

Dry Topsoil Concerns Some Corn Growers

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Corn planting in the ~~Hoosier~~ Hoosier Boilermaker state is off to the races with 15% of the state's crop acreage already in the ground, well ahead of the five-year average of 5% (Indiana Ag. Stats. Service, 4/19/04) and ahead of the previous record pace (8%) set in 1976. Three reasons for the early rapid rate of corn planting are dry soils, warm soil temperatures (relative to early April), and short-term memories of last year's wet May that delayed some corn planting until early June.

Some of the regulars at the Chat 'n Chew Café are beginning to fuss about the dryness of the soil, especially topsoil moisture. As of 18 April, 31% of the state's topsoil moisture was in fact rated as short to very short (Indiana Ag. Stats. Service, 4/19/04). Thunderstorms rolling through Indiana this week are replenishing soil moisture in some, but not all, areas of the state.

One of the concerns when surface soils are dry is the increased risk of injury to corn germination or to young corn seedlings from pre-plant anhydrous ammonia applications. Such injury is caused by desiccation of belowground plant parts that come into contact with the ammonia zone. Symptoms of anhydrous injury include poor or weak germination, discolored kernels, wilted seedlings, and brown stubbed-off roots. Shallow injection depths (less than 7 – 8 inches), coarse-textured soils, and dry surface soils (especially cloddy soils) all increase the risk of ammonia movement farther than normal from the point of injection (Sawyer, 2000) and thus the risk of injury to corn germination and young corn seedlings.

Another concern related to dry surface soils is whether soil moisture at the seed zone is uniformly adequate for germination. Uneven soil moisture in the seed zone is the primary cause of uneven emergence, the results of can easily reduce yield potential by 6 to 9 percent (Carter et al., 2002). Under normal conditions, seeding depths of 1 ½ to 2 inches are usually sufficient to achieve uniform soil moisture in the seed zone. Seeding depth decisions when surface soils are on the dry side may require planting as deep as 2 ½ to 3 inches if necessary to achieve uniformly moist seedbed conditions, especially when the short-term weather forecast is not promising any significant rainfall. The key factor when faced with dry surface soils is taking the time DURING planting to visually inspect the soil moisture levels at the seed zone and change planter depth settings accordingly to best ensure placement of seeds into a uniformly moist seedbed.

References:

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- Sawyer, John. 2000. Anhydrous application and dry soils. Integrated Crop Mgmt. Newsletter, Iowa State Univ. Available online at <http://www.ipm.iastate.edu/ipm/icm/2000/10-23-2000/anhydrous.html> (Verified 4/19/04).

Don't forget, this and other timely information about corn can be viewed at the Chat 'n Chew Café on the Web at <http://www.kingcorn.org/cafe>. For other information about corn, take a look at the Corn Growers' Guidebook on the Web at <http://www.kingcorn.org>.

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