

Corn Oil Can Cause Underdeveloped Kernels at the Tip of the Ear

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Researchers and growers have noticed that ears treated with the oil sometimes exhibit a developmental disorder called cone tip (Figure 1). The last 1/2" to 3/4" of the ear does not develop and appears as a small, pointed tip at the end of the ear. Wholesale vendors have rejected corn because of this cone-tipped ear.

An experiment was conducted in 2000 and 2001 to look at the timing of the corn oil application compared to the degree of cone tip found on the ear. Oil plus *Bt* was applied on day three, four, five, six, seven, eight, nine, 10, and 11 days from first silk (day that 50% of the ears in the field had silk showing). Ears were harvested in each plot on day 25. The length of the entire ear and the length of the undeveloped ear were measured on 10 ears per plot with four replications, to get a calculated-percent cone tip.

Corn silks are covered with minute hairs, called trichomes. We believe that the oil treatment coats the trichomes, making it impossible for the silk to receive pollen. Silk from the tip is the latest to emerge from the ear, and the last to be pollinated, thus the later corn oil is applied, the less likely there is to be undeveloped kernels in the tip of the ear. When silks are not pollinated, the silks remain light green and somewhat shiny. Once fertilization has occurred, then the silks begin to change from light green to purple/red or the tips of the silks to begin to brown. This is approximately five days from the time that silks first appear (Figure 2). The percentage of cone tips declined after day five, and continued to drop with later oil treatments.

The amount of cone tip varies somewhat with the year and variety. Growers at retail stands have still been able to sell the corn with this disorder, especially when they tell the customer that it is a result of an organic treatment that keeps worms out of the corn. Customers seem happy with this explanation. What a grower has to be careful of is not applying the oil too early so that enough of the kernels are fertilized.

However, it is also important not to apply the oil too late. Corn earworm eggs hatch in three to four days at summer field temperatures. Oil should be applied before larvae are present in the ear, not later than six to seven days after silking starts. Using pheromone traps to monitor moth flight is a good way of knowing when you need to use the oil treatment. Flights can be monitored with the Scentry *Heliothis* net trap, baited with Hercon™ lures for corn earworm, placed at about ear height in freshly silking corn. Trap captures of two moths per week or more, indicate damaging numbers. More information can be found on the UMass Vegetable Team's website at www.umassvegetable.org.

Figure 1. Cone tip disorder



Figure 2. Oil timing and percent cone tip

