

## Upcoming Dates

### March 23rd

KMMO Ag Day (visit  
KMMO.com for more info)

### April 1st

Crop Insurance Earliest  
Planting Date for Corn

### April 15th

Crop Insurance Earliest  
Planting Date for Soybeans

### September 30th

Deadline to spend TruChoice  
chemical prepay funds



## In this issue:

Spring Updates **P.1**

Corn Nematode—An Overlooked Pest **P.2**

Effects of Seed Orientation at Planting **P.3**

Local Wheat Crop Update **P.4**

Effects of Seed Orientation at Planting  
(continued from Page 3) **P.4**

## SPRING UPDATES

It's that time of year again! Spring is here, and we have a few updates and reminders to share.

**PMZ DRY & MOLY DRY UPDATE** | For those who have used Rocket Seeds PMZ Dry on corn and Moly Dry on soybeans as a talc/graphite replacer, we have these products available and in stock. These products were recently purchased by Koch Agronomic Services, and have been repackaged and renamed under Koch's Protivate Seed Enhancer offerings. Please see new names below:

⇒ **PMZ Dry** is now **NU4-DRI** (used for corn)

⇒ **Moly Dry** is now **NU5-DRI** (used for soybeans).

Let us know if you're still needing either of these products before you begin planting. We can deliver the NU4-DRI to your farm when we deliver your corn seed. If you have any questions about the new product names and packages, please give us a call.

**IN-SEASON SUPPLY & PRICING** | For those who prepaid for corn and soybeans in December or February, remember that one of the benefits of pre-paying is getting that same discount for ANY in-season seed. For example, if you prepaid for 24 bags in December, but need 3 more bags to finish up this spring, those 3 bags will be priced the same as your first 24.

**TRUCHOICE FUNDING EXTENDED** | There has been a recent change to the TruChoice funding. In previous years, you had to have your TruChoice Crop Protection Account 100% funded by February to receive the 10% or 15% savings on your money. However, TruChoice leadership has recently made a change to allow these discount savings on any funds added in-season, as long as you had the minimum \$5,000 funded in your account by February 24th. Meaning, anyone who funded their TruChoice accounts by February 24th, can add money in-season and still realize the 10% or 15% savings on those extra dollars. This will provide more savings opportunities and added flexibility for in-season decisions, especially for products like fungicide and UtrishaN. If you have any questions about this or want to add more money to your account, feel free to give us a call.

**DELIVERIES** | We are currently sorting corn in prep to begin making deliveries. We will be contacting each of you over the next couple of weeks to schedule a time to deliver your corn. Remember that not everyone will be able to get their seed the day before planting, so if you can make room in your shed for it now it would be greatly appreciated.

**SWEET CORN** | We do have sweet corn available again this year. We will have some with us during deliveries and some in stock at our office. This year we are offering Incredible and Ambrosia (both are conventional varieties).

**TURF PRODUCTS & SPRING FORAGES** | We have Kentucky 31, lawn seed, lawn fertilizer, Crabgrass Preventer, & Weed 'n Feed in stock. We can also get spring forages & pasture mixes for those who still need to seed products this spring.

**A NEW ADDITION TO THE FAMILY** | We're excited to be welcoming another baby to the family in August this year. Kendall and Mason are excited for the new addition!



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## PRODUCT SPOTLIGHT

### P1170AM

P1170AM is a new 111 day versatile corn hybrid suitable for your productive soil types. When comparing it to P1197AM, it has similar agronomics, but offers more drought tolerance combined with more yield potential.

### P40A23E

P40A23E is a group 4.0 maturity A-Series Enlist soybean. It works well in above average yield environments, but we want to avoid placing it in a creek bottom.

#### What are Corn Nematodes?

Corn Nematodes are colorless roundworms that live below ground. They may be overlooked as a pest in corn due to their small size and non-distinctive damage symptoms, but they can cause yield loss by damaging corn roots. Some studies have shown yield loss ranging from 2 to 10 bu/ac, depending on the nematode species and pressure. Recent farming trends may be increasing nematode numbers as well as their economic impact in corn. Reduced tillage is known to favor some nematode species, in addition to corn following corn crop rotations.

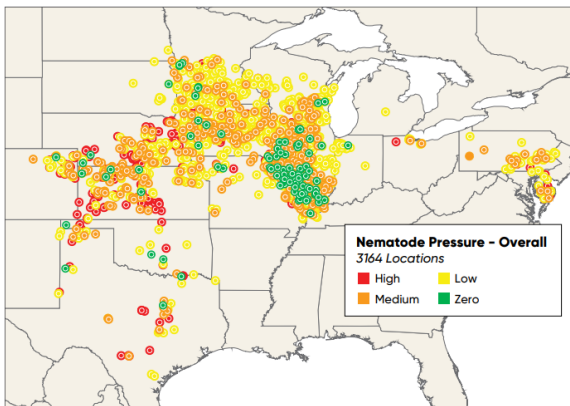
Nematode damage can occur throughout the growing season, but corn is most vulnerable during the early-season crop establishment. Visual symptoms usually show up as “hot spots” in the field. Plants may appear to be moisture-stressed, stunted and chlorotic, or exhibit less-extreme signs of poor plant growth. Symptoms are often mistaken for another problem, such as low fertility, soil compaction, weather stress, or insect damage. **Figure 1** below shows a stunted corn plant from corn nematode.



**Figure 1.** Stunted growth of the corn plant on the left due to corn nematode pressure. Above ground symptoms of nematodes are often non-descript and resemble low fertility, weather stress, or insect and disease pressure.

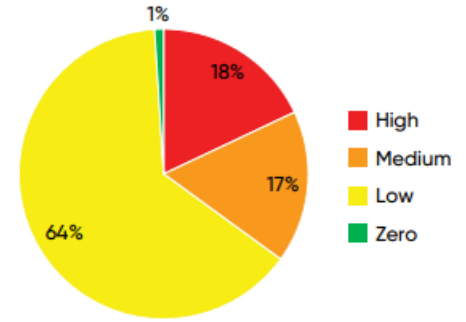
#### Corn Belt Nematode Populations

Pioneer agronomists, territory managers, and sales reps collected corn nematode samples across the U.S. corn belt from 2019 to 2022 (shown in **Figure 2**.) A total of 3,164 samples were collected. Samples were taken at approximately V6 growth stage, and samples were taken within and between the corn row. Of all samples collected from 2019 to 2022, 35% showed medium to high levels of nematode pressure.



**Figure 2.** Corn nematode pressure at sites sampled in 2019, 2020, 2021, and 2022

You’ll see the green dots on the previous map indicating “zero” levels of nematode pressure. These samples were primarily found in Illinois. However, when looking at 2022 samples alone, 99% of the samples collected across the entire corn belt showed nematodes were present (shown in **Figure 3**).



**Figure 3.** Corn nematode pressure at sites sampled in 2022

#### What can you do to manage Corn Nematodes?

The first step is learning the corn nematode pressure on your farm. If damaging levels of corn nematodes are found, implement control measures such as rotating to soybeans or another crop, and use nematicide seed treatment on your corn seed.

## Lumialza™

### NEMATICIDE SEED TREATMENT

In 2022, Pioneer launched the addition of Lumialza nematicide to its standard corn seed treatment package.

- Lumialza is a biological nematicide product that contains the active ingredient *Bacillus amyloliquescens*—Strain PTA-4838 (a naturally occurring soil bacterium).
- It has activity against all primary corn nematode species.
- It forms a bio-barrier around the corn roots, and grows with the root system, providing 80 days of protection.



No nematicide

Lumialza™ nematicide seed treatment



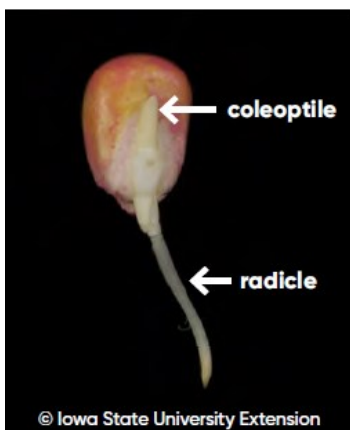
**Figure 4.** Corn root masses treated with no nematicide vs. treated with Lumialza nematicide.

# EFFECTS OF SEED ORIENTATION AT PLANTING ON CORN GROWTH

Does seed orientation matter? Agronomists and producers have long been interested in the potential to improve corn growth and yield by controlling the orientation of the corn seed in the furrow at planting. The reason that seed orientation could potentially influence corn growth is because of how the initial growth from the germinating seed occurs, show in **Figure 1** below.

- The radicle root emerges near the tip of the kernel
- The coleoptile emerges from the embryo (germ) side of the kernel and elongates in the opposite direction toward the dent end of the kernel.

When a corn kernel is planted with the tip pointed downward, the emerging radicle and coleoptile are already pointed in the direction they need to grow, without the need for the seedling to burn additional energy and time to bend their growth downward & upward, respectively (show in **Figure 2**). Furthermore, the direction of the germ side of the kernel influences the orientation of the plant's leaves, particularly during the early vegetative stages. Seeds planted with the germ side perpendicular to the row will tend to have leaves oriented across the row rather than toward adjacent plants in the row.



**Figure 1.** Germinated corn seed showing the emerging coleoptile and radicle.



**Figure 2.** Corn seed that was planted with the kernel tip angled upward, showing how both the coleoptile and radicle had to bend as they elongated to grow in the proper direction.

A field demonstration was conducted in 2022 to investigate the effects of corn seed orientation on speed of emergence, canopy closure, and light capture. The study compared four different seed orientations:

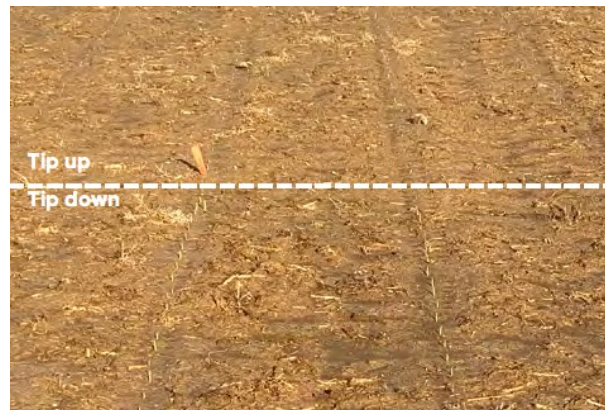
1. Tip down, germ across the row
2. Tip up, germ with the row
3. Tip down, germ with the row
4. Seed laying flat in the furrow

Seed furrows 1.5 inches deep spaced 30 inches apart were created using a planter with the closing wheels tied up. Seeds were then planted by hand in the furrows in each of the four different orientations listed above, and then seed furrows were closed. Time to emergence and canopy closure were recorded, as well as measurements of light capture and temperature under the canopy. Light capture was assessed by measuring the amount of light that was able to penetrate the canopy and reach ground level.

## RESULTS

### Emergence

Seeds planted with the tip down emerged faster than those planted tip up by approximately 20 GDUs (shown in **Figure 3**).



**Figure 3.** Emerged seedlings from corn seeds planted tip down (foreground) and tip up (background) showing faster emergence with seed planted tip down.

### Leaf Orientation

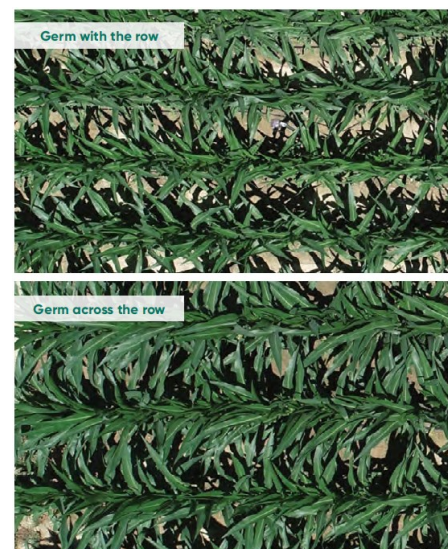
- Seeds planted with the tip down and germ oriented perpendicular to the row resulted in leaves growing across the row, while seeds planted tip down with the germ parallel to the row resulted in leaves growing with the row (**Figure 4**).
- Seeds planted with the tip up did not result in uniform leaf orientation, even though the germ orientation was uniform. This is due to the circuitous path the coleoptile had to take around the kernel as it emerged.



**Figure 4.** Corn plants from seeds planted tip down with the germ oriented across the row (left) and with the row (right) showing the impact of germ direction of leaf orientation during early vegetative growth.

### Canopy Closure & Light Capture

- Seeds planted with the tip down and germ perpendicular to the row resulted in leaves growing across the row which closed the canopy quicker than seeds planted tip down with the germ parallel to the row or seeds planted tip up (**Figure 5**).
- Light penetration through the canopy was measured from July 3 to July 13. Plots with seeds planted tip down and the germ oriented across the row captured an average of 40% more light than those with the germ oriented with the row.
- A period of high temperatures and drought stress occurred during late vegetative growth stages. The greater light interception in plots with leaves oriented across the row was able to reduce daytime soil surface temperatures by around 14° F.



**Figure 5.** Overhead view of plots with seeds planted tip down with the germ oriented with the row (top) and across the row (bottom).

**CONTINUED ON PAGE 4.**

# LOCAL WHEAT CROP — *Management Update (3/13/23)*

***Wheat is looking good across the area with good stands. Below is advice from our agronomist on key management timings:***

- The warm weather we saw a few weeks ago had much of the wheat crop greening up nice. The cooler weather we had last week and the forecast for this week should slow it down just a touch. Feeke's growth stage 4-5 is the optimal growth stage to apply spring topdress nitrogen as well as post-emergence herbicides. Several were at 4 last week and will be moving to Feeke's 5 quickly.
- Research shows it is best to split apply nitrogen with an advantage of 3-5 bu/ac vs a single shot app. The first shot would ideally already be on or applied now or as soon as possible. With the second shot being at jointing (first node visible). Apps of 40-50 now with the rest applied later help avoid lodging concerns and add more yield vs one shot applications. Total N for most of the folks managing their wheat is 120-150lbs of actual N per acre in the spring. With wheat needing 1.1-1.5 lbs of N per bushel. If logistics of application make it necessary to only apply in one shot, keep in mind that this allows more time for N loss and a taller wheat plant with more chance for lodging later if growing conditions are superb. Liquid with a ground rig that has streamer tips is the preferred method for high yield wheat growers looking to raise great wheat. Dry with spinners or a plane are the lesser preferred methods, as it is difficult to get great uniformity, but they are often the only methods available.
- Sulfur is also important and a sulfate form should be applied with the nitrogen at a ratio of 8:1 to 15:1 N:S. A good goal is 12-20 pounds of S per acre depending on the ground, yield goal, etc. The main forms of fertilizer available to provide sulfate are ATS (liquid) and AMS (dry).
- Feeke's 6.0 (first node visible) is the cut off for several herbicides (growth regulators). Targeting Feeke's 4.0 and 5.0 for herbicide apps is ideal. Products like Quelex have wider application windows.
- Feeke's 8 is the first fungicide timing to watch for to protect the flag leaf from things like Stripe rust. Aproach Prima works good on stripe rust.
- Feeke's 10.5.1 (flowering begins) is the ideal time for fungicides to protect against Head Scab. This fungicide timing is crucial for targeting Fusarium Head Blight (FHB) or Head Scab. Ideally, we'd prefer to time it perfectly to flowering as the research data shows. Being too early tends to be worse than being a touch behind. Be sure to use a fungicide labeled for head scab. Miravis Ace (Jaime's pick), Prosaro, and Caramba are common choices. The link below provides more info on wheat growth staging, head scab, and an MU article recently published with fungicide data on FHB. Link: <https://corteva.showpad.com/share/0cARSQRP3c86Ws8kUNJXF>

## EFFECTS OF SEED ORIENTATION *(continued from Page 3)*

In summary, results of this study show that controlling seed orientation at planting offered benefits to corn emergence, canopy closure, and light capture, particularly under stressful conditions. Several previous studies have investigated the potential benefits of controlling seed orientation. However, results of these studies have been mixed, with some studies showing a yield advantage and others showing improved emergence and light capture but no significant effect on yield. The research has been limited, due to the labor-intensive nature of the work and difficulty in mitigating confounding factors.

The lack of any available planting technology capable of controlling seed orientation in the furrow has likely also limited the amount of interest in researching seed orientation – even it were shown to matter, growers would have no way of doing anything about it. However, with the advent of planting technologies such as John Deere's ExactEmerge, that maintain control of the seed from the meter until it is deposited in the furrow, manipulating seed orientation seems like much less of a leap in technology than it would have been 50 years ago when the first research into seed orientation question was being conducted.