



Delayed Emergence in Corn

Most cropping seasons see delayed emergence problems show up in corn and soybeans somewhere in the Cornbelt. I would like to help answer the question of what conditions cause emerging corn to be delayed. Agronomists commonly point to three major conditions for delayed emergence in corn: inadequate moisture, inadequate temperature, & poor seed-to-soil contact. Herbicide overdose, insect feeding, and diseases can also play a role in delayed emergence, but are considered secondary conditions.

Moisture

Corn seed takes a certain amount of consistent moisture to emerge. Moisture levels can change within a small area or affect an entire field depending on the soil characteristics and the microclimatic conditions of the field, resulting in delayed emergence. In addition, a hard rain can create a crust barrier on the soil surface that will prohibit emergence to varying degrees depending on the characteristics of the crust matrix such as thickness.

Temperature

Even though corn seed can begin emerging when soils are 50° F or higher, corn likes to emerge when the temperature is consistently above 55° F. where the seed is placed (seed zone). Some of the things that can reduce temperature and lead to delayed emergence are poor soil characteristics, dense surface residue, above normal moisture, and deep placement of the seed.

Seed-to-Soil

Corn seed does not sprout well when it is surrounded by air, water, or plant residue. Only soil structure that completely surrounds a seed provides the right environment for germination.

Mostly to a lesser extent, herbicide injury, insect pressure and disease pressure can cause delayed seedling emergence. These categories should be suspect after the 3 main categories have been ruled out.

What are the effects on yield?

A corn seedling is considered late emerging if it is more than a week behind a neighboring plant. If the delay becomes severe enough, the late plant will not be competitive. This situation produces a barren plant, which is essentially a weed to the other corn plants. As a general rule, if more than 2 stages of vegetative growth exist between adjacent plants, the younger of the two will be barren. University studies estimate a yield loss of 5 to 20 percent can occur if the emergence of the late seedlings is 10 days or more.



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Management

1. Scout the fields during emergence
2-3 locations & 30 feet of each planter unit
2. Choose the correct depth for your field conditions that year.
Current & Future soil temperature & moisture conditions.
3. Check the actual planter depth in the field.
Does calibration match in-field results?
4. Plant at a consistent depth.
This may mean slowing down to speeds less than 5.5 mph when planting.