

Inside Grundy County
By Patrick Derdzinski, Grundy County Extension Director
May 7, 2010

Early Scouting Corn

On the early morning of May 3, I reported to the USDA National Agricultural Statistic Service (NASS) that 11% of planted corn in Butler County had emerged. This matched the average emergence percent for the North Central Iowa cropland region. As corn emerges, farmers should be scouting their fields for emergence percentage, seedling health and weed pressure.

Plant populations play an important role in final yield. We know from research the optimal seeding rate is around 35,000. But not all seeds survive due to various factors such as germination percentage, seedling diseases, insects, crusted soils, cold soil temperatures, etc. Long term studies indicate that corn planted by May 5th with a final stand of 28,000 to 32,000 provides 100% yield potential. The task from now on is to try and protect that yield potential.

Counting plants is therefore one important task to undertake, to determine if replanting is necessary. Counting plant populations is an easy task. We measure 1/1,000 of an acre. In 30 inch rows, that means we measure 17 ft. 5 in. Count the number of emerged plants in the row. If you count 30 plants, you have 30,000 plants. Do this in numerous locations throughout the field. For 36" rows and 20" rows, measure 14' 6" and 26' 2" respectively to count plants.

What happens if I have only 25,000 plants per acre? Assuming the stand was even and remaining seedlings are healthy, research indicates yield potential would be reduced to 95%. Planting corn after May 5th, with a final stand of 35,000, would provide 96% of yield potential. After taking into account additional seeding costs, the decision would be to leave the stand alone.

Next, check corn fields for uniform emergence, plant spacing and plant health. In general, regardless of percent emergence, plants emerging 7 days later will impact yield approximately 6% but if plants emerge 14 days plus beyond other plants, yields can be impacted 10 to 50% depending on the percent of late emerged corn.

Corn spacing is more difficult to measure. Planter problems, germination issues and other reasons can affect distance between plants within the row. Early research from Purdue indicated significant yield penalty can occur if spacing exceeded a certain standard deviation. More recent research from Wisconsin, Canada and Nebraska indicate that modern hybrids are not as affected by uneven spacing compared to hybrids from 10 years ago. There is still considerable disagreement amongst researchers as to the impact on yield uneven spacing can have. What researchers have learned is that higher planting speeds (≥ 6 mph) resulted in more uneven spacing within the row. Stay tuned to this issue.

Last but not least, we need to examine the underground portion of the plant, looking at root growth and health. Check corn seedlings for planting depth. The seed should be at least an inch

to 1.5 inches deep. This will ensure the secondary root system (nodal root system), will develop properly.

Young root systems can be impacted by cold soil temperatures, fungal diseases and insects, saturated soils, or salt damage from fertilizers in contact with the seed. The first root system, the seminal root system, should appear healthy. It serves an important role in helping the seedling get off to a good start. Make sure there is no sidewall compaction. This is more common when planting occurs under wet conditions. Observe the mesocotyl for health. The mesocotyl is the white part of the seedling that starts from the seed to where the coleoptile is connected. The mesocotyl transports nutrients from the kernel to the new seedling.

The coleoptile is the first shoot that pushes through the soil surface. The coleoptile functions to penetrate the soil surface and allow leaves to emerge. Once the coleoptile emerges, the seminal root system stops growing but still functions, as the nodal root system begins to develop. Farmers should be able to see the nodal root system developing when the first true leaf emerges. Remember, that is not the coleoptiles which we call VE. V is for vegetative stage and E is for emergence. The first emerged leaf is called V1.

For more information on this topic, see the ISU Extension corn web site at: <http://www.agronext.iastate.edu/corn/production/management/early/root.html> or the Purdue Extension web site at: <http://www.agry.purdue.edu/ext/corn/news/timeless/Roots.html>