

TECH TALK

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Arrested ear syndrome of Maize

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Arrested ear syndrome also known as blunt ear syndrome and hollow husk, is not a disease caused by a pathogen but is a physiological disorder that can lead to significant reduction in yield.

The term arrested ear syndrome refers to the abnormal development of the corn ear which can be caused by a number of stress factors.

The most common theories proposed to explain the occurrence of arrested ear is cold stress, in particular a sudden drop in the average temperature, and pre-tassel application of crop protection chemical often including adjuvants. It is important to note that the unpredictability of arrested ear makes pinpointing the exact cause very difficult despite numerous studies done aimed at doing just this.

Arrested ear symptoms can occur on the ears, husks, silks and leaves. At maturity ears affected by this disorder are shorter, have less kernels and have dried and stunted tips (Figure 1 and 2). In trials done to simulate arrested ear syndrome, symptoms could be seen as soon as 7 days after foliar application but was usually more pronounced at 21 days after application. At this early stage it could be observed that seed development at the tip of the cob had prematurely stopped (Figure 3).

Husks of affected plants was more slender and have sharper points. When feeling the husk it appeared empty.

Silk emergence was reduced when affected by arrested ear and could be totally absent in severe cases.

Plants affected by arrested ear syndrome did not show symptoms on the leaves until the grain filling stage, at this stage the leaves

sometimes turned a purplish colour due to the build-up of sugars in the leaves.

Arrested ear syndrome is still very much an unknown phenomenon but what is known is that it can have a devastating effect on yield. Avoiding the development of this disorder is of great importance, and most research suggest the risk of arrested ear developing can be reduced by avoiding crop protection chemical applications during growth stages V10 to VT. It is important to note that if disease pressure is high it can be very risky not to apply crop protection products so if applications have to be made in this period it is important not to use adjuvants, especially Non-ionic surfactants, and to avoid multi chemical mixes.

Research done at Purdue University shows clearly that the more products get mixed in the application the greater the arrested ear percentages (figure 4). The full article can be seen at: <http://www.kingcorn.org/news/articles/08/ArrestedEars-1209.html>

Figure 1: Typical arrested ear symptoms at maturity. Photo by Bob Nielsen.



Figure 2: Cob affected by arrested ear with normal cob above. Photo by Nathan Stetzel



Figure 3: Early symptoms of arrested ear on bottom cob. Photo Nathan Stetzel

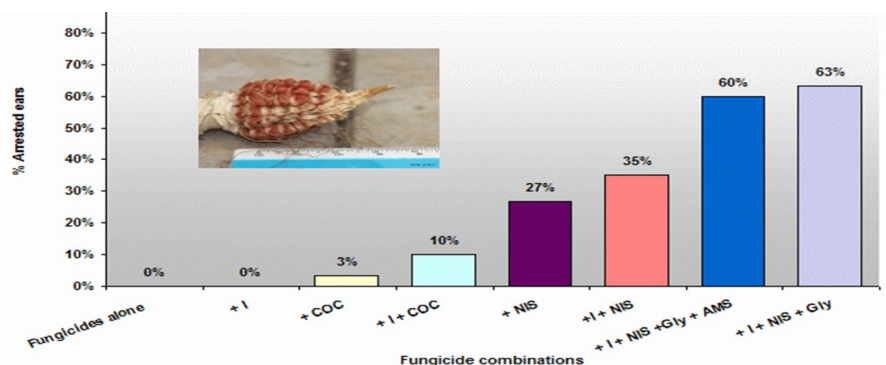


Figure 4: Percentage arrested ear after chemical applications at V14.