



Summer 2004, No. 4

EARLY GROWTH IN CORN—IS IT IMPORTANT?

Is early growth in corn important? To answer this question, we need to examine what kinds of things are happening in the plant early in the season – both above and below ground.

The leaf collar method is the most widely used means of characterizing early corn growth. Leaves with visible collars are counted, starting with the first, smaller, oval-shaped leaf of the corn plant. For instance, a plant with three leaves that have visible collars is characterized as being in growth stage V3. The “V” stands for vegetative growth stage.

Many important things happen below ground when the seed first starts to sprout. First, the radical (the first root) elongates from the seed. Second, the coleoptile, which contains the embryonic plant, elongates and begins to grow upward toward the soil surface. Next, three to four lateral roots begin to develop. These roots, along with the radical, are termed seminal roots. They begin taking up nutrients from the surrounding soil, before the corn plant has even emerged from the soil surface. These roots grow until about V3, after which their growth practically halts, although they continue to take up water and nutrients.

Once the corn plant emerges from the ground, many plant parts are developed early that determine the fate of the corn plant. Leaves enlarge and begin turning green as they are exposed to sunlight. Also, new roots begin to grow at a node above the seminal root system. By about V3, all leaves and ear shoots are being formed that will be fully developed later on. By about V5, a tiny tassel has started at the growing point, which is usually just below the soil surface at this time. The growing point is the place where leaf cell division occurs in the plant. By V6, the nodal roots become the major supplier of water and nutrients to the plant.

Access to nutrient supplies is critical early in the season. The amount of nutrients taken up is small, but proper supplies are critical. With only a limited root system present, nutrients must be close to the roots. Common ways of ensuring this are the use of starter fertilizer and/or building soil fertility levels. Without nearby access to nutrients, plant development may be adversely affected both early and later on.

So is early growth in corn important? The answer is definitely “**Yes.**” A concentrated nutrient supply near the young root system improves the chances that corn will be able to access nutrients needed to help the crop reach its attainable yield potential.

—TSM—

For more information, contact Dr. T. Scott Murrell, Northcentral Director, PPI, 3579 Commonwealth Road, Woodbury, MN 55125. Phone: (651) 264-1936. E-mail: smurrell@ppi-far.org.