sample wet weight difference between the control and the addition of Enzup K DS.

The few differences in nutrient concentration between the control and the addition of EnzUp K DS were observed with nitrogen and potassium (Table 3). Only nitrogen and potassium in the 0 and 225 lbs/acre potash treatment were more than 0.2% greater with the addition of EnzUp K DS. No meaningful differences in the tissue test were observed at NEPAC and DPAC across all potash treatments with the addition of EnzUp K DS.

SEPAC 2025	R1 Leaf Sample (Enzup K - Control)			
		N%	P%	K%
Potash Treatment lbs/acre	0	0.96	0.10	0.23
	75	0.13	0.02	-0.11
	150	0.06	0.00	0.12
	225	0.30	0.04	0.30
	300	0.15	0.03	0.14

Table 3- R1 Nutrient concentration difference between the addition of EnzUp K and the control across potash treatments. Highlighted green cells are any differences greater than 0.2%.

Yields in 2025 were quite low compared to previous years due to a wet delay to the planting season coupled with a dry latter half of the growing season limiting grain fill. Average yields across all replications at the highest potash treatment were 202, 150, and 168 bushel per acre at SEPAC, DPAC, and NEPAC respectively. The addition of EnzUp K at SEPAC and NEPAC added 7 bushels per acres across the three highest potash treatments at SEPAC and added 6 bushels per acre across the three highest potash treatments at NEPAC. DPAC yield did not increase with the use of EnzUp K, but did respond positively to the main potash treatment increasing yield linearly from 118 bushels per acres at zero lbs/acre potash treatment to 150 bushels per acre in the highest potash treatment of 300 lbs/acre.

Ultimately, yield, commodity price, and treatment cost are still the big factors that determine whether a practice or product makes sense on the farm. The 2025 field trials have been harvested, and we've included an early look at how the treatments performed. However, we'll need more time to dig deeper into the full dataset and sort out the treatment-by-location responses. We also have preliminary research with EnzUp K DS in two soybean fields, one with low soil K at the SEPAC location and one with more moderate to high soil K levels at the PPAC location. As we work through the full analysis from all sites, we'll share a more complete summary of results in an upcoming update.

Quick Take: Purdue Potassium starter Research

- Potash improved yields, but responses plateaued above 150 lbs/acre, with maximum yields near 240 bu/acre at 225-300 lbs/acre.
- EnzUp K DS added an average of +15 bu/acre across all potash rates, with biggest gains (+23 bu/acre) occurred where potash was 0-75 lbs/acre in 2024.
- Even at higher potash rates when yield plateaued, EnzUp K DS still boosted yield (+9 bu/acre) in 2024.
- Tissue tests didn't fully capture differences, but plants were visibly bigger, and ear leaf biomass was higher with EnzUp K DS.
- 2025 trials across four Purdue Ag Centers will determine whether these results hold up across environments.

References

1. A&L Great Lakes. (2018). Declining soil test potassium levels. https://algreatlakes.com/blogs/news/declining-

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3. Camberato, J., Helms, A. (2021). Thoughts on Profitable Fertilizer Rates. Purdue Univ. Dept. Agronomy Soil Fertility Update.
4. Quinn, D., Bower, B., Oliva, E., Zapata N., Vaca, J., Gramajo, E. (2024). Applied Research for Corn Production in Indiana-2024. Purdue University Dept. Agronomy.

🌾 Corn harvest reflections: 2024 & 2025 seasonal corn canopy vegetation indices reveal different growing conditions across Indiana

(Vlasios Mangidis, Gustavo Nocera Santiago, and Ignacio A. Ciampitti- Ciampitti Lab, Department of Agronomy and IDAAS**)**

As the 2025 corn harvest wrapped up, we can compare the changes in seasonal corn canopy vegetation indices as a reflection of the growing conditions for 2025 compared to those in 2024. Why it matters: The shape of the seasonal canopy curve influences the growing conditions. This information can offer new insights from the last growing season and help to improve planning for the next season.

A summary on how we built the seasonal curves: our team tracked weekly canopy "greenness" using the Green Chlorophyll Vegetation Index (GCVI) from April through September with publicly available Sentinel2 imagery (Copernicus/ESA). The GCVI is a straightforward "greenness" signal that tracks crop growth throughout the season. Curves were summarized by month to show seasonal shapes. We worked with three regions, North, Central, South, defined by Indiana's official climate division boundaries (Fig. 1). In each region we randomly sampled 10 corn fields from Crop Sequence Boundaries (CSB) (USDA's Economic Research Service). For benchmarking purposes, we included the 2024 county corn yields from USDA-NASS (2025 yields are not yet available).

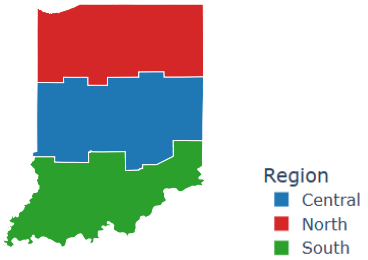

Figure 1: Indiana study regions based on official climate-division boundaries

The 2024 seasonal curves are presented in Fig. 2. Each line is the monthly average of GCVI (Apr–Sep) for a sample of 10 corn fields per region. Higher values refer to greener canopy/more leaf area over time. All three regions reflected a peak in July. The North ramped earlier out of spring; the Central held steadiest midsummer until late July, and the South region declined more slowly into August, with a reduced leaf senescence process.

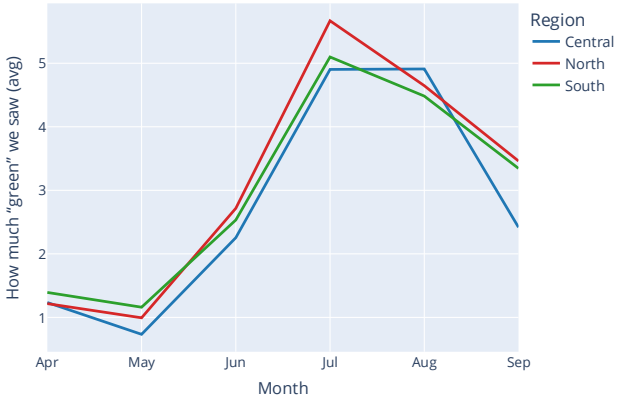

Figure 2: 2024 phenology by Indiana region

When the canopy stayed high and steady through June–July, corn fields finished more consistently, as for the Central region. On the other end, when the canopy dropped early in August, yields were more variable, as for the North region. The 2024 yield distribution by

region is portrayed in Fig. 3.

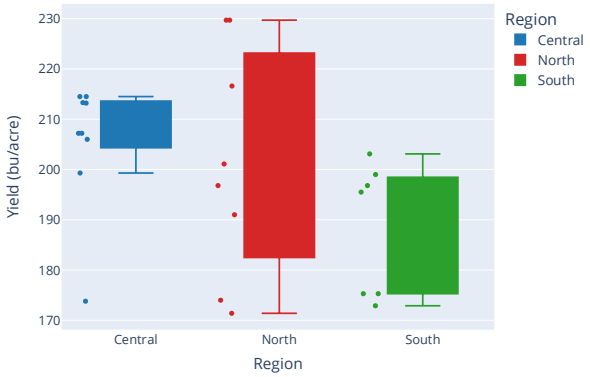

Figure 3: 2024 yield distribution by Indiana region

The 2025 corn canopy, as shown in Fig. 4, echoed 2024. All three regions peaked in August. Relative to the North and Central, the South showed a slower early-season trend and then with a smoother drop, all a potential reflection of delays in planting time in this region.

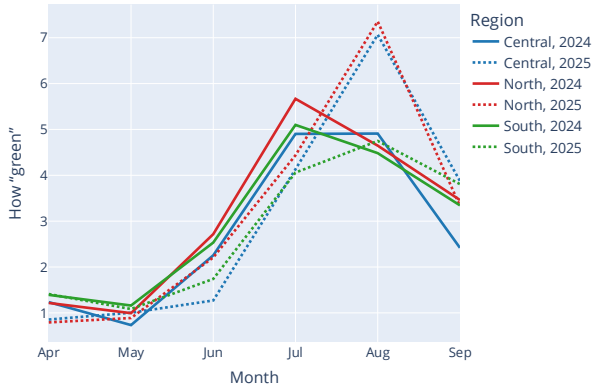

Figure 4: 2025 vs 2024 phenology by Indiana region

From a weather perspective, the 2025 season was about 3–4% cooler statewide and roughly 15–16% wetter. Those cooler, wetter conditions extended the crop greenness (see Fig. 4). The field maps in Fig. 5 reflect this scenario: in Aug 2024 (left) the crop was already yellowing, while 2025 (right) the crop remained uniformly dark green.

In the South, the weather conditions capped the peak of greenness, less sunlight, and wetter soils (less oxygenround roots) lowered the top of the curve for the 2025 season.

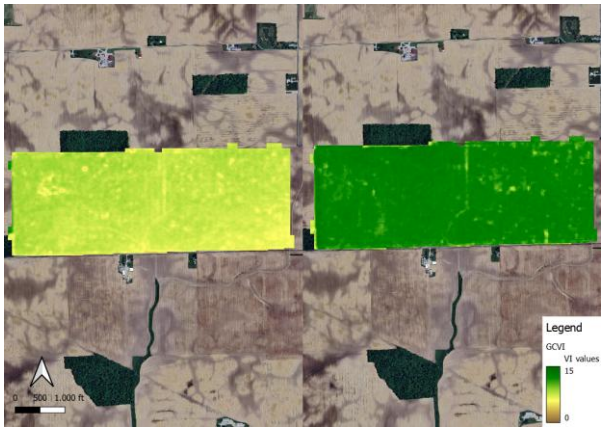

Figure 5: Aug 14 field GCVI (same Central Indiana field, same color scale Left: 2024—lighter greens/yellows show senescence underway. Right: 2025—darker; more uniform greens show the canopy still holding.

In 2025, the South followed that pattern and held green longer; while the North and Central regions turned down faster after the peak. If your fields build a clean ramp and hold a midsummer lid, they may have a steadier finish; if the line turns early in August, expect more variability and plan scouting and harvest priorities accordingly. As 2025 county yields are released, we will connect those with these crops seasonal canopy to provide context and a conclusion to this story with the final corn yields. Until then, this information is providing us with straightforward evidence that yields will be variable in the north, better in the central region, and with reduced yield potential in the south, linked to delays on planting date, wetter soils, and lower temperatures early in the growing season.

References

USDA-NASS QuickStats — county corn yields (2024).
USDA-NASS Crop Progress & Condition — Indiana weekly reports (2024–2025).
USDA's Economic Research Service - Crop Sequence Boundaries (CSB)
Copernicus/ESA Sentinel-2 L2A — public satellite imagery used to derive GCVI.
Open-Meteo Archive API (ERA5 reanalysis from ECMWF)
Johnson, D.M. et al. (2021). *Remote Sensing* 13(21): 4227 — greenness signals track yield at scale.
Tan, C. et al. (2020). *Scientific Reports* 10: 929 — greenness relates to leaf area/canopy structure.

Better Outlook for the Future Pushes Farmer Sentiment Higher

(Michael Langemeier and James Mintert - Purdue Center for Commercial Agriculture)

The *Purdue University-CME Group Ag Economy Barometer Index* climbed to 139 in November, 10 points higher than in October and the highest barometer reading since June of this year. The improvement in farmer sentiment was attributable to producers' more optimistic outlook for the future, as the November *Future Expectations Index* reading of 144 was 15 points higher than in October, whereas the *Current Conditions Index* fell 2 points to a reading of 128. This month's survey was the first survey conducted since the late October announcement of a trade pact between the U.S. and China that included provisions for increasing U.S. exports of agricultural products to China, and survey respondents were notably more optimistic about future prospects for U.S. agricultural exports. Sentiment was also buoyed by a sharp rise in crop prices from mid-October to mid-November. The November barometer survey took place from November 10-14, 2025.

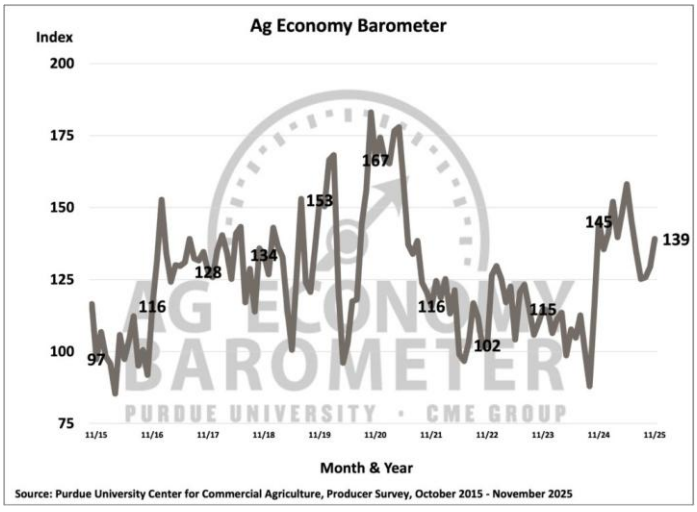

Figure 1. Purdue/CME Group Ag Economy Barometer, October 2015-November 2025.

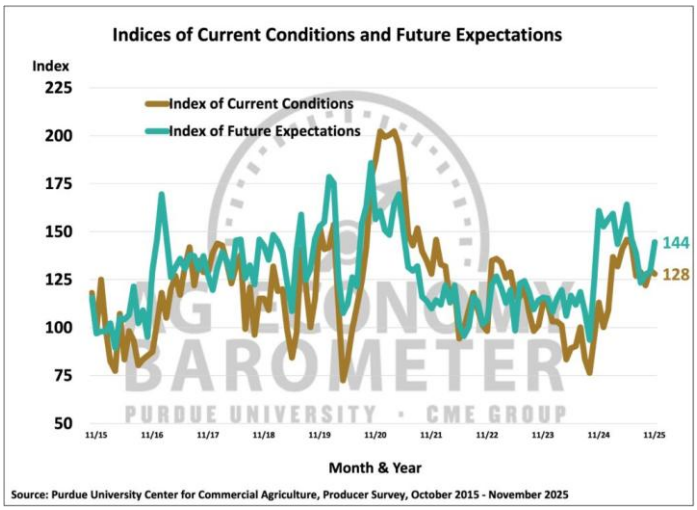

Figure 2. Indices of Current Conditions and Future Expectations, October 2015-November 2025.

Producers in November were more optimistic about their farms' financial performance than a month earlier, as the Farm Financial Performance Index climbed 14 points to a reading of 92. In particular, the percentage of producers who expect better financial performance this year rose to 24% from just 16% in October. A sharp rise in crop prices from mid-October to mid-November was a key reason behind the expectation for better financial performance. For example, Eastern Corn Belt prices for fall delivery of corn and soybeans rose 10% and 15%, respectively, from mid-October to mid-November. The stronger financial outlook in the crop sector outweighed a weaker outlook provided by livestock producers, who were feeling the brunt of a decline in cattle prices that took place during the same time frame. Despite the stronger financial outlook, the Farm Capital Investment Index fell 6 points to a reading of 56, with just 16% of respondents saying now is a good time to make large investments in their farm operations.

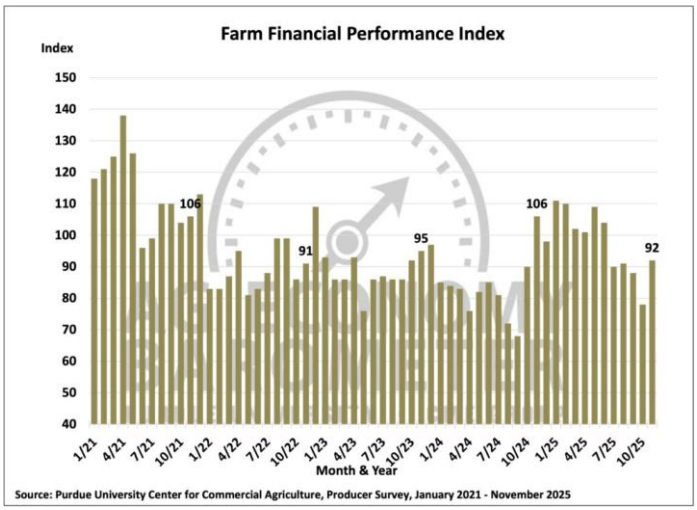

Figure 3. Farm Financial Performance Index, January 2021-November 2025.

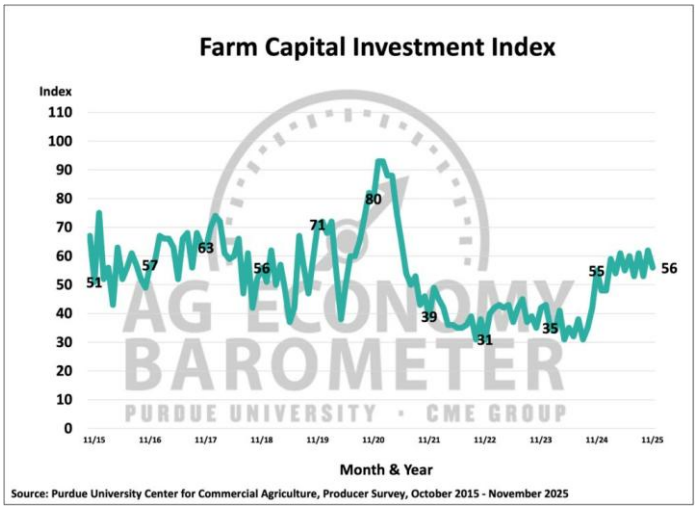

Figure 4. Farm Capital Investment Index, October 2015-November 2025.

Producers became more optimistic about future agricultural trade prospects in November. Responding to a question included in every barometer survey since January 2019, just 7% of respondents said they expect U.S. agricultural exports to weaken in the next 5 years, down from 14% who felt that way in October and down from 30% who expected exports to weaken back in March. In a related question, 47% of corn producers responding to the November survey said they expect soybean exports to rise over the next 5 years, while just 8% said they expect soybean exports to decline. The improved trade outlook appeared to contribute to this month's sentiment improvement.

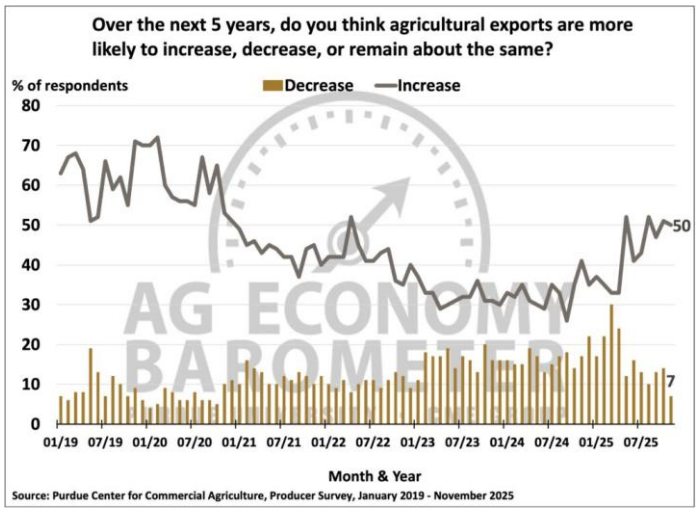

Figure 5. Expectations for Agricultural Exports Over The Next Five Years, January 2019-November 2025.

A majority of producers in November reported that they still expect to receive a supplementary support payment from USDA, similar to the 2019 Market Facilitation Program (MFP), but they were less confident of receiving the payment than in September. This month, just 16% of respondents thought an MFP payment was "very likely", down from 62% who felt that way in September. Still, when the "likely" and "very likely" response categories are combined, just over three-fourths (76%) of farmers in November said they expect an MFP payment, compared to 83% who felt that way in September. When asked how an MFP payment would be used on their farms, 58% of respondents said they would use it to "pay down debt", up from 52% who said an MFP payment would be used to reduce debt when surveyed in October.

For the second month in a row, the *Short-Term Farmland Value Expectations Index* rose, reaching 116 in November, 3 points above a month earlier and 10 points higher than in September. Farmers' long-run perspective on farmland values also rose this month as the *Long-Term Farmland Value Expectations Index* climbed 4 points to a reading of 165, a new record high for the index. This month's survey also asked corn producers about their expectations for cash rental rates for farmland in 2026. Nearly three-fourths of respondents (74%) said they expect rates in 2026 to be about the same as this year, which was very consistent with

responses received in both July and August. The relatively strong cash rent outlook provides some support for farmland values.

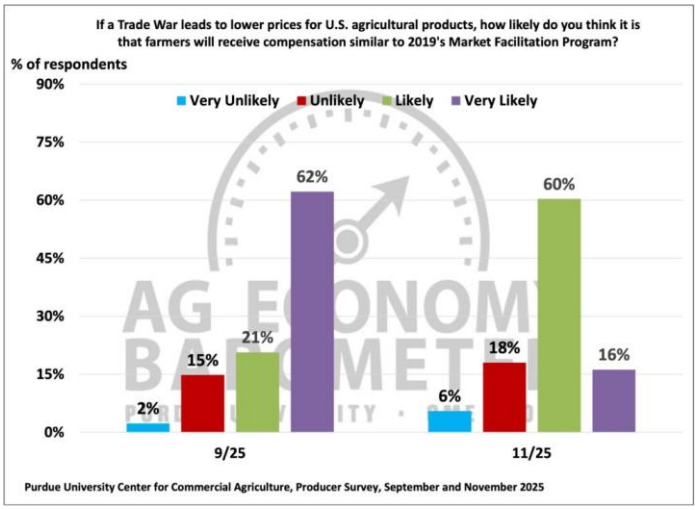

Figure 6. Likelihood That Farmers Will Receive Compensation Similar to 2019's Market Facilitation Program, September & November 2025.

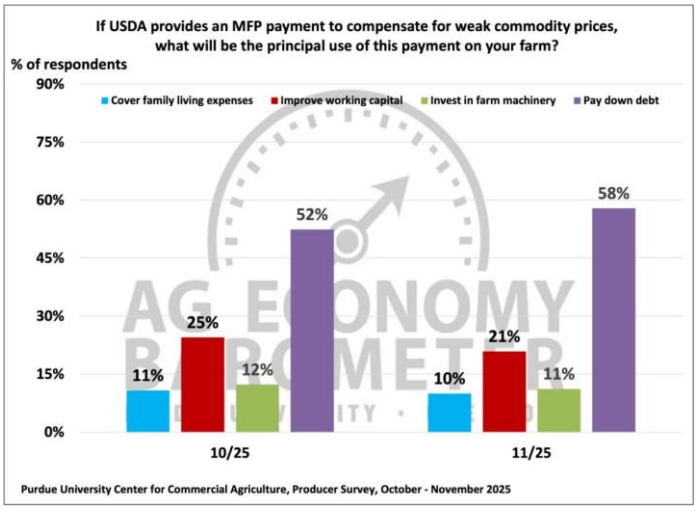

Figure 7. How Would A Market Facilitation Payment (MFP) Be Used On Your Farm, October-November 2025.

The November survey again asked corn producers what adjustments to their production practices they anticipate making in 2026 in response to expected weak operating margins. Among producers who say they plan to make changes, the top two production practices they will consider changing are shifting to lower-cost seed traits or varieties and reducing applications of phosphorus. Next in line for possible changes are reducing corn seeding rates and nitrogen application rates. Still, a large minority of farmers (40%) said they don't plan to make any changes to their corn production practices in 2026.

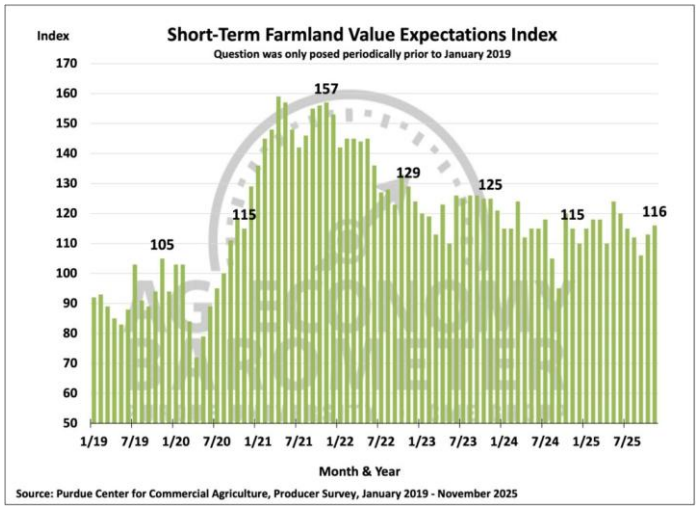

Figure 8. Short-Term Farmland Value Expectations Index, January 2019-November 2025.

Recent barometer surveys have included two questions that focus on farmers' attitudes regarding 2025's policy shifts. A majority of respondents, 59% in November and 58% in October, said they expect that use of tariffs by the U.S. will ultimately strengthen the agricultural economy. However, that is lower than last spring, when 70% of respondents said they expected tariffs to strengthen the agricultural economy in the long run. More producers in recent months reported being uncertain regarding the long-run impact of the U.S. tariff policy. In October and November, 16% and 17% of survey respondents, respectively, said they were uncertain about the impact that tariff policy will have, roughly double the 8% of respondents who felt that way in April and May. Meanwhile, two-thirds (67%) of farmers in the November survey said the U.S. is headed in the "right direction", down from the 72% who felt that way in October.

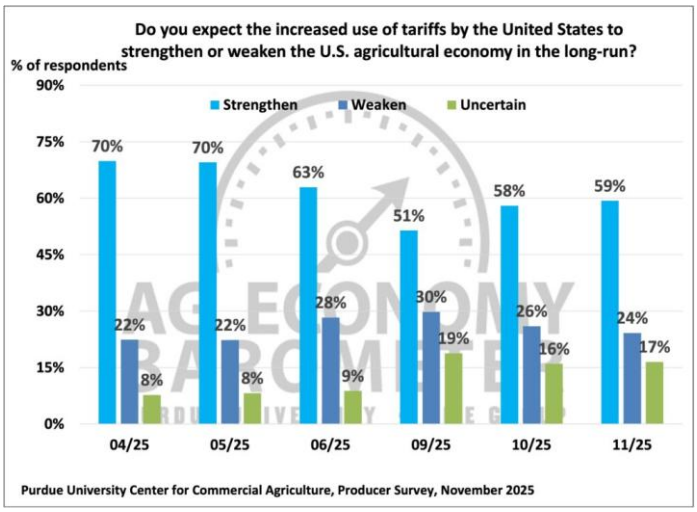

Figure 9. Will U.S. Tariff Policy Strengthen or Weaken the U.S. Agricultural Economy in the Long-Run?, April-November, 2025.

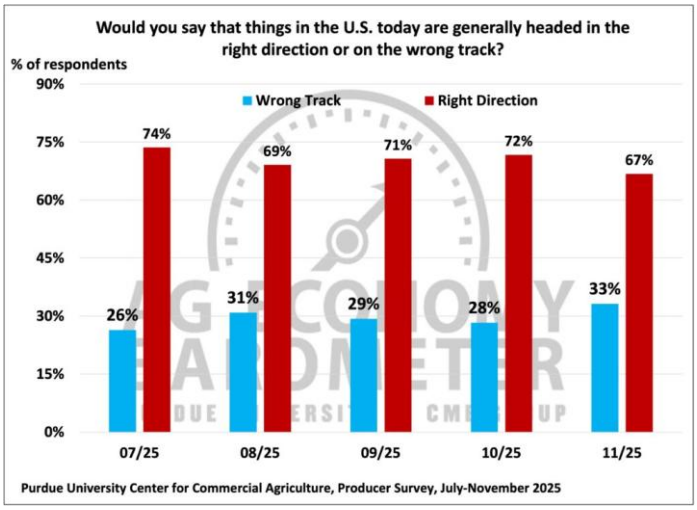

Figure 10. Are Things in the U.S. Today Headed in the Right Direction or on the Wrong Track?, July-November 2025.

Wrapping Up

Farmer sentiment improved in November, with the rise attributable to an improvement in the *Index of Future Expectations*. Strengthening crop prices contributed to the improved outlook for the future, as did a more optimistic outlook for agricultural exports. Producers were more optimistic about farmland values in both the short and long run this month. Most farmers continue to think it is likely that they will receive supplemental income support from the USDA in the form of an MFP payment if prices are negatively impacted by U.S. tariff policies. A majority of producers expect U.S. tariff policies to prove beneficial to the agricultural economy in the long run, but the percentage of respondents who said they are uncertain about the impact was roughly double the percentage who said they were uncertain last spring. Finally, two-thirds of producers said that "things in the U.S. today are headed in the right direction", but that was lower than a month earlier, while the percentage who chose "wrong track" rose from 28% to 33%.

Acknowledgments

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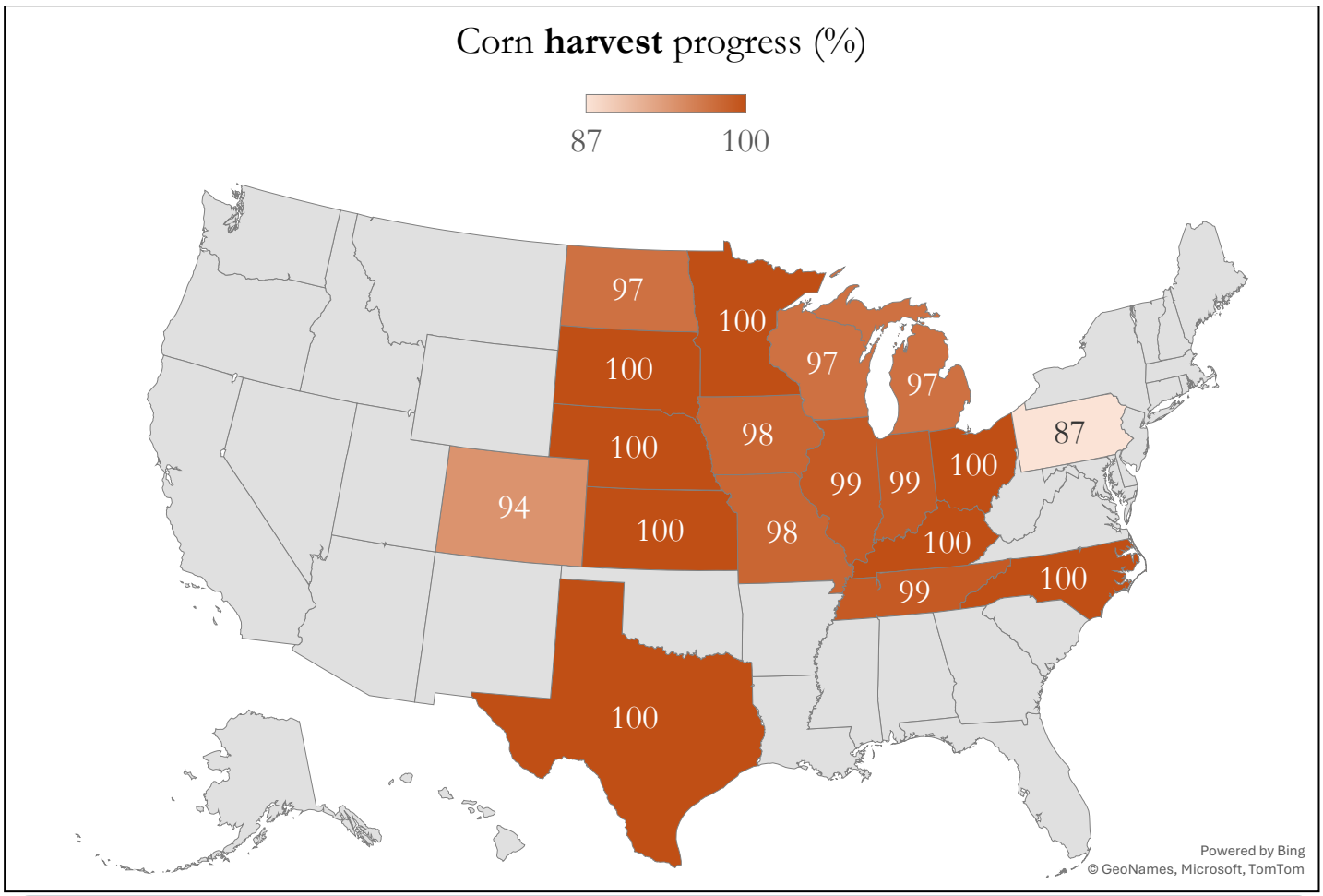
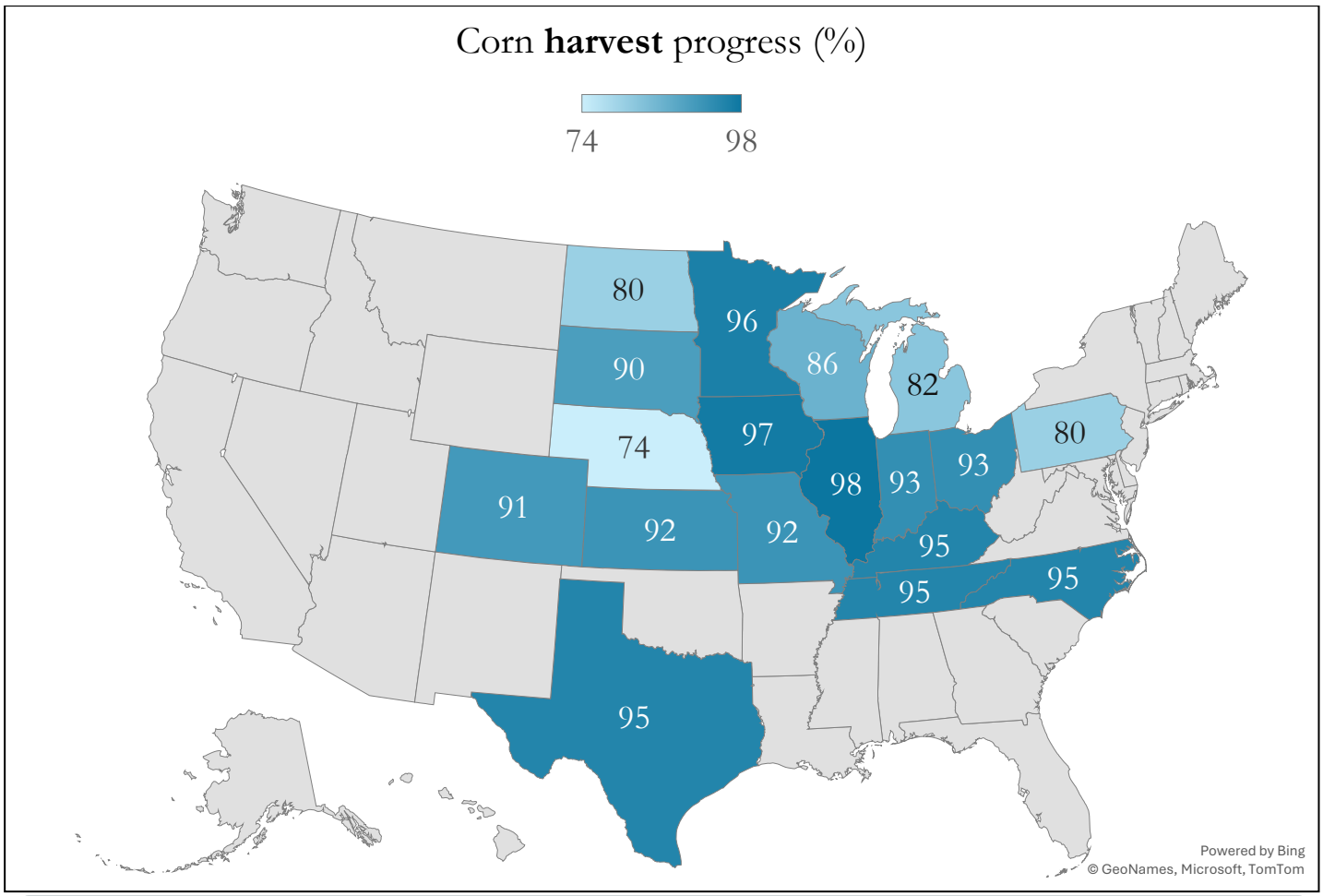
INDIANA CORN
Marketing Council



Interactive Maps 1. U.S. Corn **Harvest** Progress (USDA-NASS)
Click on the dates below to see the corn harvest progress over time and the average:

Nov 23, 2024	Nov 16, 2025	Nov 23, 2025	Average (2020-2024)	Back to page 2



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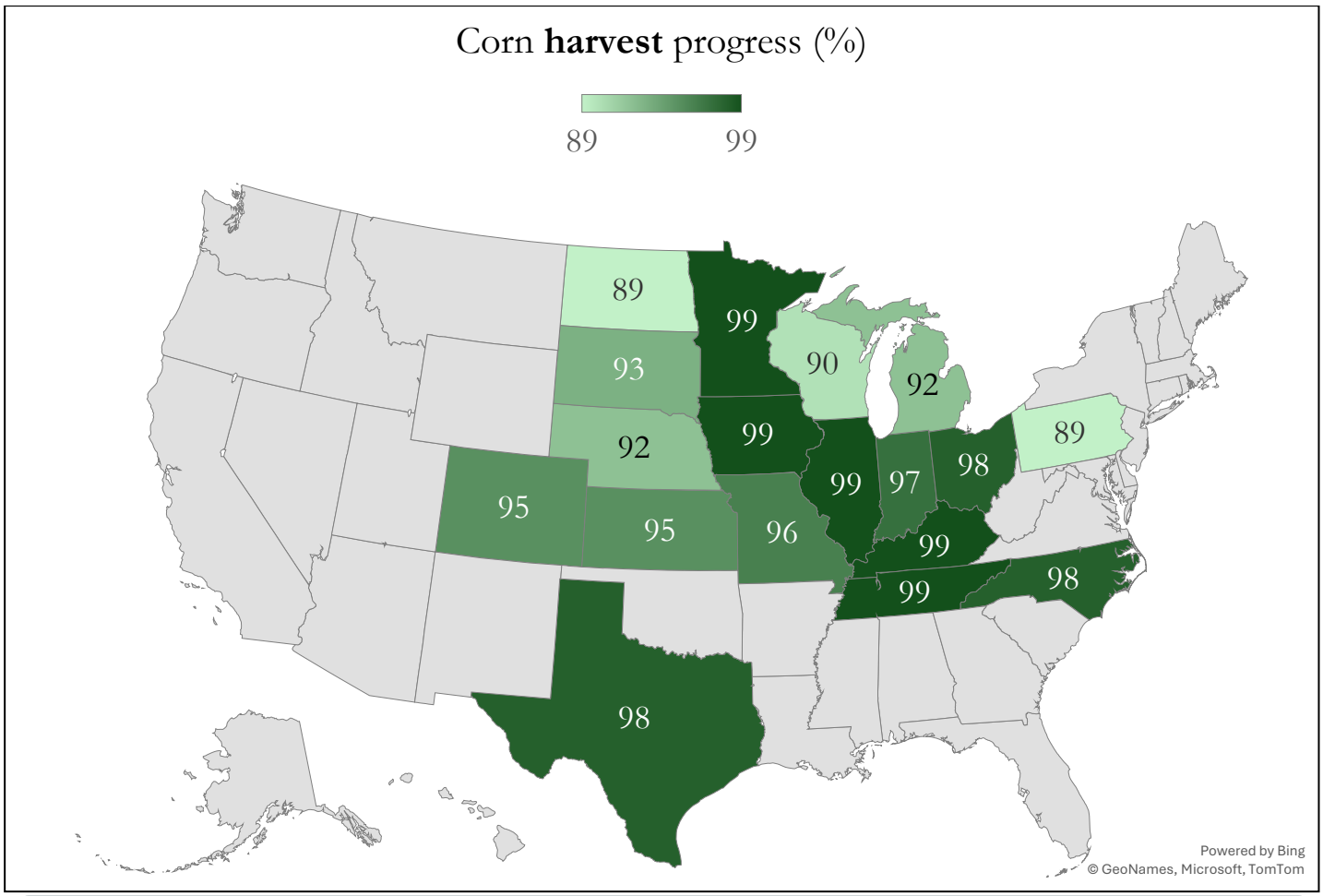

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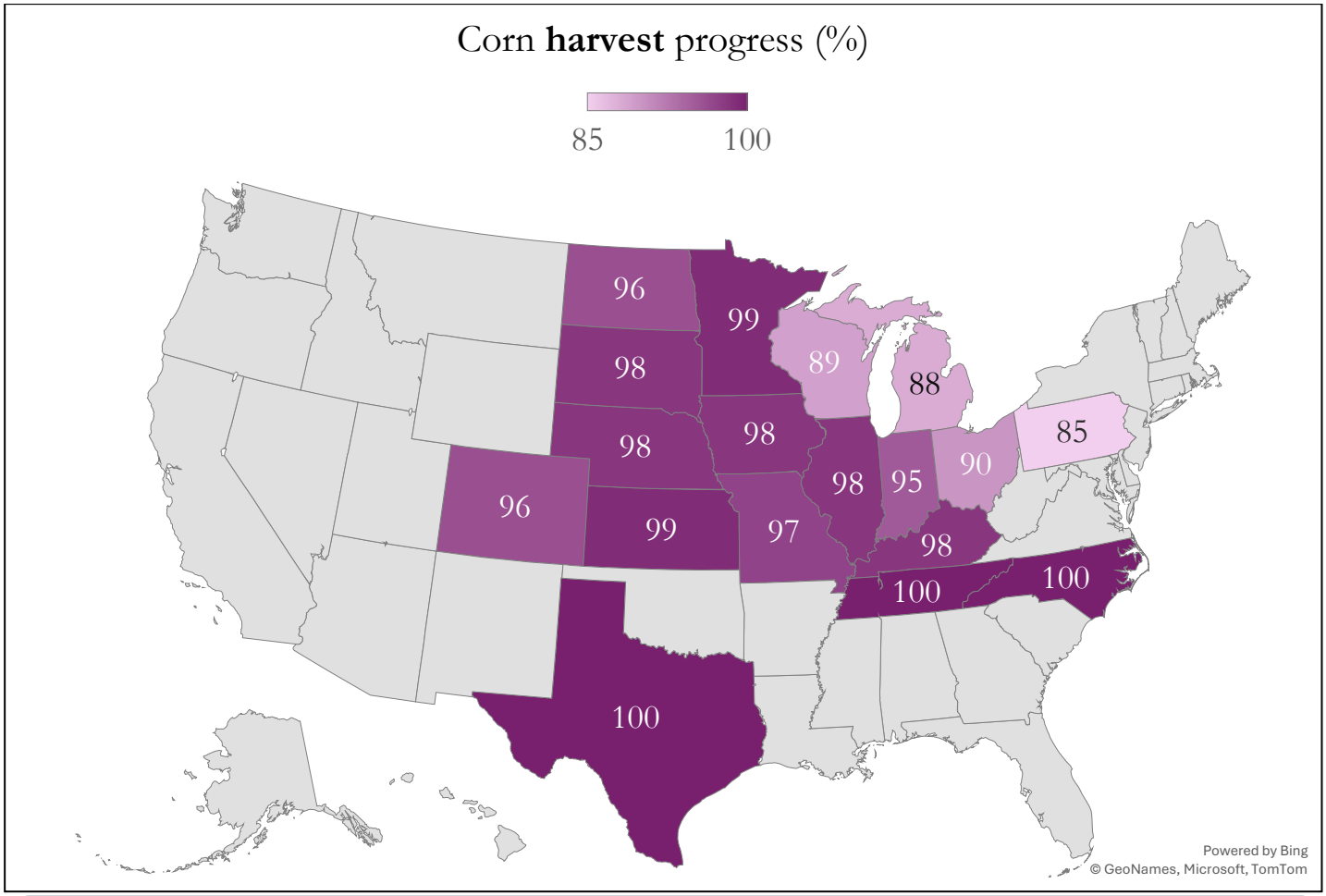

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