

FORAGER



Agronomics with livestock in mind!



SPRING WEATHER STRESS ON CORN

Producers are utilizing earlier and earlier planting dates to enhance their production. This earlier planting has benefits, such as better corn plant development and higher yield potential; but it is not without some risk. These risks involve two uncontrollable factors – cool, wet soils and the possibility of frost/freeze injury.

Frost/Freeze Damage

Corn growth and development is directly affected by temperature. Cooler temperatures slow down, and can virtually stop, the development processes. Freezing temperatures can kill the seedling. However, the severity of frost/freeze damage to corn seedlings is dependent on temperature, growth stage and the length of exposure to freezing temperatures. Temperatures between 28° - 32° F rarely have any effect on corn. The growing point for corn is typically below ground until growth stage V5-V6. This protects the growing point from moderate frost and minor freezing temperatures. As long as the growing point is below ground, it would take a sustained freeze of below 28°F to damage the corn plant. Freezing temperatures at this stage can destroy plant tissue, but have little effect on the final yields. The soil and plant both act as insulation, and typically protect the growing point from freezing for up to several hours. In addition, there are chemicals in the corn plant tissue that act like “anti-freeze” to protect, to a certain extent, the plant from minor lower temperature fluctuations.

Occasionally, a twisting and fusing of the whorls will be noticed after a freeze event. This can occur either below ground, causing the seedling to emerge misshapen, or above ground making the plant appear to have herbicide injury. Much of this twisted whorl condition is cosmetic, and will not affect future growth and development. The freezing conditions have prevented the leaves from unfurling normally, resulting in a “tied-up” leaf whorl. An assessment of frost/freeze on early planted corn is that the effect on the emerging corn crop will be minimal for the most part. Emerged plants may be damaged by the freeze, seedlings just below the soil surface should emerge shortly, undamaged; and seeds just planted should germinate and emerge normally. Of course this assumes a return to warmer and drier weather in the near term after a frost. Little yield effect is noticed on corn frosted this early in its growth because the lower leaves on a corn

plant never get very large and are soon shaded heavily by the larger leaves above them. Therefore the contribution they make to the food supply of a corn plant is small. Replanting frost-damaged corn is ill-advised at this growth stage. Wait 3-to-5 days after a frost/freeze to determine the extent of damage and if the crop is capable of recovery. Waiting slightly longer may be warranted, if growing conditions don't quickly return to normal. If new growth is not evident in the whorl after a reasonable period of time, one could assume that the plant has died. One way to confirm this is to check the growing point by slicing the stem open. The growing point should appear white to light yellow and be firm. If this is the case, prognosis for recovery is good. If the growing point is dark, water-soaked and appears rotten, then the plant is dead. When poor growing weather follows an early season frost, corn seedlings sometimes may die. When this is confirmed by lack of re-growth, or by observing dead, rotten growing points, replanting may be necessary.

Cool, wet soils

Saturated soils, cool temperatures (soil temperatures fall below the 50°F threshold for germination/growth), and wet weather are all prescriptions for delaying corn emergence and seedling development. Seeds and germinated seedlings will not sustain any measurable growth or development until soils have warmed above this temperature (above 50°F). Of particular concern is the development of seedling blight diseases, since cool conditions predispose a plant to root infection. The slower growth and development of the root system will not allow the plant to produce more root mass quickly enough to overcome bacterial damage, as a normal growing plant would. A disease that will quickly take advantage of the stressed corn seedling is Pythium, the most common cause for seed rots and seedling damping off in corn. Pythium thrives in saturated soils. In soils between 45° and 53°F the corn plant's ability to defend itself and outgrow the infection is severely limited. A corn crop, during a period of cool, wet soil conditions, can suffer stand loss. This stand loss can be made worse when the crop is under some other stress, like frost injury. For more information contact the Renaissance office.

(edited from an article by Mark Seem, CCA Agronomist)

RENAISSANCE NUTRITION...

Providing Sound Nutronomic Advice

1.800.346.3649