



# Agronomic Spotlight

## Corn Tillering

- Corn tillering is most likely to occur under low plant populations when fertility and moisture is plentiful early in the season.
- Tillers can also develop when the main stem of the corn plant is damaged by severe climatic or other conditions.
- Research shows that tillers have no negative impact on corn yield, and may even contribute to the yield potential of corn silage or grain under certain conditions.
- Excessive tillering in a field may only be an indication of problems with plant stand density and distribution.

Tillering is a normal part of corn physiology. In the early 1900's, growers believed that tillers would suck nutrients from the main corn stem, and referring to them as "suckers" came from this belief. Growers would walk their fields to remove "suckers" as soon as they appeared. Research conducted in the 1930's dispelled this belief, but questions still arise when a high frequency of corn tillering is noticeable in a field. Corn with tillers may not appear like a normal stalk of corn. Tillers can form gnarled and unsightly tassel ears, where smut and other diseases may appear. However, tillers are generally not detrimental to the corn plant.

### Corn Tillers

Tillering in corn is much less common than in small grains (wheat, barley, oats) where it is essential to crop production. Tillers are shoots that grow from nodes at the base of corn plants (Figure 1). Like the main stem, tillers are capable of producing their own roots, nodes, leaves, tassels, and ears. Tillers can grow to be about 30-60% the size of the main corn plant. Tillers that appear early in the season can become large and numerous, especially under low plant populations, high fertility, and good moisture conditions. Tillers that appear later in the season generally do not have enough time to mature and develop ears before a killing frost.

Corn tillering is most likely to occur under conditions of high soil fertility and moisture during the first few weeks of the growing season. Low plant populations and large gaps between plants can also contribute to an increase in tiller production. Corn products can vary in their propensity to develop tillers. Products with a strong tillering trait may form one or more tillers even at relatively high plant populations if the environment is favorable early in the growing season. However, environment tends to be more important than the product's genetic background when it comes to tillering in any given year.

Severe climatic or other conditions that destroy or effect the plant's top growth can also lead to tiller production. One or more tillers usually occur if the main stem is injured or destroyed by hail, frost, wind, flooding, insects, herbicides, animal traffic, or tractor tires during the first half of the growing season.

### Tiller Effects in Corn

Nutrient movement and the relationship between the main corn stem and tillers is as follows:

- Prior to tasseling, there is very little movement of food or photosynthates between the main stem and tillers.
- After tasseling, earless tillers can move photosynthates to the main stem, contributing to grain fill.
- If there are ears on both the main stem and tillers, photosynthate movement acts independently, filling their ears respectively from their own leaves.
- If the main stem does not have an ear and the tiller does, photosynthates can move from the main stem to the tiller.



Figure 1. Tillers may generally appear around the 5- or 6-leaf stage of corn.

Small tillers without ears will normally develop under a full stand of corn in normal field conditions, and will have little influence on the main plant. Therefore, the effect of tiller development in an undamaged field of corn is neutral. Tiller development in a field that was damaged or simply planted too thin may result in tillers producing harvestable ears that can actually contribute to grain yield.

Bottom line, the appearance of tillers has no negative impact on corn yield potential. Excessive tillering may only indicate problems with stand density, distribution, and gaps in the field, where corrective actions could lead to reduced tillering next season.

**Sources:** Thomison, P.R. Corn growth and development - Does tillering affect hybrid performance? The Ohio State University Extension agronomy facts publication AGF-121-95. <http://ohioline.osu.edu>; Nielsen, R.L. 2003. Tillers or "suckers" in corn: Good or bad? Purdue University Corny News Network. <http://www.agry.purdue.edu>; Ransom, J. 2014. Tillering in corn common this year? North Dakota State University Crop & Pest Report. <http://www.ag.ndsu.edu>. (web sites verified 5/22/15).

For additional agronomic information, please contact your local seed representative. Developed in partnership with Technology, Development, & Agronomy by Monsanto.

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