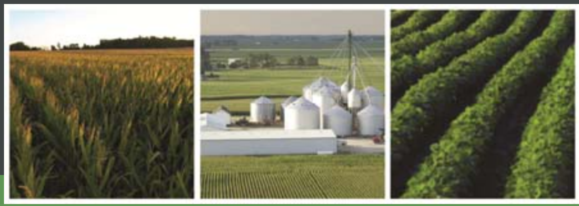

Agronomic Alert

Unusually Long Silks Prior to Tassel Emergence

- Silks may appear prior to tassel emergence resulting in unusually long silks.
- Silk emergence traditionally occurs after the last tassel branch appears.
- Silking prior to tasseling may be the result of environmental issues and/or individual corn product physiology.

Traditional Silking Process

Traditionally, silk emergence occurs after the last branch of the corn plant's tassel is completely visible. A visual, full tassel and no silks is referred to as the VT (Vegetative Tasseling) stage of growth.[1]

The silking process begins around the V12 to V14 (12 to 14 fully developed leaves) growth stages when silks begin elongating from individual ovules (potential kernels) near the base of the very small cob. Silks are produced sequentially from ovules beginning at the cob base to the cob tip over a time period of a 4 to 8 days. The silks from the cob base are the first to appear from the husks surrounding the miniature cob. The visual appearance of the first silks is designated as the R1 growth stage (first stage of reproductive growth).

Typical silk growth after emergence is about 1 to 2 inches per day until stopped by the fertilization process when a pollen grain germinates and begins growing down the silk to the ovule, or slowed by natural aging.[2] Silks detach from the ovules when fertilization (pollination) has occurred. Unfertilized silks may continue to grow and become quite long until fertilized. When silks turn brown, they are no longer receptive to pollen and those ovules to which the silks are attached will not develop into potential kernels.

Unusually Long Silks

Contrary to the traditional silking process, silks may emerge prior to tassel emergence and pollen shed. This scenario can result in silks becoming unusually long as they continue to grow and await the attachment of pollen grains (Figure 1). Extra long silks may also be caused by environmental issues or the physiology of the individual corn product.

Environmental issues that promote silk growth can include cloudy days, cool temperatures, and abnormally wet conditions. Therefore, growing seasons that have a number of cloudy, rainy, and somewhat cool days prior to traditional VT may allow for unusually long silk growth because of the absence of pollen. Physiologically, some corn products may display silks prior to tassel emergence. This can result from the selection process that occurred during the product's development or breeding, particularly for the selection of drought tolerance.[2]

Effects of Silking Prior to Tassel Emergence

Unfertilized ovules can be a result of sustained silk growth and the absence of pollen. Silks will no longer be receptive to the growth of pollen tubes if the first emerging silks (ear base) become too old or desiccate prior to the arrival of viable pollen. Without fertilization, the ovules will shrink, the potential for kernel development ceases, and the ear butt will be missing kernels.

Figure1. Unusually long silks.

The first emerged silks can also become covered by the elongated, later emerging silks, which prevents pollen grains from landing on the earlier emerged silks. The result being the same as described above for unfertilized ovules.

Zippered ears may result as silks from the underside of the ear are covered by the length and mass of the topside silks, preventing the fertilization of the covered silks. The zipper results because ovules along the length of the ear underside do not develop.

Silk balling, an entanglement of the silks within the husks, can also occur when silks are becoming unusually long. Under this scenario, silks fail to emerge from the husk and without emergence, the ovules cannot become fertilized and kernel development does not occur. Abrupt temperature changes (very warm to cool – low 60's or cooler) may also influence silk balling.[3]

On the positive side, tassel emergence and pollen shed can occur while the silks are still receptive and normal fertilization can result. Kernel development under this scenario should be as expected and respond accordingly to the environment of the remaining growing season.

Sources:

[1] Ritchie, S.W., Hanway, J.J., and Benson, G.O. 1993. How a corn plant develops. Iowa State University Special Report 48. [2] Nielsen, R.L. 2009. Unusually long silks in corn. Corny News Network Articles. Purdue University. https://www.agry.purdue.edu/ext/corn/news/timeless/LongSilks.html. [3] Nielsen, R.L. 2000. Scrambled silks, anyone? Corny News Network Articles. Purdue University. https://www.agry.purdue.edu/ext/corn/news/articles.00/SilkBalling-0718.html. Web sources verified 7/8/2015.

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