Issue #6 – May 30, 2025

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🌾🚜 From South to North: Indiana's Corn Progress Update

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

According to the USDA-NASS planting progress report released on **May 28, 2025**, **87%** of the **U.S. corn** crop has been planted, a notable increase from 78% the previous week and ahead of both last year's rate of 81% and the five-year average of 85% (Interactive Map 1). Continued favorable weather over the past two weeks has enabled farmers across many states to make rapid progress toward completion.

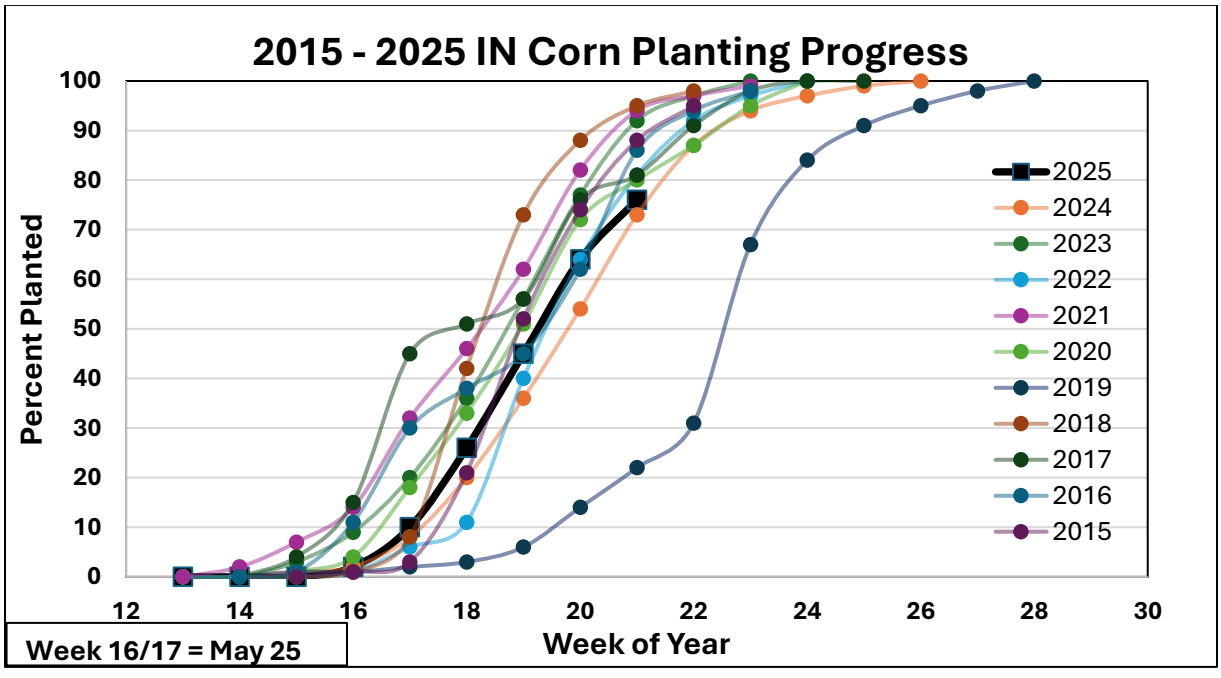

Figure 1. 2015-2025 Indiana corn planting progress by week (USDA-NASS)

In Interactive Maps 1, you'll find updated planting progress across central corn-producing states. The Corn Belt is nearing completion of planting, with standout progress in states such as Minnesota (97%), Iowa (95%), Nebraska (95%), and Missouri (94%), all of which are now ahead of their five-year averages. Even states that had been slightly behind are catching up fast.

Indiana has now reached 76% planted, up from 64% the previous week, continuing its upward trend but still below its 5-year average of 79%. The state made a solid 12-point jump this week, reflecting strong momentum. Some states, like Ohio (54%) and Pennsylvania (51%), remain well behind historical norms due to earlier weather delays, while North Carolina (96%) and Texas (93%) are nearly finished. These numbers indicate that national planting progress is back on track, with most regions either matching or exceeding seasonal expectations as we enter the final stretch of spring planting.

In addition to planting, corn emergence is gaining speed, with 67% of the crop emerged nationwide, up from 50% last week and ahead of both 2024's pace (55%) and the 5-year average (60%).

In the Corn Belt: Iowa (76%), Minnesota (78%), and Nebraska (77%) are significantly ahead of average. Indiana now reports 57% emergence, up from 39% last week and slightly ahead of its 5-year average of 54%. Ohio (36%) is still lagging, but improved from last week's 22%. South Dakota (70%) is emerging quickly, far ahead of its 5-year average of 45%. These emergence rates suggest good early-season development in much of the Corn Belt, although cooler or wetter conditions earlier this spring continue to affect a few states (see Interactive Maps 2).

The USDA-NASS also released its first corn conditions report of the season, showing that in Indiana, 59% of the corn crop is rated in good condition and 11% in excellent condition. This early-season assessment suggests a promising start for Indiana's corn, especially considering recent gains in planting and emergence progress. See Interactive Maps 3 for more information across the U.S.

➡ Let us know if we can help.

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

May 25, 2024	May 18, 2025	May 25, 2025	Average (2020-2024)

Interactive Maps 2. U.S. Corn **Emerged** Progress (USDA-NASS)
Click on the dates below to see the corn emerged progress over time and the average:

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Interactive Maps 3. U.S. Corn **Condition** (USDA-NASS)
Click on the categories below to see the corn condition at each U.S. state on May 25th.

Very Poor	Poor	Fair	Good	Excellent

Purdue Corn Team Research Update and "Sandblasted" corn

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

Planting wrapped up last week at the Pinney Purdue Agricultural Center (PPAC) in Wanatah, IN, and the week before at the Agronomic Center for Research and Education (ACRE) in West Lafayette, so our two main Purdue Corn Team research sites are in the ground and growing. Research trial planting is still ongoing and delayed at our Northeast, Eastern, and Southeastern Indiana research locations due to continued rainfall and wet conditions.

During the week of May 16th, a significant wind and dust storm impacted many corn and soybean fields primarily in West Central portions of the state (e.g., White, Pulaski, Benton counties). Following the impacts of this storm, many corn plants in these areas were exhibiting the effects of **excessive wind and foliar damage caused by blowing soil particles or "sandblasting"** (Figures 1 and 2). Foliar damage severity was more pronounced in conventionally-tilled fields with minimal to no surface residues which can act as a "shield" from soil particle movement. Overall, fields which were no-tilled or had cover crops were noticeably less impacted by the dust storm.

Figure 1. Bending of young corn plants due to excessive winds and rainfall in West Lafayette, IN

Despite the observed foliar damage, the fortunate part is that young corn plants (e.g., V5 growth stage or younger) can withstand high levels of above-ground leaf tissue damage. Overall, when conditions like these occur, it is important to be patient and to examine plants after a few days to assess plant recovery. For example, many of the recently impacted corn fields in these areas have exhibited healthy, new leaf growth (Figure 2) a few days after the wind storm and no measurable yield loss impacts or replants are expected. In addition, "bending" corn plants due to the high winds and wet soil conditions in certain areas of the state (Figure 1) will recover and correct themselves as conditions improve and the plants continue to develop. Currently, our team has not been informed of any replanted corn occurring in these areas, but many soybean acres had to be replanted.

Ongoing Cover Crop Research

Since 2022, the Purdue Corn Team has continued research trials which examine the management of corn following a cereal rye cover crop (Figure 3).

Cereal rye is widely regarded as an excellent cover crop for Midwest cropping systems. It establishes well and produces substantial above- and below-ground biomass across diverse locations, planting timelines, and environmental conditions. In Indiana, cereal rye is often the primary cover crop option for many corn and soybean farmers due to the timing of fall cash crop harvests and prevailing environmental factors. Its robust growth and biomass production effectively support cover crop goals, such as reducing excess soil nitrate in the fall and spring, suppressing weeds, influencing soil moisture, minimizing soil erosion, and contributing organic matter to the soil

Figure 2. Young corn plant impacted by wind and sandblasting damage due to high winds in Pulaski County, IN. Photo provided by Phil Woolery, Purdue Extension.

However, despite these benefits, managing cereal rye in the spring can be challenging, particularly for farmers planting corn as the subsequent cash crop. Yield reductions in corn following rye are commonly attributed to equipment interference, causing poor seed placement, seed-to-soil contact, and emergence, and reduced nitrogen and sulfur availability and nitrogen and sulfur immobilization, caused by the high carbon-to-nitrogen ratio of rye biomass.

Recent Purdue research highlights key strategies to manage corn planted after cereal rye and many of these trials continue and are being expanded upon. Trials conducted in West Lafayette, IN, in 2024 revealed sulfur deficiencies in corn following cereal rye, which were corrected with a sidedress application of 15 lbs/acre sulfur (as ammonium thiosulfate), resulting in a 15 bu/acre yield increase. In contrast, sulfur had no effect where rye was not used as a cover crop. Additional studies at Lafayette, IN and Butlerville, IN research locations in 2022 and 2023 tested planter closing wheel options and found that cast-iron, spiked closing wheels in comparison to standard round, rubber closing wheels resulted in improved corn emergence and yield in high-residue rye systems by enhancing furrow closure and seed-to-soil contact. These results underscore the importance of proper planter settings, planter equipment, and early-season nutrient management when growing corn after cereal rye. Overall, our current best practices include applying 40-60 lbs/acre of nitrogen in a 2x2 starter band at planting, supplementing with sulfur if needed (via preplant, starter and/or sidedress applications), and splitting nitrogen applications with an in-season sidedress application at V4-V6 to align with rye decomposition and limit nitrogen immobilization. Terminating rye 2-3 weeks before planting and closely monitoring planting conditions can also help to reduce further risks. Overall, the most important item we have found is that corn management must differ and must be more precise in many cases when following cereal rye vs. when it does not follow cereal rye.

Figure 3. Corn plants growing in the research area with cover crops at ACRE, West Lafayette, IN.

Ryegrass Curveball: Don't Let This Weed Strike You Out

(Tommy Butts & Travis Legleiter (Extension Weed Scientist, University of Kentucky)

Image generated using ChatGPT

Annual ryegrass has been rearing its ugly head from a weediness perspective as of late. It has become increasingly problematic in Kentucky, quickly becoming a top 3 weed to deal with. It has also jumped the Ohio River and been steadily moving northward through multiple Indiana counties (Fig. 1). We've also received several calls and emails indicating a difficulty to terminate an annual ryegrass cover crop. As a result, we wanted to provide an update on herbicide resistance and provide some recommendations for management.

Nationally, ryegrass has been found to be resistant to six herbicide groups including Group 1 (SelectMax, Axial, etc.), Group 2 (Accent, PowerFlex, etc.), Group 9 (Glyphosate), Group 10 (Liberty), Group 15 (Define, Dual Magnum, etc.), and Group 22 (Gramoxone).

Figure 1. Annual ryegrass problems in a corn field in southern Indiana.

The majority of these resistance concerns have typically been isolated to the Southern and Pacific Northwest regions of the U.S.

However, resistance concerns have gradually been creeping northward.

In Kentucky, ryegrass has been confirmed resistant to Group 1 (Select Max, Axial Bold, etc), Group 2 (Accent, PowerFlex, etc), and Group 9 (glyphosate) herbicide groups with widespread glyphosate-resistance now occurring. Additionally, pinoxaden (Axial) failures have been more heavily reported across the Kentucky wheat growing area. In Indiana, there is not "confirmed" resistance to glyphosate and Group 2 herbicides; however, numerous failure complaints have been received on both groups, and it is highly likely that there are multiple occurrences, particularly in southern Indiana.

In addition to herbicide resistance, other attributes may be contributing to herbicide failures, including: improper application setup, late timings, and possibly some overloaded "hot" tank-mixtures causing antagonism issues. Ryegrass is difficult to control to begin with, and each of these things add up to increase the likelihood of a failure occurring. **The little things matter for successfully managing ryegrass.**

As a result of these challenges, here are a few of the management efforts we'd recommend to getting a handle on any ryegrass problems you may be having. On the plus side with ryegrass, previous research has shown that if we can eliminate seed production from any ryegrass plants for 2-3 years, we can effectively reduce the population in the field by 90%+.

- ✓ **Use crop rotation**, particularly to soybean. This allows for some alternative herbicides to be used such as clethodim (SelectMax).

- ✓ **Start clean**: Make sure to eliminate ryegrass prior to planting. Clethodim (SelectMax) at a minimum of 16 fl oz/ac (8 fl oz/ac of a 2 lb product) can be an option prior to planting soybean; however, it is a challenge prior to corn due to the plant-back restriction. Additionally, even at these higher rates, clethodim tends to be rather slow when applied during cold periods and can allow ryegrass escapes or the need for a second application. Gramoxone can also be effective at controlling ryegrass, but it frequently takes two applications, and we would recommend adding metribuzin or atrazine to the tank-mixture as they will heat up the Gramoxone making it more effective.
- ✓ **Once corn is up, it becomes extremely challenging to manage ryegrass, and there are minimal options.** Group 2 herbicides such as Accent Q or Steadfast Q may work, but in our experiences, it may be a 50/50 chance. Enlist corn may also be an option where we would have the option to use quizalofop (Assure II); however, there are some concerns in heavy wheat growing areas where we've had Hoelon (diclofop) resistance for years that this may confer cross-resistance to quizalofop as well. **The "best" recommendation we currently have in this situation is to plant corn with the LibertyLink trait, and add at least one application of glufosinate (Liberty)** to help beat back the ryegrass in-season.
- ✓ **Use an alternative fall-planted cover crop like cereal rye.** Research has shown than cereal rye is highly competitive and can significantly hinder annual ryegrass growth and seed production, while still remaining easier to terminate in the spring prior to planting the cash crop.
- ✓ **Consider the use of fall-applied residual herbicides.** Herbicides such as Dual Magnum or Zidua have fall application options on their label, and provide effective residual control of annual ryegrass often into the spring months (Fig. 2). Command (clomazone) can also be applied in the fall, and has very good ryegrass control; however, you must plant soybean the following spring as there is a 9-month plant-back interval to corn.
- ✓ **On highly erodible fields, consider a combination of a fall-applied residual and cereal rye cover crop** to reduce soil erosion and provide two effective management tactics against ryegrass.

Although these options are not easy, they are effective. And as we stated previously, if we can get ahead of ryegrass seed production, it only takes 2 to 3 years to drastically reduce the soil seedbank and future problems. If you have any problems, questions, or would like to report an area with ryegrass concerns, please don't hesitate to contact us or your local Extension Educator. **Good luck out there!**

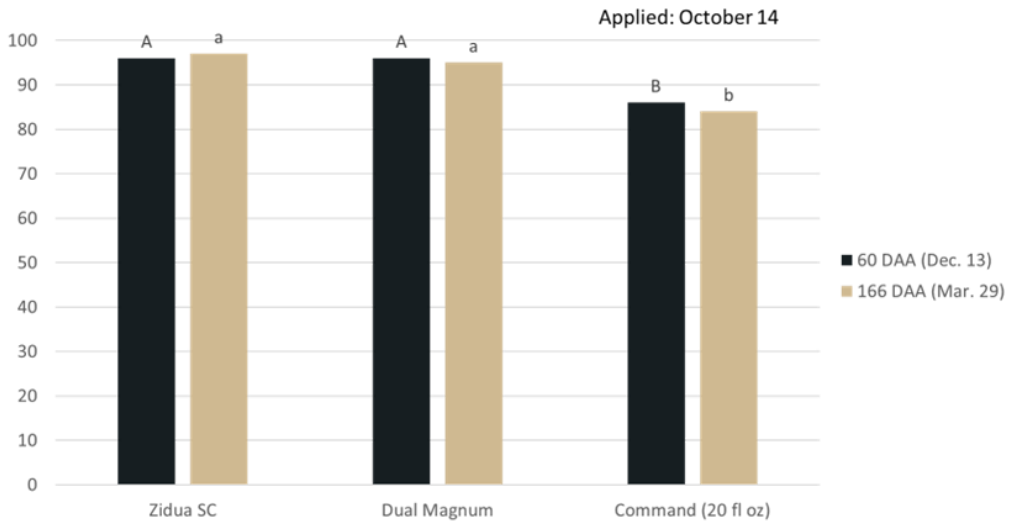

Figure 2. Residual control of annual ryegrass from fall applications of Zidua SC (3.75 fl oz/ac), Dual Magnum (1.33 pt/ac), and Command (20 fl oz/ac) herbicides.

🌾 From Cold Stress to Nutrient Mess: What's Behind the Yellow Striping?

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

White scouting some of our earliest planted corn at our West Lafayette, IN research location, interveinal chlorosis (yellow striping; Figure 1) in a band across most of the leaves of different hybrids was noticed for corn planted on April 16th, which was at the V3 growth stage. When examining the recent conditions, prior to the observation of these symptoms, the fields at ACRE in West Lafayette, IN, had not received a lot of rainfall, but had experienced recent cool and cloudy conditions, with some cool days and 40°F nighttime lows.

Figure 1. Interveinal yellow striping of corn.

What could be the cause of the yellow striping in young corn? One of the first nutrients that came to mind was zinc due to the band of yellow striping across the leaf with green leaf tips. What is zinc's role in the corn plant? Zinc plays a key role in carbohydrate, protein, and chlorophyll production in corn. When deficient, growth can be stunted, and nodes can stack. Where is zinc deficiency most found? While zinc deficiency symptoms can be observed in all soils under cool, wet, and cloudy conditions, they are often found in soils with high pH, very high phosphorus levels, and sandy, low-organic-matter soils, particularly when no zinc amendments have been applied.

Figure 2. Corn with sulfur deficiency

Are there other nutrients that show interveinal chlorosis or yellow striping? There sure are! One we often see early in the season is sulfur deficiency. Sulfur deficiency can be noticed by interveinal chlorosis across the length of the leaf and is primarily observed in the younger and most recently emerged leaves (Figure 2). In addition, plants can turn yellow or pale green. In sandy soils, the yellowing can be more neon in color. What is sulfur's role in the plant? It is a key nutrient involved with amino acid and protein synthesis. It works hand-in-hand with nitrogen. Where is sulfur deficiency most found? We typically associate sulfur deficiency with sandy and low-organic-matter silt loam soils; however, it can also occur in all soil types, especially when corn is planted early and the weather

has been cool or cool and wet. In cool or cold soils, the rate of sulfur mineralization is slowed, allowing deficiency symptoms to appear. In addition to both Zn and S deficiency symptoms, both magnesium (Mg) and manganese (Mn) can show similar yellow striping. In Indiana, Mn-deficient soils are primarily found in northwest Indiana on soils with high organic matter levels (e.g., muck soils) and those with high pH levels. Mg deficiency symptoms are often rarely observed in the state, but can be more of a problem in sandy soils in southern Indiana, where lime sources are mostly calcium-based.

So, is it Zn or S deficiency? The first time I looked at this corn, I thought it was zinc. However, there were no dark green leaf margins. I checked the field just a short week after a return to warmer conditions. The deficiency symptoms had progressed. The interveinal chlorosis persisted, and the entire plant was a light green. I could now see it was more definitely sulfur deficiency versus zinc. Of course, it could have been a little of both. However, sending a tissue sample to a reputable lab for analysis, if in doubt, will confirm the deficiency.

Will May's Mixed Precipitation and Temperatures Persist into June?

(Austin Pearson)

Precipitation in May has varied tremendously, but most of the state has generally been on the dry side. Areas from Vermillion and Parke Counties to Lake Michigan have received between 25% and 75% of the normal precipitation through May 27 (Figure 1). Conditions were dry enough that thunderstorm winds on May 16 prompted the National Weather Service Chicago Office to issue rare dust storm warnings for Benton, Newton, Jasper, Lake, and Porter Counties. Farmers in these counties were further ahead due to the drier conditions, which exposed emerged soybeans to severe damage and led to widespread replanting decisions. Southern Indiana also faces challenges due to the limited planting windows. The USDA National Agricultural Statistics Service Indiana Crop Weather Report on May 27 indicated that 76% of corn and 71% of soybeans have been planted, both nearly on schedule despite the challenges.

Abnormally dry (D0) and moderate drought (D1) conditions are once again expanding across northern Indiana due to both short and long-term precipitation deficits. According to the US Drought Monitor on April 29, 2025, over 14% of the state was under D0 conditions. By May 27, 2025, the map reported that just over 32% of the state was experiencing either D0 or D1 conditions (Figure 2).

Temperatures have been near or slightly below normal throughout the state, with the average for the state being 0.5°F below normal for the first 27 days of the month. In last week's article, we discussed various GDD products and noted that these are purely temperature-driven. As a result, Modified Growing Degree Days since May 1 are between 20 and 40 units below normal (Figure 3).

What can we expect for June? The Climate Prediction Center outlook indicates near-normal precipitation and above-normal temperatures for the first week of June (Figure 4). This trend of increased chances for above-normal rainfall and temperatures is likely to persist into the second week (Figure 5). Overall, CPC products indicate that the western half of the state is expected to experience above-normal temperatures, with equal chances for precipitation. In contrast, the eastern half is expected to see above-normal rainfall.

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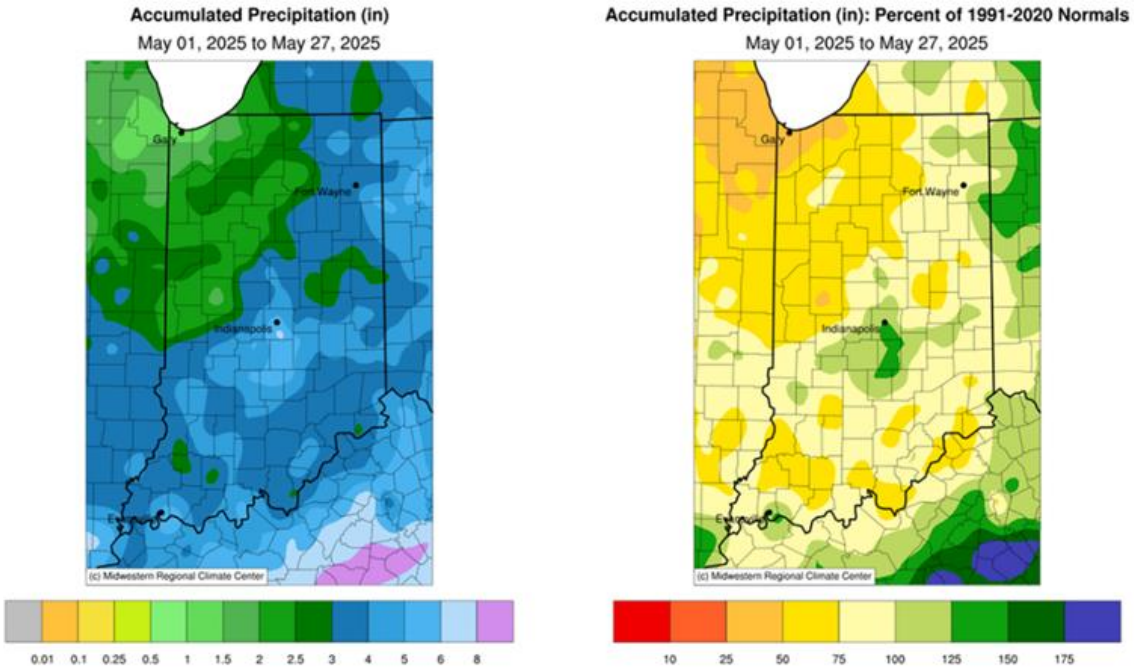

Figure 1. Left - May 1-27, 2025, accumulated precipitation represented as the departure from the 1991-2020 climatological normal. Right - May 1-27, 2025, accumulated precipitation represented as the percent of the 1991-2020 climatological normal.

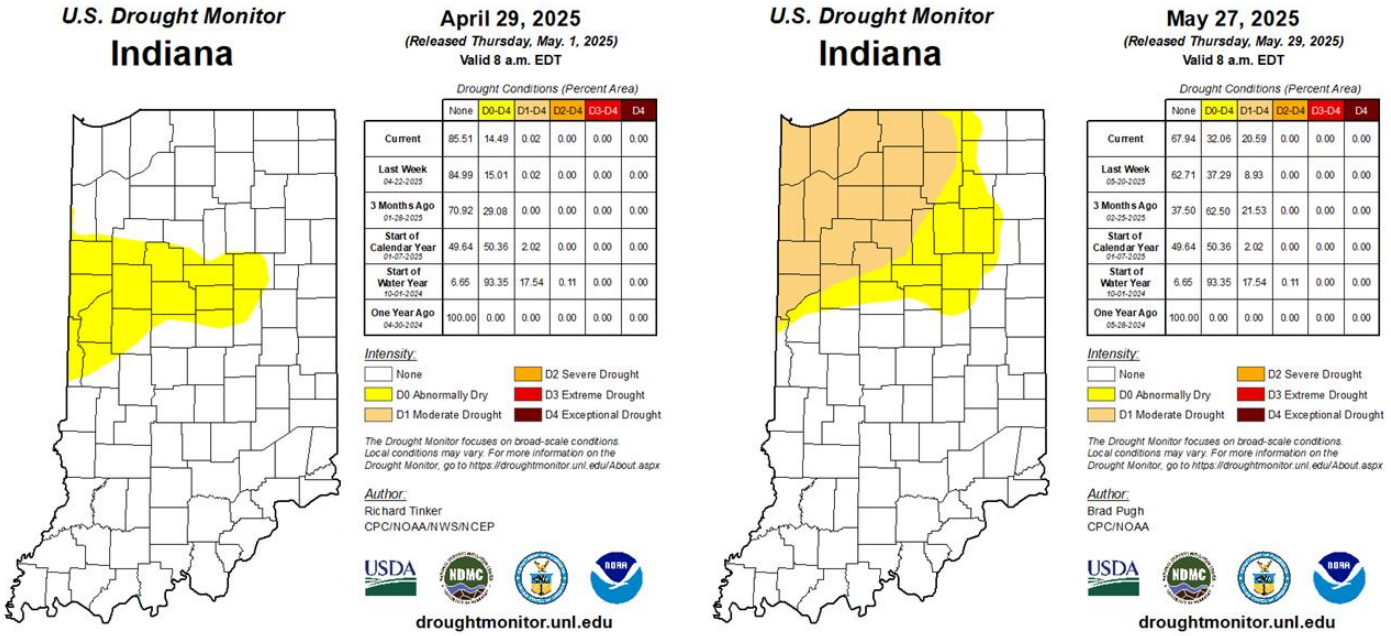

Figure 2. Left - April 29, 2025, US Drought Monitor Map. Right - May 27, 2025, US Drought Monitor Map.

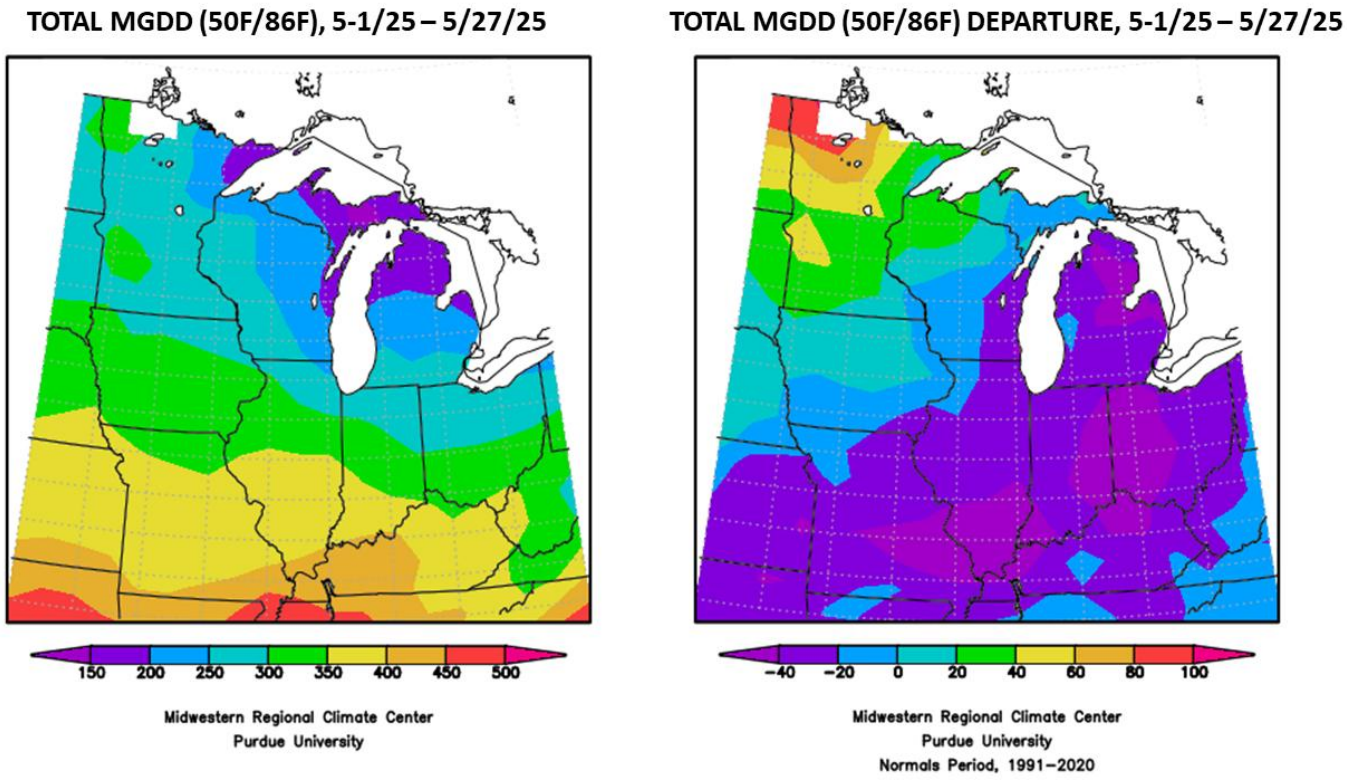

Figure 3. Left – Total MGDD (50°F/86°F) accumulation for May 1-27, 2025. Right – Total MGDD (50°F/86°F) accumulation displayed as the departure from the 1991-2020 climatological normal.

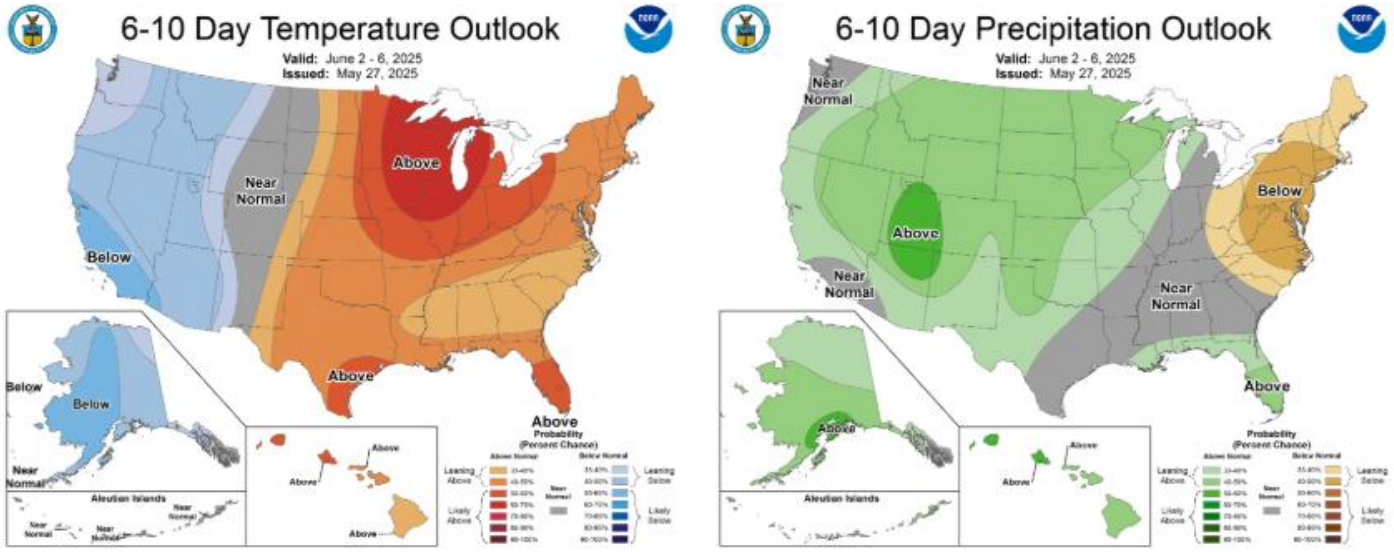

Figure 2. CPC 6-10 Day temperature and precipitation outlook maps, valid June 2-6, 2025.

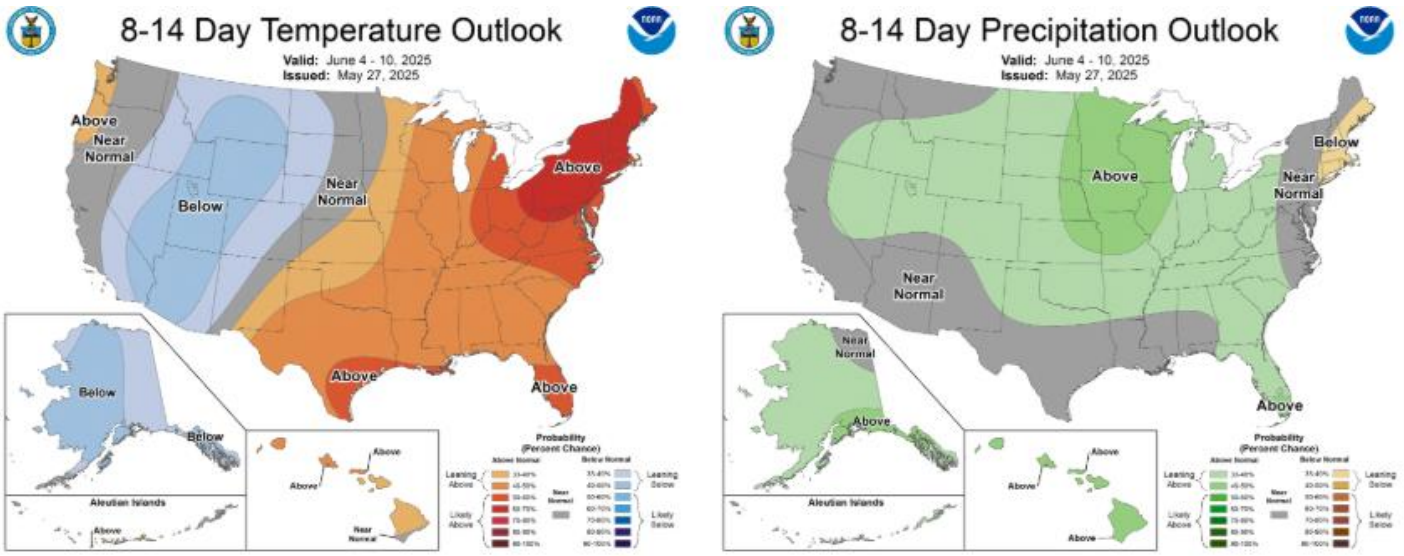

Figure 3. CPC 8-14 Day temperature and precipitation outlooks, valid June 4-10, 2025.

Acknowledgments

The authors greatly appreciate the feedback and contributions of all growers, county agents, consultants, and corn industry stakeholders.

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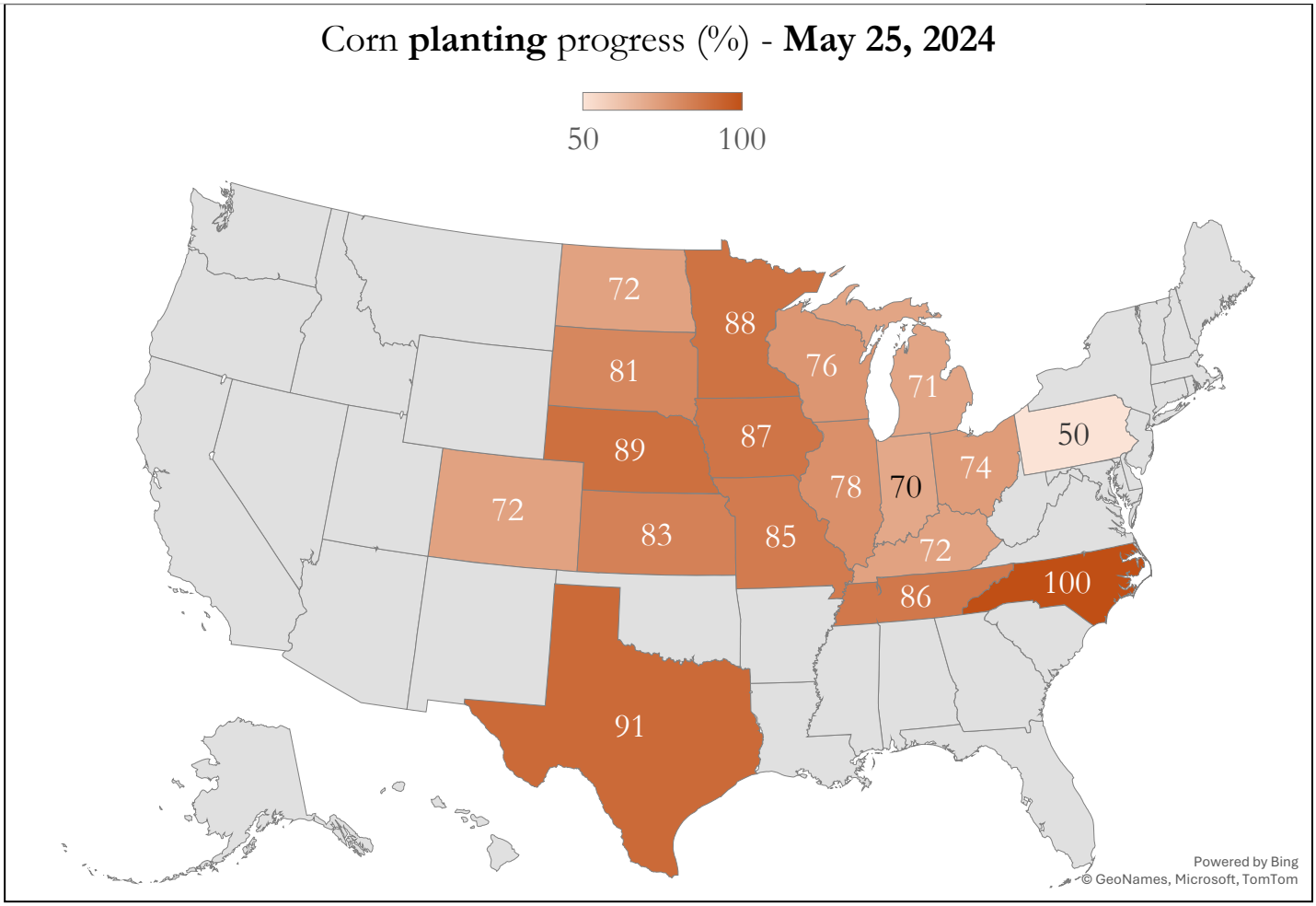

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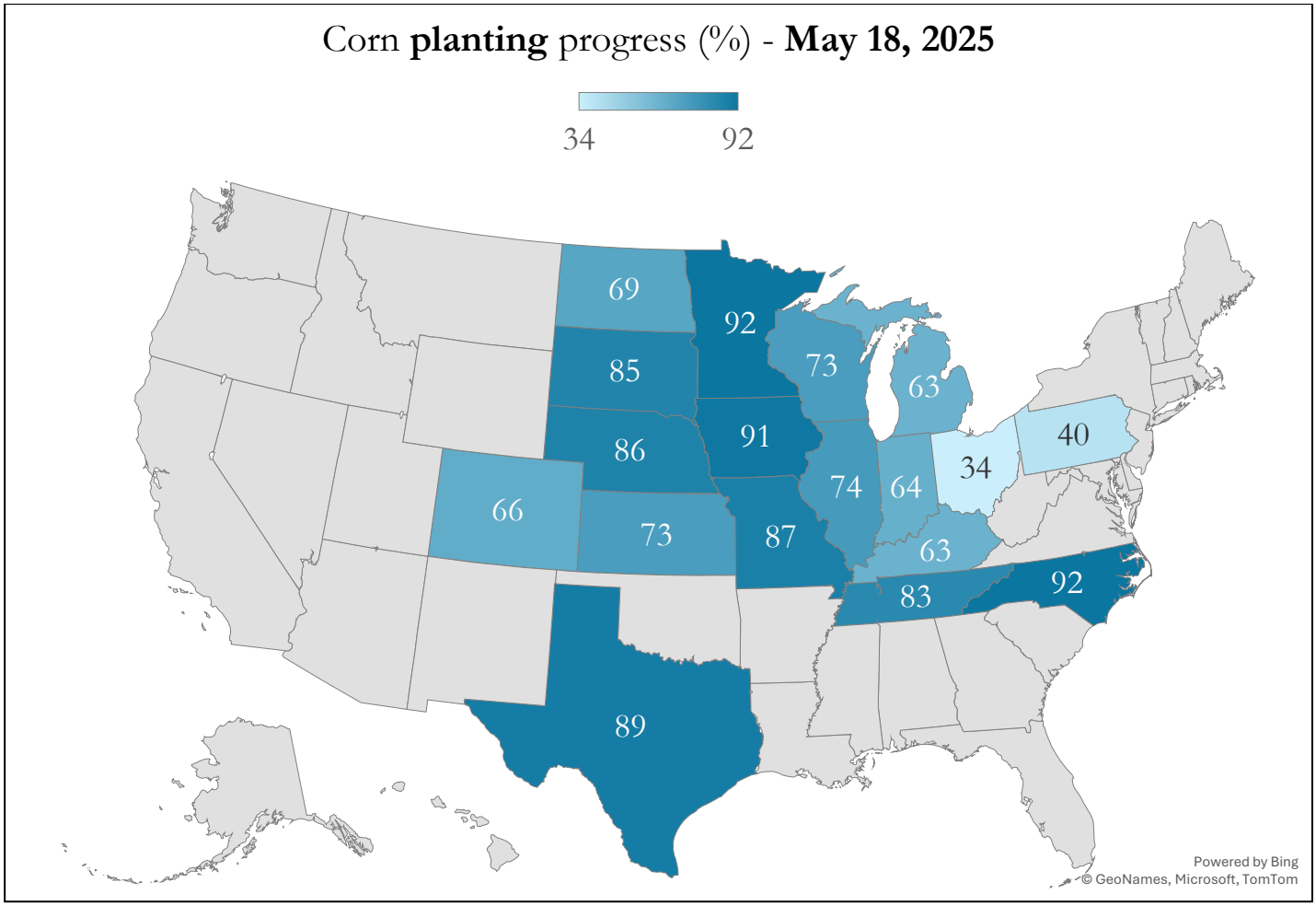

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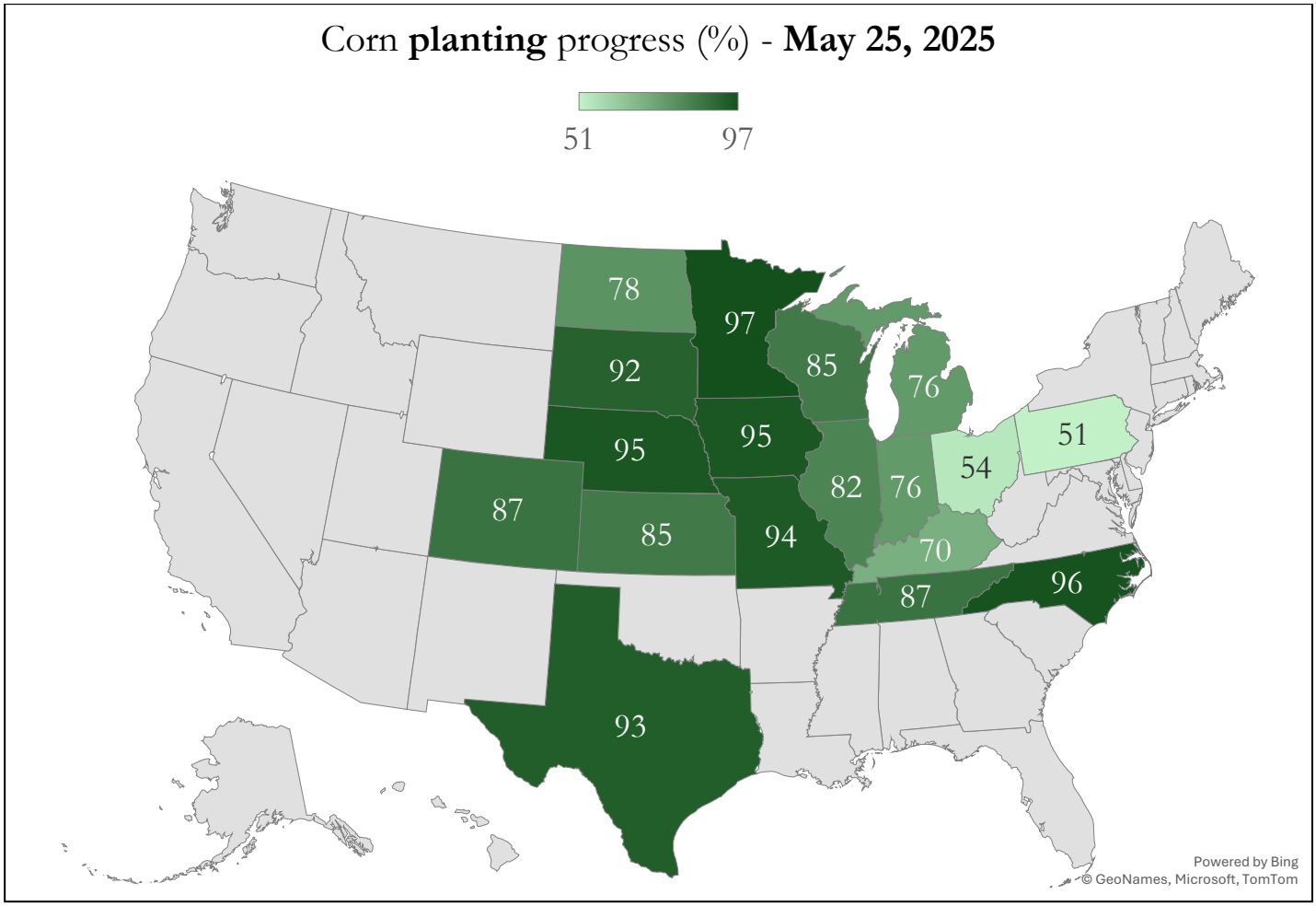

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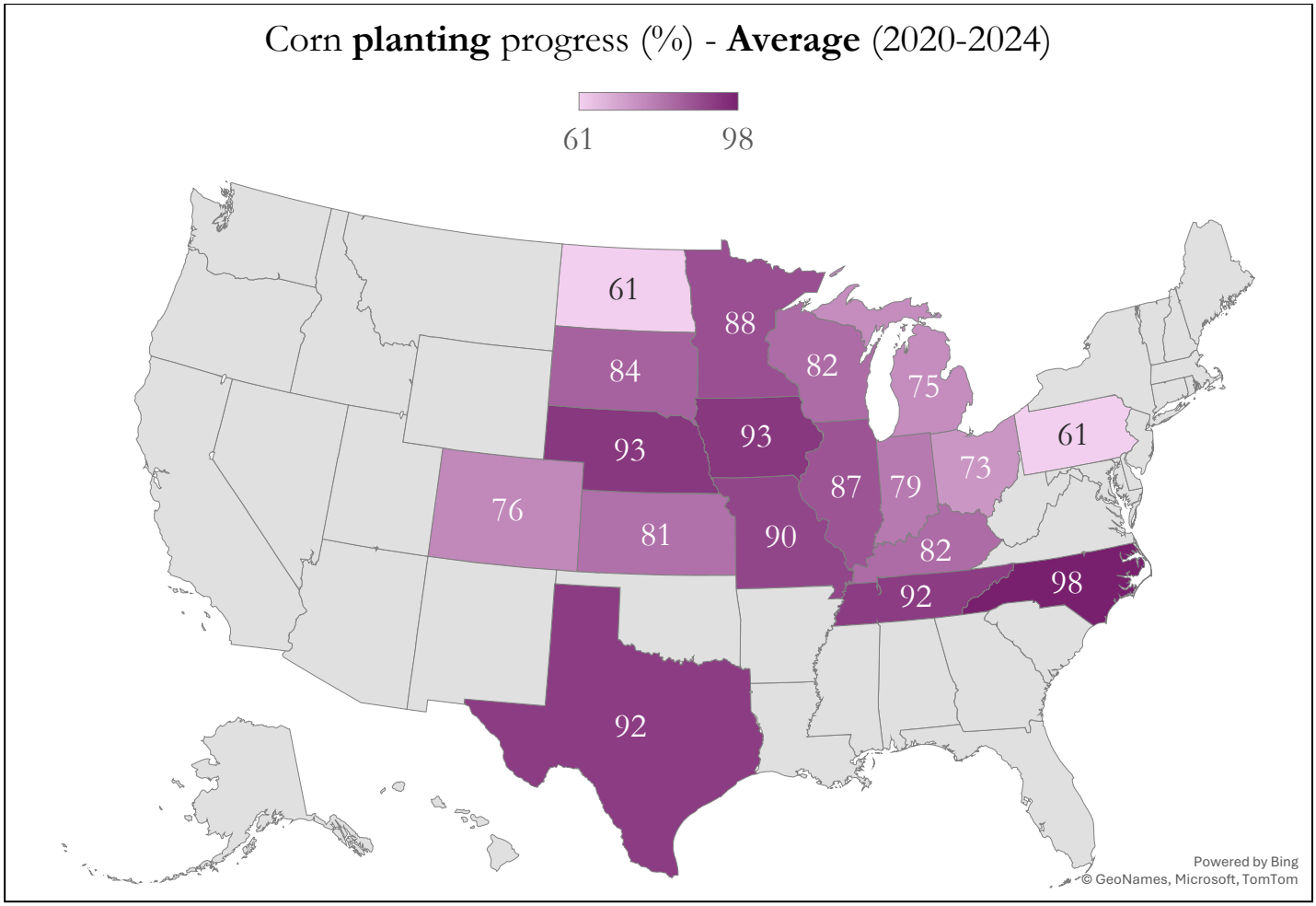

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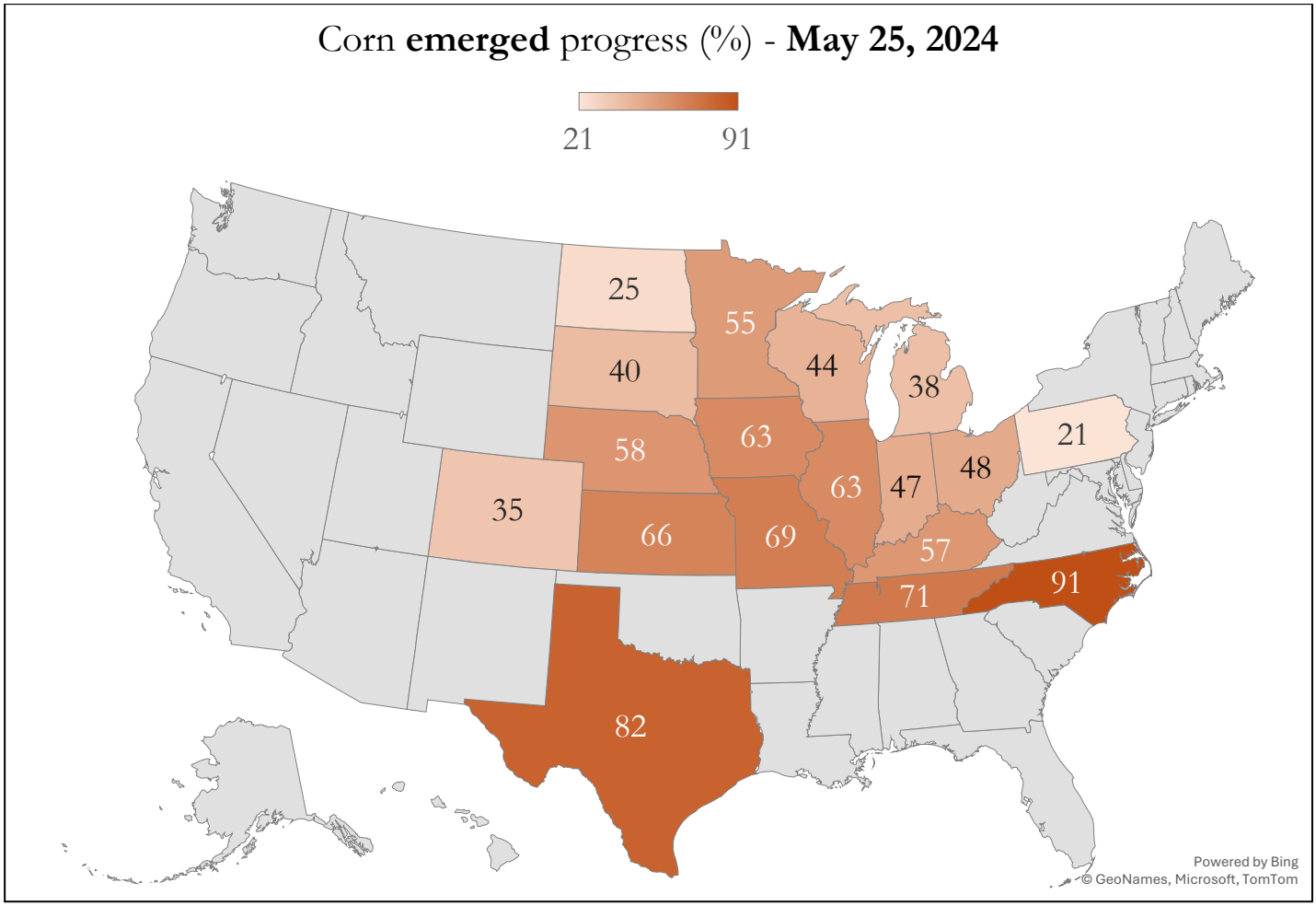

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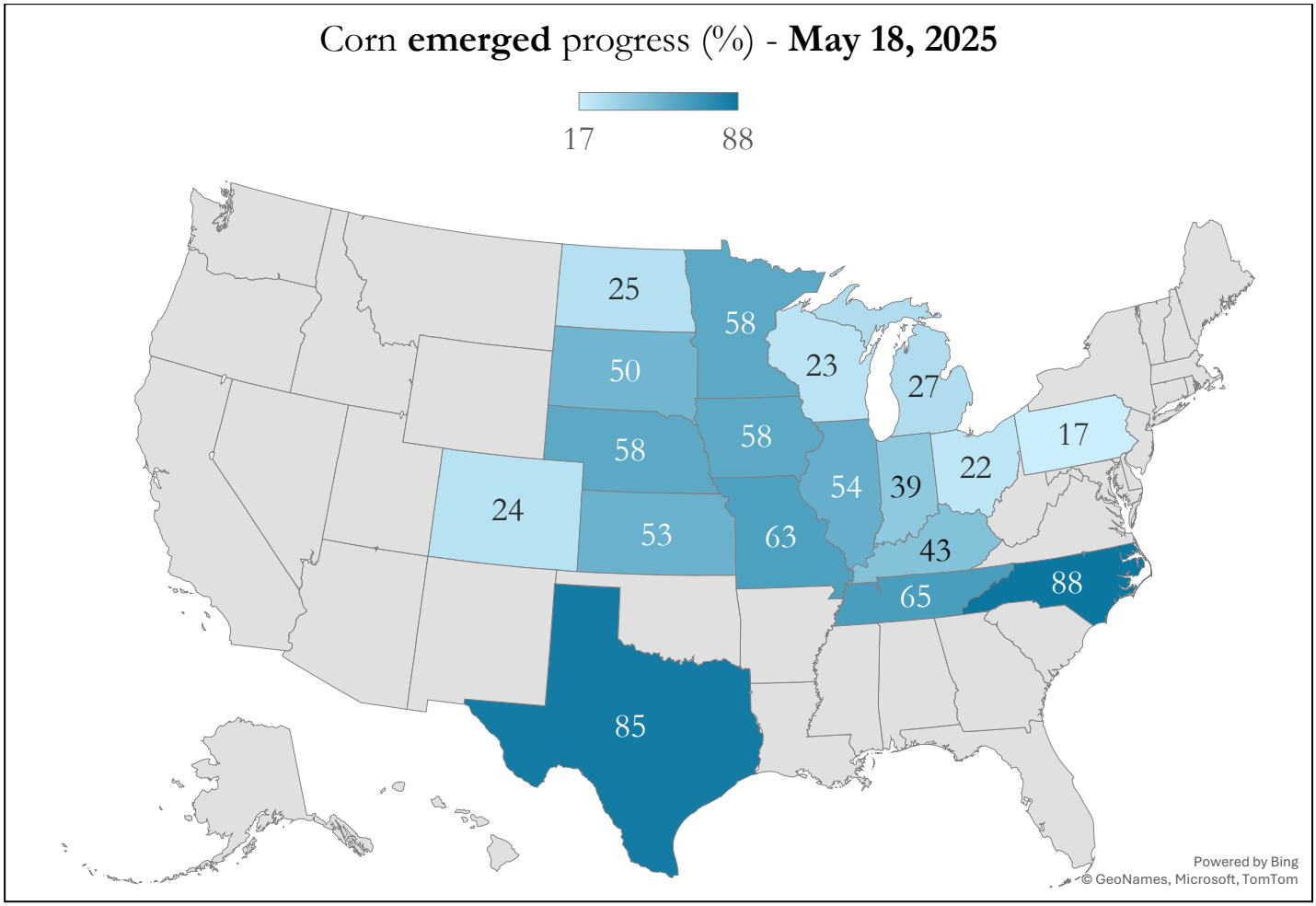

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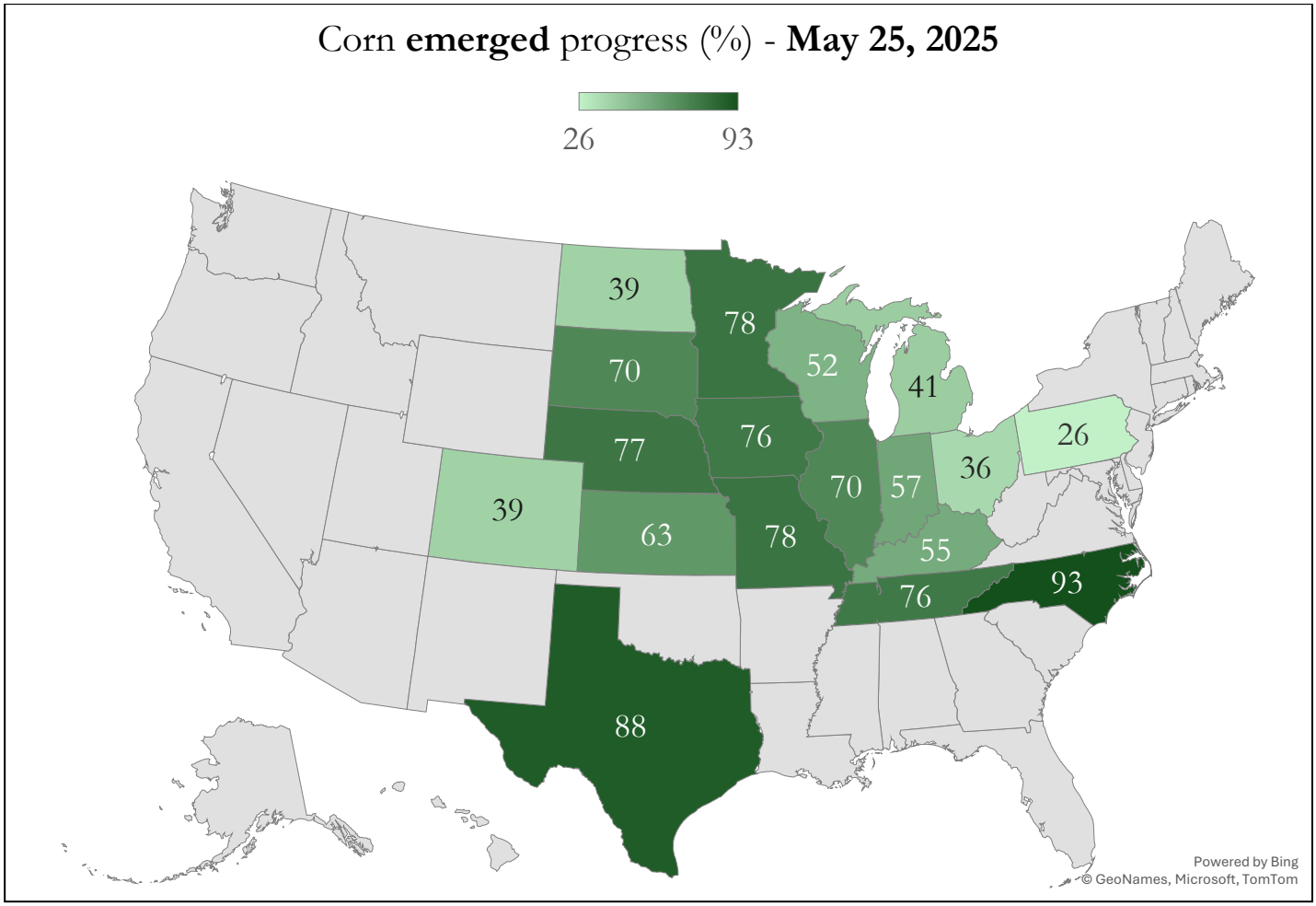

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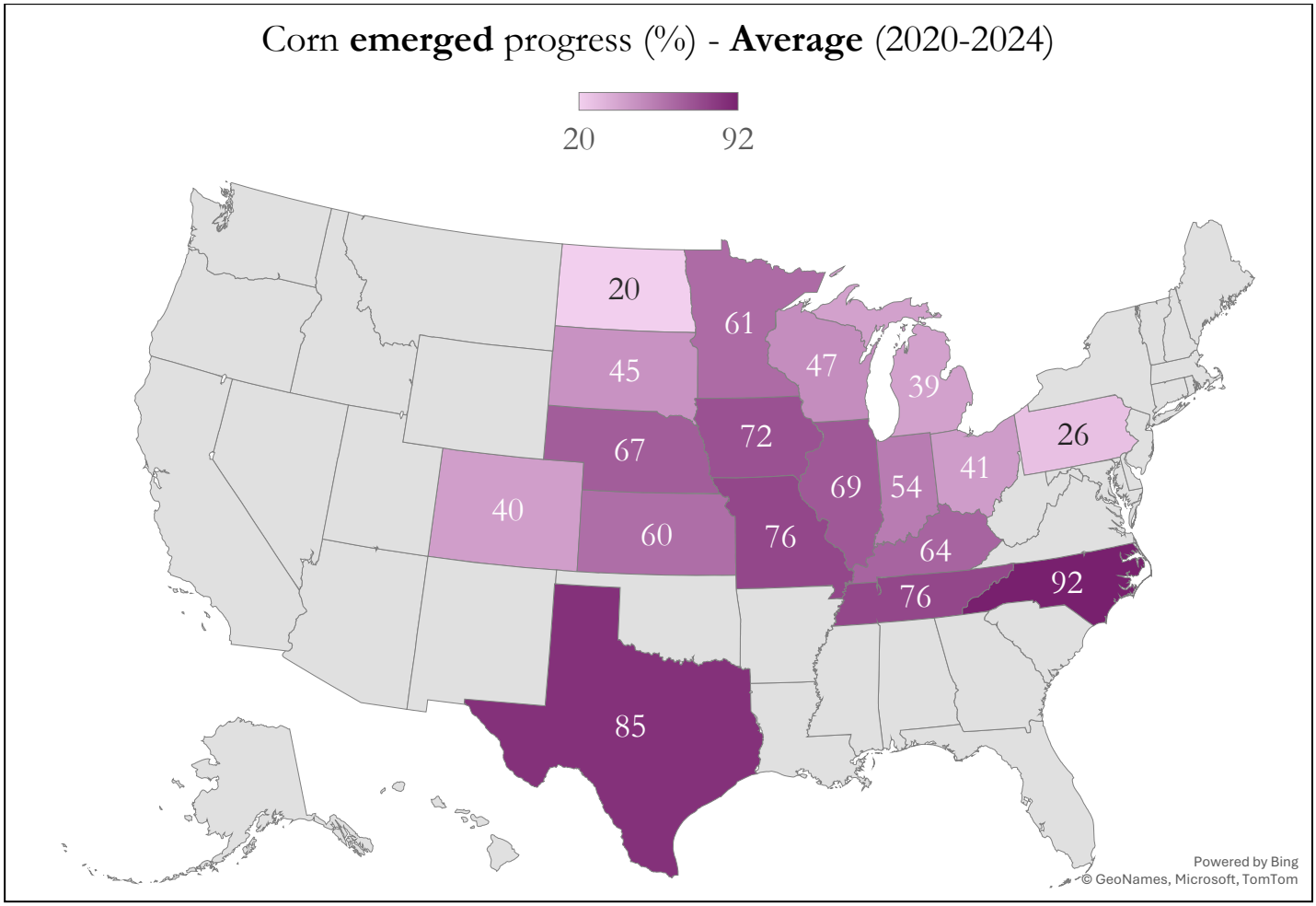

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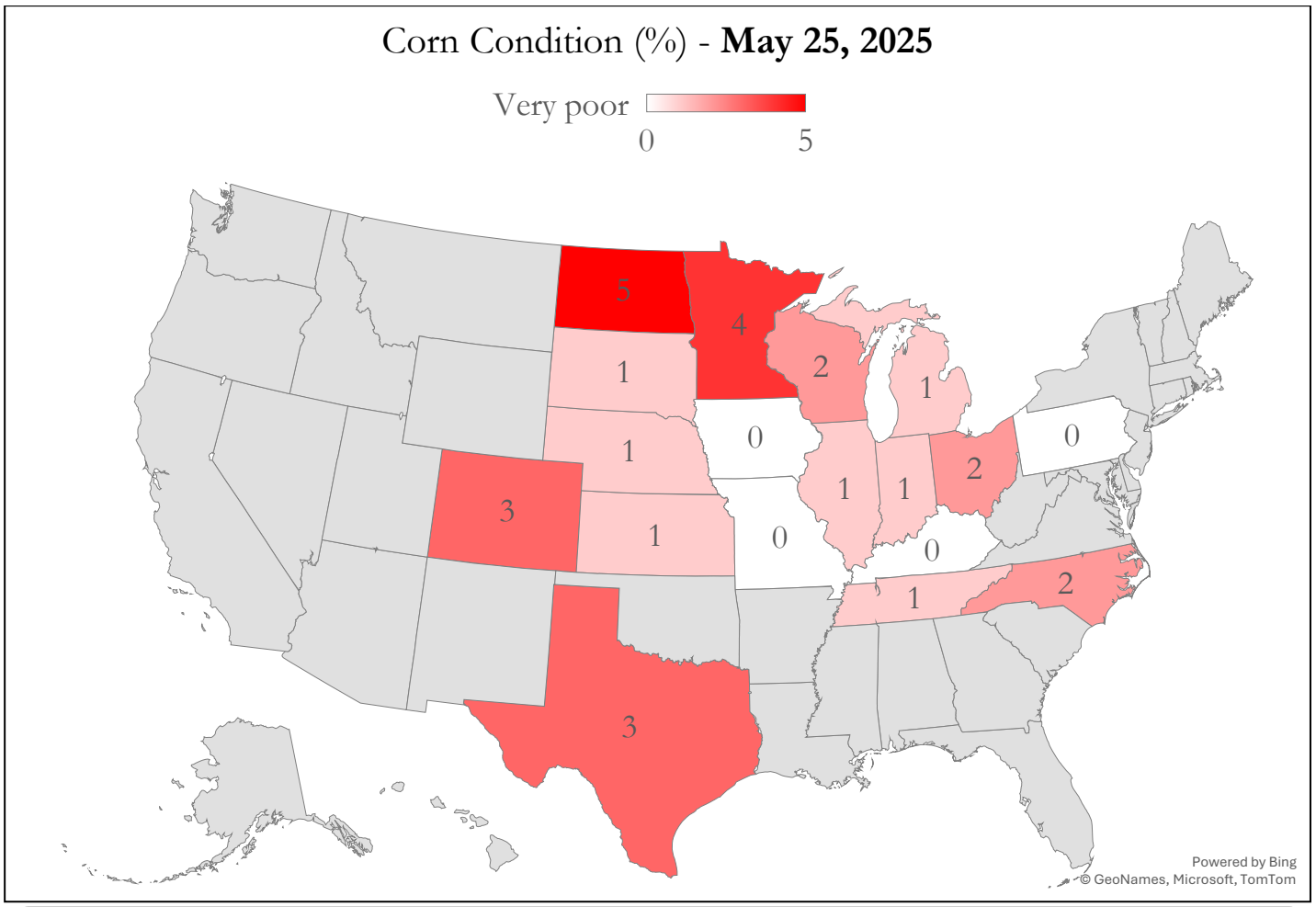

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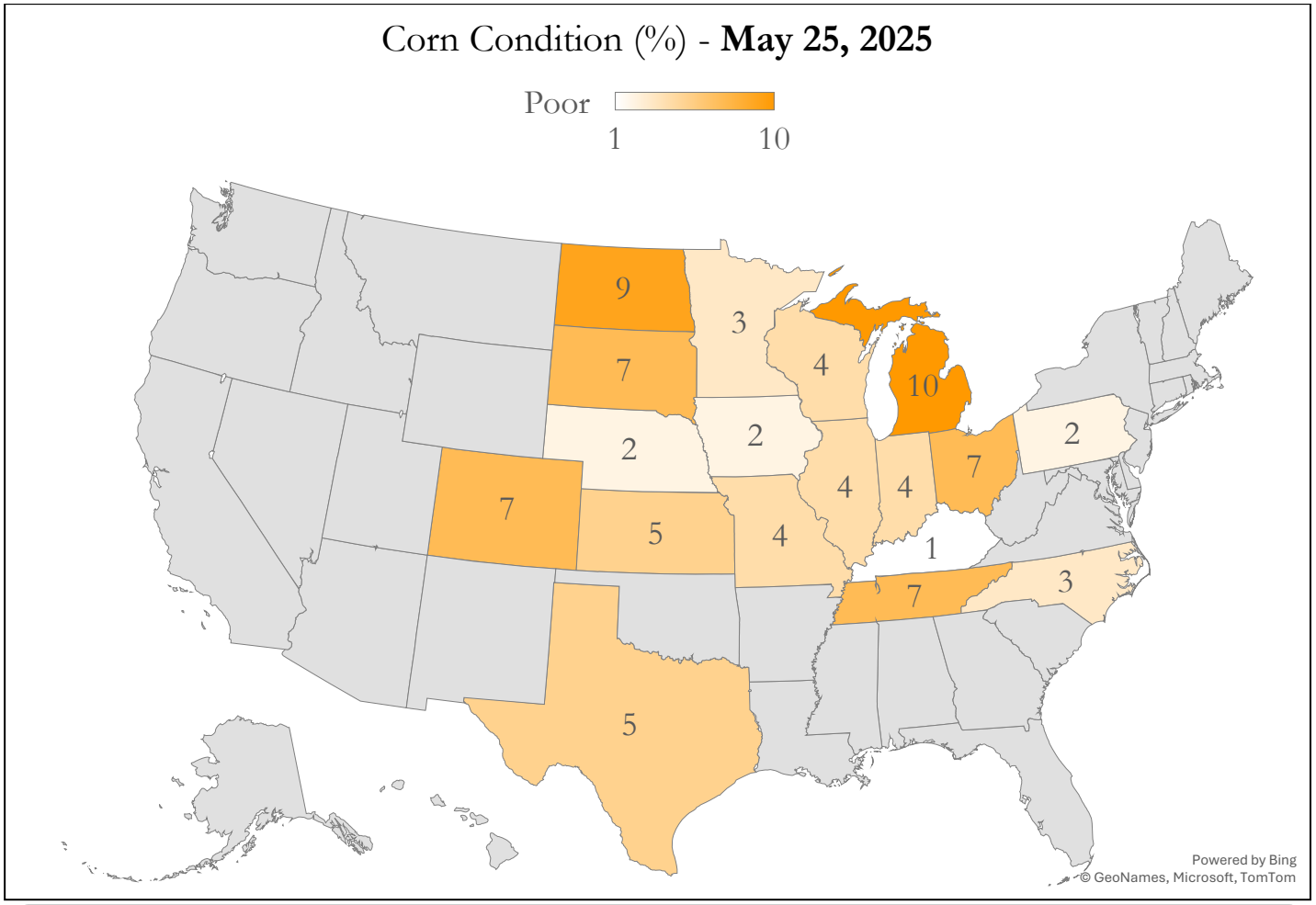

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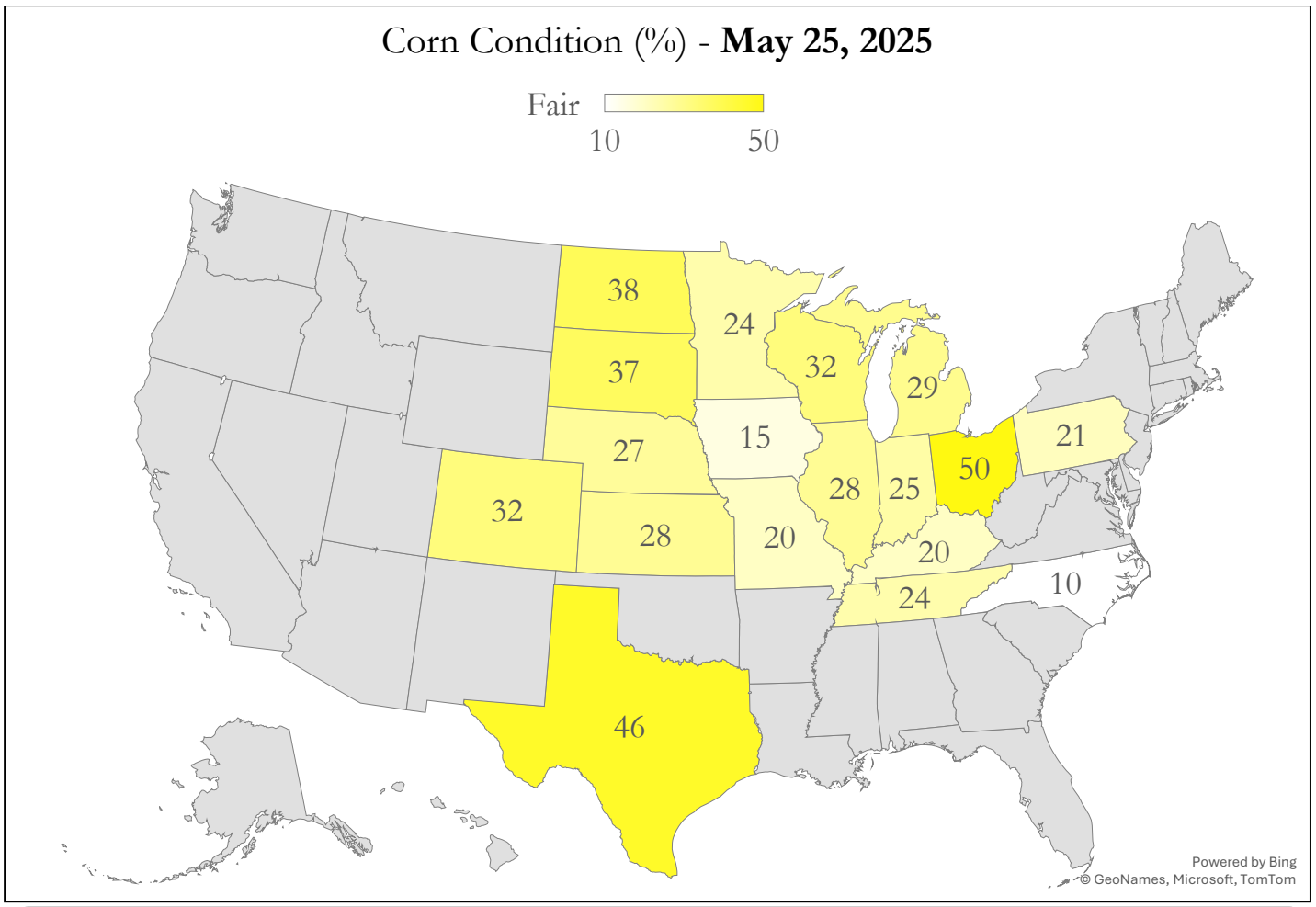

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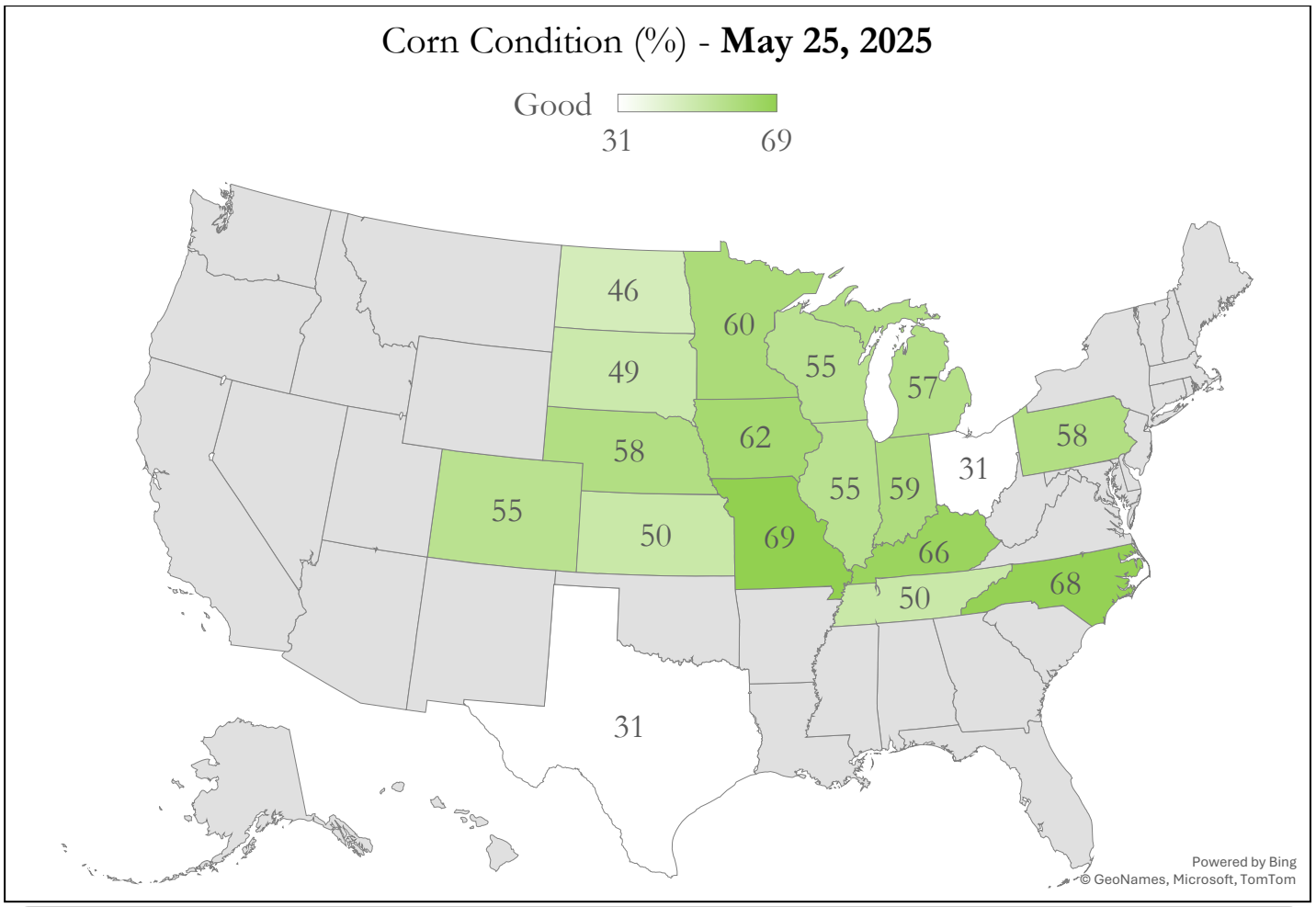

Interactive Maps 3. U.S. Corn **Condition** (USDA-NASS)

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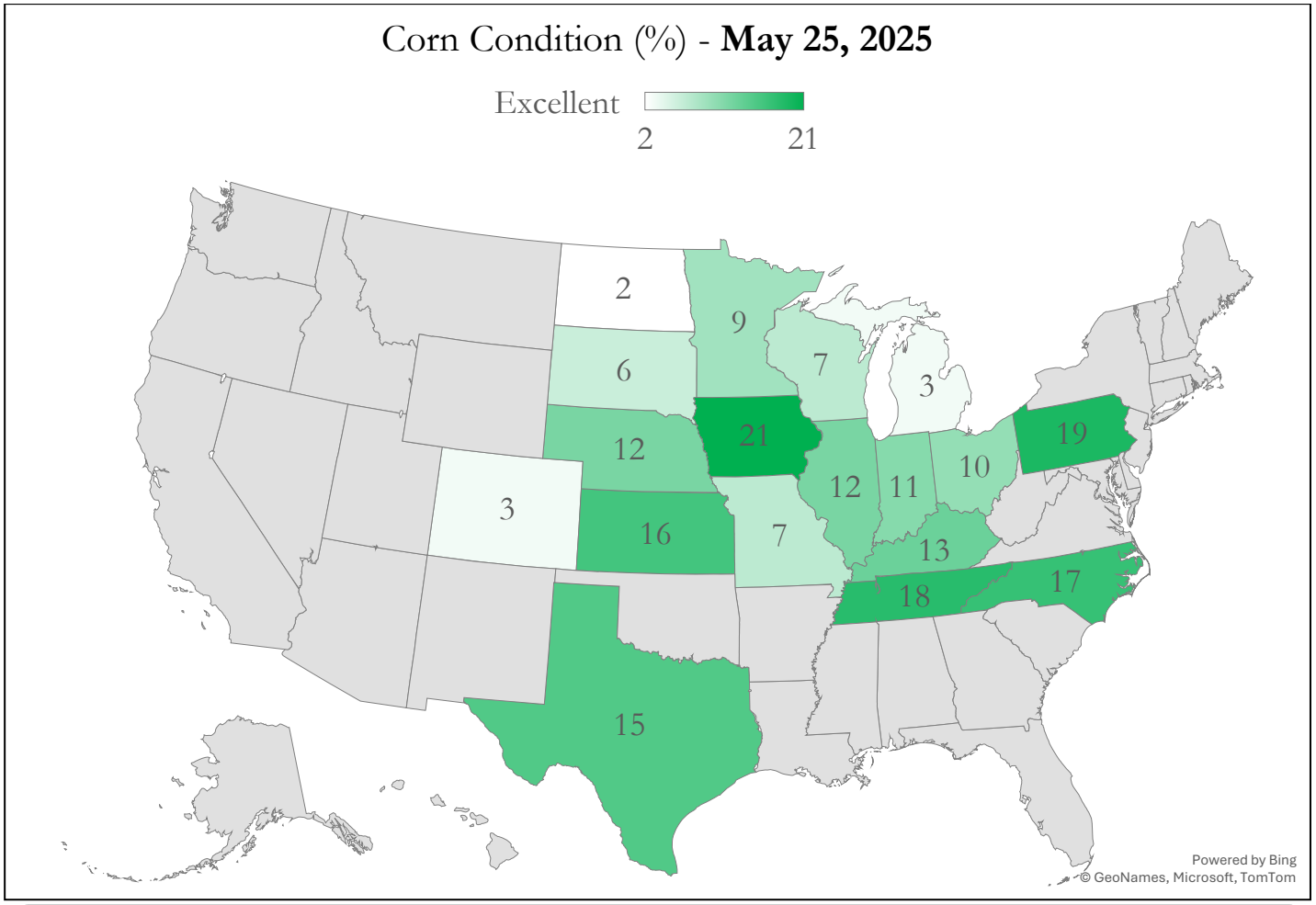

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