



Colorado State University Extension
Golden Plains Area Extension

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Corn Planting

(Burlington, Colo.)

Since soil temperature, stand establishment and uniform emergence are all key considerations when attempting to determine an optimum corn planting window, early plantings are generally discouraged when significant acreages are involved. Agronomy professionals agree that the optimum corn planting window will be related directly to a consistent soil temperature of around 50 to 55° F at the two-inch soil depth. Traditionally, these consistent soil temperatures occur between the third week of April through the first week of May. Since cool soils through mid-April often result in a lengthy germination period, corn emergence can often times take over three weeks from the time of planting to full stand establishment.

Table 1 outlines the approximate days to seedling emergence based on various, consistent, soil temperature ranges:

Table 1: Days to emergence based on soil temperature.
Soil Temperature Approximate Days to Corn Emergence
50° F25 – 20 Days
55 - 60° F14 – 10 Days
65 - 70° F 8 – 5 Days
75 - 80° F 4 Days

Crop Observations/Management Suggestions

Under cold weather conditions or fluctuating soil temperatures, the coleoptile (shoot) still emerges from the seed, but rather than growing upward towards the soil surface, it twists or curls around the seed. The unusual growth pattern of the coleoptile is in response to cold soil conditions; this type of growth alone is usually not cause for alarm. Once soil temperatures improve, the coleoptile will "right" itself and grow towards the surface, where it splits open when exposed to sunlight, allowing the first leaves to emerge.

Corn may leaf out underground for a number of reasons. A cloddy seedbed or improper closure of the seed furrow may allow light to penetrate below the soil surface. If light reaches the emerging coleoptile (spike) underneath the surface, it may rupture, causing the leaves to unfurl. Cold soils and compacted and/or crusted soils can also lead to leafing out underground. Some herbicides occasionally magnify the corkscrew problem with the soil conditions mentioned above.

Once corn is emerged other issues can express themselves. Purple Corn Syndrome shows up in a handful of cornfields nearly every year. This purple seedling color results from the expression of genes for anthocyanin pigment formation. Most corn hybrids contain 5 of the necessary 8 genes required to produce this purple color, while the other 3 genes are present in only certain hybrids suggesting this attribute is a “genetically inherited” trait more prominent in certain hybrids over others.

Since several of these genes are cold sensitive, overnight temperatures in the 40s with daytime highs in the 60s are often sufficient to trigger a purpling effect on corn leaves. Since these temperature sensitive genes are only expressed in seedlings prior to the six-leaf stage of growth, this early developmental stage often coincides with the same period most likely to have lower temperatures. Corn usually outgrows the condition by the time it is 12 inches tall. This occurs quickly if weather remains conducive for rapid growth or slows if conditions remain cool enough to retard root and shoot growth.

Realizing that cool temperatures, not the purple pigment itself, results in slow plant growth is important. Extensive research has been conducted on purple corn with no negative yield implications observed.

Source: Pioneer Hi-Bred Intl’.

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