

AGRONOMY UPDATE

MAY 15, 2017

As soils have begun to dry enough in a few areas of Indiana, field work has started to resume. After a series of many pounding rains and downright cold overnight temperatures, the question begs to be asked: Will seed that's in the ground pull through or are some farmers facing major replant situations?

After a series of walkabouts through Central Indiana this past week, I am back on the optimistic side of this emotional rollercoaster I've been riding regarding whether the current planted crop will survive. I was amazed at what I saw in fields that were planted just hours before the big rains last week where seeds ended up sitting in soil temperatures below the 50 degree mark for an extended period of time. Despite all of this, I am still holding out hope that we're going to get away with just replanting "ponds" in most situations as long as good weather holds and the soil crust doesn't get too hard.

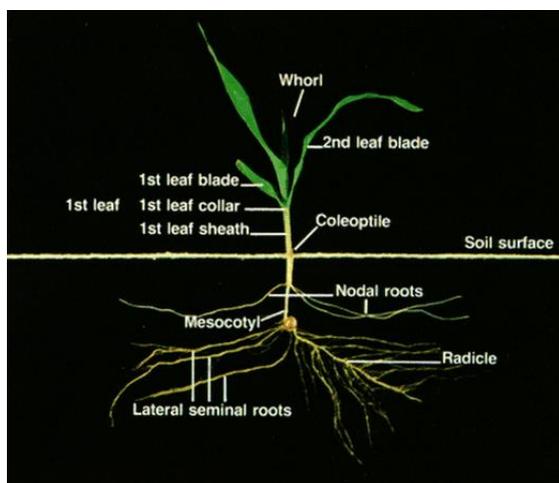
When you begin your scouting ventures, I recommend that you proceed with cautious optimism when formulating replant decisions. I believe many will be surprised at what they find in their fields, but I think this spring is going to have a longer tail than we want or expect it to. I think we're going to be dealing with many agronomic issues in the upcoming weeks, particularly around seedling diseases that may appear later on. Growers who aren't shy about spending the extra money on "insurance" such as treated seed, starter fertilizer, pop-up fertilizers, in-furrow fungicides, etc., are more likely to be happy with their investment this year.

SCOUTING TIPS FOR MAKING REPLANT DECISIONS

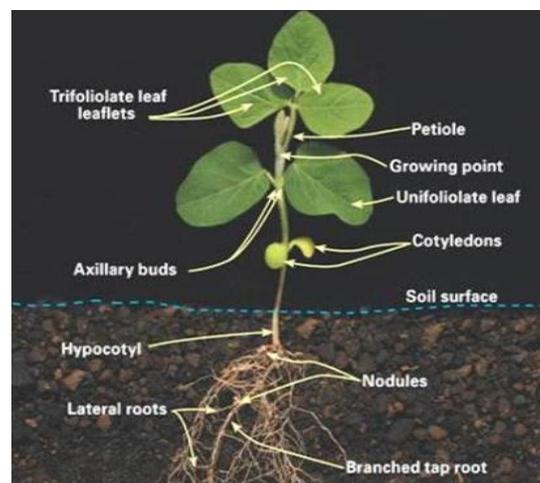
Due to the extended period of saturating rainfall and cold temperatures, it should come as no surprise that both corn and soybeans are emerging at an uneven pace. Because of this, it will be a challenge to estimate what a final stand might be. The first step in determining stand establishment, or predicting what stand establishment might be in the future, is to start digging for seeds and seedlings in several areas of the field.

Carefully remove soil from the seed or from all plant tissue of the seedling. With corn seedlings (Picture 1), pay special attention to the seed, mesocotyl, coleoptile and roots. In soybean seedlings (Picture 2), pay special attention to the hypocotyl, cotyledons and root.

Examine the seed and plant tissue for any discoloration, firmness, swelling, insect damage or odd smells (when no one is watching, of course). As a general rule of thumb, white to yellow to green coloration is good. Plant tissue should be firm to the touch and not excessively swollen. Signs that the seedling is dying would include discoloration of plant tissue (which typically includes brown to black splotches), swelling and/or mushy to the touch. Rotting seeds in the ground smell just like that rotting pile of corn sitting by the unload spout of your pit auger at the grain bin.



Picture 1. Diagram of V1 corn seedling. Photo adapted from Iowa State Corn Growth and Development Publication, 2011.



Picture 2. Diagram of V1 soybean seedling. Photo adapted from Iowa State Soybean Growth and Development Publication, 2009.

CURRENT STATE OF THE CROP

Corn and soybeans that are in the ground to date can be broken up in to two segments – that which was planted around the week of April 17 and crop that was planted the week of April 26 - after a short rain delay.

Both corn and soybeans that were planted in the week of April 17 are up and out of the ground, for the most part. Some of this crop you could tell was nipped a bit by the frost last Monday morning, but fortunately this was simply a very light, non-killing frost. Damage was mostly cosmetic. Though I observed stands were uneven and patchy, I struggled to find un-emerged seedlings that have started to rot or leaf out underground. Seedlings below the soil surface were still working hard to get out of the ground (Picture 3). A very similar story with soybean seedlings planted at this time (Pictures 4 & 5). There were no signs of tissue death as described in the previous section.



Picture 3. Corn seedlings emerging at a different pace due to cold, excessively wet soils. Planted April 17th, 2017



Picture 4. Soybean seedlings emerged in a field planted on April 20th, 2017.



Picture 5. Soybean seedlings about to emerge in a field planted on April 20th, 2017. Seeds slow to emerge due to cold, excessively wet soils.

Corn and soybeans that were planted on the week of April 26 were surprisingly also in a good state. Seed that was planted just a few hours before the torrential rainfall ensued, and didn't sit under water for several days, has germinated and has been growing at a very slow pace (Pictures 6, & 7). Soil temperatures have remained just warm enough to keep the metabolic processes of the seed moving, causing enough growth to keep the seed from rotting in the ground. I was unable to find seeds that I thought wouldn't make it, as long as the weather started at turn for the better.



Picture 6. Corn seedlings germinated and slowly growing due to cold temperatures and excessive rainfall. Planted April 25, 2017, just hours before rainfall.



Picture 7. Soybean seedlings germinated and slowly growing due to cold temperatures and excessive rainfall. Planted April 25, 2017, just hours before rainfall.

The one negative observation has been PPO damage in emerging soybeans (Pictures 8, 9 & 10). As described in Purdue Universities article regarding PPO herbicide damage in soybeans ([link below](#)), cold and wet weather can make soybeans susceptible to this normally safe herbicide. Weather ahead will have an effect on likelihood of survival, and only time will tell if these beans can pull through.



Picture 8. PPO herbicide damage to soybeans planted April 18, 2017 in Central Indiana.



Picture 9. PPO herbicide damage to soybeans planted April 18, 2017 in Central Indiana.



Picture 10. PPO herbicide damage to soybeans planted April 18, 2017 in Central Indiana.

All we can do at this point is hope that the weather turns for the better. There's no telling how much longer these seedlings can hold on if current weather conditions remain unchanged. I'm just happy to report that my findings were better than I thought they would be. As always, reach out with any questions or help with scouting. Below are links to supplemental reading regarding information discussed in this agronomy update that I find to be valuable given current conditions.

Purdue Pest & Crop Newsletter – May 5th Edition: <https://extension.entm.purdue.edu/pestcrop/2017/Issue6/>

Corn Replant Considerations 2017 – Bob Nielsen: https://www.agry.purdue.edu/ext/corn/news/Articles_17/CornyDecisions-0508.html

Frost Damage to Corn – Bob Nielsen: <https://www.agry.purdue.edu/ext/corn/news/timeless/FrostedCorn.html>

Hybrid Maturities for Delayed Planting – Bob Nielsen: <https://www.agry.purdue.edu/ext/corn/news/timeless/HybridMaturityDelayedPlant.html>

Frost Damage to Soybean – University of Minnesota: <http://blog-crop-news.extension.umn.edu/2015/05/frost-injury-to-soybean.html>

PPO Injury to Soybean – Travis Legleiter & Bill Johnson: <https://ag.purdue.edu/btny/weedscience/Documents/PPOInjuredsoybean.pdf>



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