

News Release for Immediate Use or Next Issue
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The Complications from Heavily Crusted Soil

With high amounts of moisture throughout this winter and spring, we are currently seeing heavy crusting in soils. “Physical soil crusts are the result of the physical degradation of the surface soil and may be classified as structural or depositional” (Sjoerd Willem Duiker, 2017). Structural degradation of soil aggregates cause the soil to become very compacted and “run together.” “A soil crust is more likely to develop on fine-textured soils, soils low in organic matter and tilled fields where surface residue levels are not sufficient to protect the soil aggregates from raindrop impact” (Stanton, 2018). When soil crusting is an issue, poor emergence and even death can occur in crops that undergo epigeal emergence (i.e. soybeans). Although soil crusting, after extremely heavy precipitation, is inevitable, there are several methods to help alleviate and even prevent soil crusting.

First of all, one of the best practices, if possible, is to not till or plant when conditions are too wet. The soil is an appropriate tilth when it can be placed and squeezed in the hands, clumped together, yet break apart into the original condition. Soil in the appropriate tilth helps to reduce compaction, thus minimizing crusting. A second consideration, with regards to planting, is to decrease planting depth and lift row cleaners to maintain residue cover over the crop. Additional residue helps to prevent destruction of soil aggregates by absorbing the impact from rain drops.

In addition to planting, being cognizant of field conditions once fields have been planted is vital for plant emergence. More times than not, it seems the moisture shuts off and the summer heat comes early, once crops have been planted. The heat and lack of moisture exacerbates crusting, especially if a crop was planted in too wet of conditions. If a crust develops, and the field has irrigation capabilities through center pivot, a light amount of precipitation can assist with emergence. Another way to alleviate crusting is through the use of a rotary hoe. Rotary hoes are helpful when crusting occurs in fields with a conventional tillage system. Use caution when rotary hoeing soybeans that are beginning to emerge, and be sure to rotary hoe in the same direction as the rows; doing so during the heat of the day when plants are less brittle. Rotary hoeing should be avoided for soybean plants that have the hypocotyl exposed (neck of the soybean in the “crook” stage).

Lastly, one of the best ways to mitigate crusting is through prevention. The planting of cover crops and/or leaving residue on soil surface assists in dampening the impact from rain drops, allowing for the continued stability of soil aggregates. Checking soil tilth, especially in soils primarily comprised of clay, also helps to prevent soil crusting. For more information, contact Tyler Husa, Crop Production Agent in the Concordia Extension Office by calling (785) 243-8185 or emailing thusa@ksu.edu.

References:

Sjoerd Willem Duiker, P. C. (2017, September 7). *Soil Crusting*. Retrieved from PennState Extension: <https://extension.psu.edu/soil-crusting>

Stanton, M. (2018, May 10). *Improving soybean emergence in soils prone to crusting*. Retrieved from Michigan State University Extension: <https://www.canr.msu.edu/news/improving-soybean-emergence-in-soils-prone-to-crusting>

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