When a corn kernel is planted into warm, moist soil, water is absorbed through the seed coat and the kernel begins to swell. The critical soil moisture required for corn to germinate is 30%, and a corn seed will absorb 1.5 to 2 times its weight in water during the germination process.

The radicle root will emerge from the seed in favorable growing conditions within two to three days, or 65 to 80 growing degree days (GDDs). Corn typically requires between 100 and 120 GDDs (or five to seven days) after planting to emerge from the soil. This process could, however, take several weeks if soil temperatures are cool or dry. After germination, the mesocotyl elongates from the seed, pushing the coleoptile towards the soil surface. The mesocotyl is a white, tubular, stem-like tissue that is sometimes called the first internode.

The VE growth stage is corn emergence. Once the coleoptile breaks the soil surface and reaches sunlight, it stops growing, opens at the tip and the first true leaf unfolds. This first encounter with sunlight will also set the depth of the crown, which is usually about 3/4 in. below the soil surface. This is where the first nodal roots will emerge. It’s at this time that the radicle and seminal roots are developing to supply water and some nutrients to the crop.

The V1 growth stage is achieved when the first leaf has fully emerged and the leaf collar is visible. This first leaf will have a rounded tip, while all other leaves will have a pointed tip. At this time, the plant is mainly relying on nutrients from the seed as it continues rapid root growth.
The V2 growth stage is when the second leaf has fully emerged and the leaf collar is visible. The leaf collar is the junction between the leaf blade and the leaf sheath. This is typically seven to ten days after emergence, or about 200 GDDs in favorable growing conditions.

The V3 growth stage is the time when the plant transitions from the seed being the main food source and the beginning to the photosynthetic process to produce energy. The plant begins to rely more on the nodal root system as it continues to expand and produce root hairs. It's at this time that primary ear initiation has started, and seminal root growth has ceased. The V3 growth stage is reached about 10 to 20 days (around 350 GDDs) after emergence.

The V4 growth stage is when the plant determines the number of kernel rows around the primary ear will have at maturity.

At the V5 growth stage, the leaf collar is visible on the fifth leaf. The growing point of the plant moves from underground to the soil surface and the plant is now relys on the nodal roots for nutrients and water. All of the leaves the plant will ever have are initiated during the first four to five weeks of plant development. Kernel rows around have been determined, and this is the last internode to remain underground.

At the V6 growth stage, tassel development is initiated. All of the plant’s leaves are formed and rapid stalk elongation begins. This normally takes place 25 to 30 days after emergence, or approximately 475 GDDs.

**ABOVE:** A corn plant is staged by counting leaf collars. The collar is the point where the leaf blade and leaf sheath come together. Collars are numbered in the plant above. As the plant matures, the first few leaves will fall away from the plant. To stage older plants, split the stalk and count nodes.