Some Unusual Kernel Injuries

DR. PAUL VINCELLI, DR. CHAD LEE AND DR. RIC BESSIN

LEXINGTON, KY.

Based on a limited number of cases we saw last week, there are two unusual injuries Extension agents and others should be on the watch for.

"Popped kernel" is the name given to kernels where the seedcoat on the crown of the kernel breaks open, giving it the appearance of a partially popped popcorn kernel (Figure 1). Little is known about this condition, although it has been associated with irregular rainfall, especially when very hot and dry conditions are common. We speculate that the injury occurs when very dry weather during grain fill is followed by a flush of rainfall, causing the endosperm to outgrow the pericarp. However, this is speculation, since scientific research on this is lacking.

"Silk cut" is a different condition resulting in a rupture of the seedcoat where it is in contact with unpollinated silk. While the genesis of "silk cut" is not well-understood, it is thought that contact with unpollinated silk (which can remain alive for days) interferes with normal expansion of the developing seedcoat, resulting in a rupture of the kernel. Unpollinated kernels are certainly common this year, because of heat and drought during the pollination of many corn crops.

Because both of these conditions result in a rupture of the seedcoat, each opens the kernels to invasion by ear and kernel rot fungi. In particular, this condition raises concern about possible avenues of infection by mycotoxin-producing fungi, especially those that produce fumonisins or aflatoxins.

Given the widespread occurrence of very hot, dry conditions during pollination, we suggest the following:

1. Scout fields for these and other forms of kernel injury.
2. For affected fields, be prepared to harvest in a timely way and dry grain promptly.
3. Provide good storage conditions (aeration, monitoring for mustiness, etc.) for all grain but especially for corn from fields showing kernel injury.
4. Market affected grain promptly. Δ

DR. PAUL VINCELLI: Extension Plant Pathologist, University of Kentucky

DR. CHAD LEE: Extension Agronomist, University of Kentucky

DR. RIC BESSIN: Extension Entomologist, University of Kentucky

Figure 1: "Popped kernel" condition, associated with irregular rainfall, especially including very hot and dry conditions. Note the two sap beetle larvae on the left side of the photo, which are attracted to the ruptured kernels.

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