Dry Soil Conditions and Corn Establishment

There are a number of great resources and articles by experts in other areas of Canada and the United States. The following is an article by Dr. Joel Ransom, Extension Agronomist for Cereal Crops with North Dakota State University, on the impact of dry soil on corn germination and emergence.

The following is an excerpt from the article:

For most soils, 0.5 inches of rain (sandy soils slightly less) is needed in order for moisture to move to a 2 inch depth (the seed zone) in dry soils. Other factors can also affect germination and emergence when soil moisture is marginal. Poor soil-seed contact can restrict the corn seed from extracting enough moisture from the soil to germinate. Crop residues that touch the seed can similarly impede the movement of water to the seed. Occasionally, fertilizers placed with the seed inhibit germination due to their salt effect being more pronounced in dry soils.

Moisture in the top two inches of soil is also required for nodal root development. Nodal roots develop from the crown, which establishes about ¾ inch below the soil's surface, regardless of planting depth. These roots initiate soon after the V1 stage and rapidly develop to become the primary means by which the plant acquires water and nutrients by the V3 stage. If the soil remains dry around the crown for an extended period during early vegetative growth, however, nodal roots will not develop and when plants obtains sufficient size, they flop over (accompanying photo). Though this phenomenon, called the floppy or rootless corn syndrome is found occasionally in areas of the field with lighter soils or where there is compaction or shallow seeding, it may be more widespread during seasons of limited early rainfall like this year.

The complete article appears in the NDSU **Crop & Pest Report – June 1, 2017** edition and is available here: Dry Soils and Poor Corn Emergence.

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