

Pollen to fruit: Growing with God

By Jack Walker
Professional Agronomist

Pollination and fertilization are the most sensitive and critical steps in the development of corn. No fertilization means no grain. Each day that the corn leaves roll during this period can reduce yield up to 8%.

Hail damage is also most detrimental at this time. Silk clipping by rootworm adults and Japanese beetles may also prevent fertilization. Since this is such a critical time for the corn plant, it is wise to understand the process.

The tassel is the male flower and the ear is the female flower located on separate areas of the plant (monocious). The tassel produces the male genetic material called pollen inside the anthers. Each tassel produces between two and five million pollen grains. Pollen means dust so each pollen grain is very small. After the dew dries in the morning and it is not raining, pollen is released from the anthers. Pollen is shed over about a one-week period.

The female flower or ear can produce up to about 1,000 ovules, and thus, potentially about 1,000 kernels of corn could be produced on a single ear. But in reality, about 400-600 kernels actually develop on an ear. Each ovule has a silk or stigma that emerges out of the ear tip of shoot. Silks from the base of the ear emerge first and from the tip last. It is, therefore, most common to see unfertilized ovules at the tip of the ear.

There is about two to five thousand pollen grains per silk. Because the pollen is so small and easily windblown, only about 3% of the ovules are fertilized from pollen from the same plant.

Pollen readily adheres to the silk. The pollen grain germinates on the silk and produces a pollen tube that

contains the male genetic material. The pollen tube grows down the hollow silk and fertilizes the female ovule within 24 hours. Within two to three days after an ovule has been successfully fertilized, the base of the silk will collapse and detach from the immature kernel and the silks will soon start to turn brown. The fertilized embryo will be nourished to develop a mature kernel in about 55-60 days. For the ovules that remain unfertilized, the silks remain attached and continue to grow for about 10 days and retain a live color. They eventually deteriorate.

Since the silk detaches from the immature kernel or embryo with successful fertilization, we can do an ear shake test to determine the success of fertilization. Using a knife, cut lengthwise through the husk on two sides and gently remove the husks. Gently shake the ear. Unfertilized ovules will still have attached silks.

While all of this is interesting and important to corn farmers, of greater importance in our lives is our relationship with God. It is therefore wise to understand the process of growing with God as much as possible. And there are many similarities between the critical period of corn fertilization and our relationship with God.

Pollen: God comes to us

Some may say that God did not come to save them or that they have been too evil to deserve eternal life. Titus 2:11, however, says, "For the grace of God that brings salvation has appeared to all men." John 6:40 states, "For my Father's will is that everyone that looks to the Son (Jesus) and believes in Him shall have eternal life."

No one has been or will be good enough to earn salvation. It is only by God's grace. Just like the pollen coming down to the silk, it is God

that comes down to us. The silks cannot go up to the tassel and neither can we go up to God. God is always shedding the abundant pollen of grace to all that will receive Him.

Silks: God reveals the truth to us

John 6:44 states: "No one can come to me (Jesus) unless the Father who sent me draws him, and I will raise him up at the last day."

The Holy Spirit draws us through the truth of the Gospel to enable us to genuinely proclaim Jesus as our Savior and Lord. The silks for receiving God's grace are drawn out the ear shoot by the Holy Spirit.

The role of the Christian is to be Christ's ambassadors to deliver His message of reconciliation—the truth of the Gospel. Christians are just the messenger, but oh how welcome are the feet of the messengers of good news!

Genetic fertilization: God lives within us

Once Jesus resides in our heart He never leaves. He is always with us. We are a new creation!

Grain: God enables His children to bear fruit

Newly saved individuals are nourished to enable them to produce fruit by doing the good works that God prepared them in advance to do (Ephesians 2:10). Just like detached brown silks and fruit is a clear sign of successful fertilization and the ensuing developing grain, God's children are also recognized by their good works.

It appears to me that salvation is such a spiritual battle between good and evil. Prayer and the proclamation of God's truth is vital. As we evangelize at farm shows and other events, we must remember to be in prayer and accurately deliver the good news of God's saving grace. Our loving God will take care of the rest.

Jack Walker is product development agronomist for Novartis Seeds, 7113 Alt. 49 East, Arcanum, OH 45304.