

Corn Pollination

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Corn has tasseled in many fields in the area, which means the pollination process has begun. Pollination is a critical time in corn production. If pollination does not occur a farmer will have ears with few to no kernels.

Pollination is the process of transferring pollen from anthers, male flower parts, to the female flowers. The male flowers in corn are called tassels and the ears contain the female flowers. The arrangement of tassels at the top and ears lower in the canopy has made corn well suited for wind pollination.

Female flowers in the ear cannot receive pollen until silks emerge from the husks. Silks are sticky on the end to catch pollen and they provide the pathway for the pollen grain to reach the ovule on the ear. Ovules will develop into kernels or grain.

Pollen shed usually begins two to three days prior to silk emergence and continues for five to eight days with peak shed on the third day. On a typical midsummer day, peak pollen shed occurs between 9 a.m. and 11 a.m. (after the dew has dried off the tassels), followed by a second round of pollen shed late in the afternoon.

Pollen shed begins in the middle of the central spike of the tassel and spreads out later over the whole tassel. Lower branches are the last to shed pollen.

Each tassel contains from 2 to 5 million pollen grains, providing 2,000 to 5,000 pollen grains for each silk. Wind blows the pollen across the field with most settling within 20 to 50 feet of its tassel source.

Pollen shed is not a continuous process. It stops when the tassel is too wet or too dry and begins again when conditions are favorable. Pollen remains viable after release for about 18 to 24 hours.

When a pollen grain lands on the silk, it forms a tube down the silk channel to pollinate the ovule in 12 to 28 hours. About 97% of the silks are pollinated by pollen from a different plant in the field.

A well-developed ear should have 750 to 1,000 ovules, or potential kernels, each producing a silk. Silk development begins first from the base ovules and last from the tip ovules of the ear.

Under good conditions, all silks will emerge and be ready for pollination within three to five days. This usually provides adequate time for all silks to be pollinated before the end of pollen shed.

Silks continue to elongate until pollinated. Long silks indicate difficulty in the pollination process. The most common pollination problem is silk emergence and pollen shed occurring at different times. Silks will turn brown once pollinated.

By pollination the corn plant has reached its maximum height and has produced all of its leaves. The potential number of kernels has been established and the remaining grain fill period will determine the size and the number of kernels at maturity.

The corn staging system used by agronomist switches from the vegetative growth stages to reproductive once the silks have begun to appear. The reproductive stages are divided into six developmental time periods:

- R1 – Sillking Stage: silks first emerge from ear tips
- R2 – Blister Stage: clear liquid in kernels
- R3 – Milk Stage: milky liquid in kernels
- R4 – Dough Stage: liquid in kernel becomes doughy
- R5 – Dent Stage: dent appears on cap of kernel
- R6 – Physiological Maturity: black layer appears on kernel tip

Many of the fields that have visible tassels are currently at Growth Stage R1. Most corn hybrids regardless of maturity type will reach physiological maturity 60 to 65 days after pollination. Corn is “safe” from a killing frost at physiological maturity.

Farmers in our area desire pollination to be completed by August 1 to insure maturity prior to the first killing frost. For our area the historic date for a first killing frost is around October 10.

Most of the corn in our area will be pollinated by August 1. Pollination should not be a problem this year; pollination problems generally occur during years of dry and hot weather.

However, the excessive water and flooding may cause corn to develop at different rates in the same field affecting tassel and silk emergence and pollination. This may result in grain maturing at different times in the same field.

Farmers have not had enough days without rain to fully assess the damage caused by flooding and excessive soil water. They need at least five days of good growing conditions to properly evaluate the health of the crop. We have not had five days since the latter part of May. However, pollination should not be a problem this year providing the corn plant was not damaged too much by wet conditions prior to tasseling.

Additional information may be found on corn growth stages at the following web site:
<http://www.agronext.iastate.edu/corn/production/management/growth/yield.html>