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Checking the Back Forty

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Frost Heaving and Death of Alfalfa

I have been in quite a few alfalfa fields this spring and many show frost heaving. The picture above show some of the worst I have seen while other times it is more subtle with dead heaved plants among those that seem perfectly fine or were heaved some without apparent injury. In some instances you have plants that are still showing some green but have the tap root snapped and pull out of the ground.

Attempts to push plants back in the ground with rollers or cultipackers are useless. Plants with green growth but broken tap roots are like to stay green in proportion to how deep the break took place: longer unbroken root the more growth into first cutting they will likely give. But come the first heat and dry spell the plants with broken tap roots will die. Plants that have heaved but not broken their tap root may settle back in before the growing season is out. Raising the mower a bit to clear these crowns may prevent injury.

There are common themes: excess water, whether a flat or low lying area or even some hillsides with a seep; wheel tracks or compacted areas; older stands with larger crowns and tap roots. There isn't much you can do to prevent frost heaving but it may be time as you mow, if you haven't already, to start assessing which fields are the most injured. I have run into few fields that should have been rotated out this spring but many that have definitely have had their stand life shortened. Not taking a late cutting and leaving some stubble can reduce the risk of frost heaving by catching snow and providing some insulation so you have less freezing and thawing.

References:
Undersander, Dan. 2009. Heaving in Alfalfa Fields. Agronomy Advice, University of Wisconsin
http://fyi.uwex.edu/forage/heaving-in-alfalfa-fields-2/

Bagg, Joel. 2013. Frost Heaving Of Alfalfa. OMAFRA Field Crop News. April 11, 2013
http://fieldcropnews.com/2013/04/frost-heaving-of-alfalfa/

Still Alive and Well… So Far

I have had many people express concern over corn already in the ground given the wet, cold weather we have had. Me too! So yesterday out checking alfalfa I had a chance to look at several corn fields planted over a week ago. I found seeds germinated and still firm. No "rotting in the ground". The soil was wet but not saturated in these well drained fields and the soil temps were 52°F at 2 p.m.

There are two possible issues that can affect this early planting. One is if the germinating seed is in a saturated or ponded soil condition. The oxygen in soil water is used up in 48 hours and the growing point for corn is in the ground at seed level. So if seed is in these ponded or saturated conditions for several days death may occur. First planted corn especially this year was likely planted in well drained soils so the chances for saturated soils for any period of time other than the wet spots was pretty slim.

The second issue can be one of imbibitional chilling. The uptake of water by a seed is called imbibition and necessary for germination. Plant cells need to take in water and expand as they grow. Under cold soil conditions, less than 50°F cell membranes are stiff and not very flexible so some breakage can take place. The chance for this injury increases as temperatures approach the 30°F range like you might have if there is a snow/rain event right after planting. When that happens in the growing shoot you can see a "cork screwing" effect like you see when injury affects the shoot like soil crusting or physical injury. The shoot never breaks through the soil surface and ends up staying in the soil.

At some point you have to begin planting and if soil conditions are dry enough that you are not compacting the soil then it is time to go. The better drained soils that you can get on lend themselves to reducing the risk of early planting: soils don't stay saturated and tend to warm quicker. You can't plant corn risk free. You just have to know your conditions and minimize your risk.

Over the next few weeks I will report back on what has happened to these early planted fields.

References:
Elmore, Roger, 2012. Imbibitional Chilling and Variable Emergence. Department of Agronomy, Iowa State University Extension and Outreach
http://crops.extension.iastate.edu/cropnews/2012/05/imbibitional-chilling-and-variable-emergence

Thomison, Peter. 2017. Impact of recent heavy rains on corn - ponding and flooding. CORN Newsletter : 2017-11. Ohio State University Extension Agronomy Team
https://agcrops.osu.edu/newsletter/corn-newsletter/2017-11/impact-recent-heavy-rains-corn-ponding-and-flooding