Purdue University Department of Agronomy

Corny News Network

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August 2011
URL: http://www.kingcorn.org/news/timeless/Droopy.html

Are Your Ears (of corn) Sagging?

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Ears of corn normally remain erect until some time after physiological maturity has occurred (black layer development), after which the ear shanks eventually collapse and the ears decline or "droop" down. In recent weeks, corn field connoisseurs have reported droopy ears in drought-stressed fields that have not yet reached physiological maturity.

Droopy ears are cute on certain breeds of dogs, but droopy ears on corn plants prior to physiological maturity are a signal that grain fill has slowed or halted. Premature ear declination (the fancy term for this problem) results in premature black layer formation, lightweight grain, and ultimately lower grain yield per acre.

What Causes Droopy Ears? The most common contributing factor seems to be severe drought stress that extends late into the grain filling period. The "droopy" symptom suggests a loss of turgidity in the ear shank with stress, possibly combined with some cannibalization of the ear shank similar to what can occur with the stored reserves of the main stalk. Eventually, the ear shank collapses and the ear droops down.

In hybrids without the Bt-corn borer trait, collapsed ear shanks can also result from extensive tunneling by European corn borer larvae. Such tunneling weakens the ear shank, allowing it to collapse, and can ultimately also cause the ear to literally drop from the plant.

Impact on Yield? Remember that the ear shank is the final "pipeline" for the flow of photosynthates into the developing ear. An ear shank that collapses prior to physiological maturity will greatly restrict, if not totally prevent, the completion of grain fill for that ear and will likely cause

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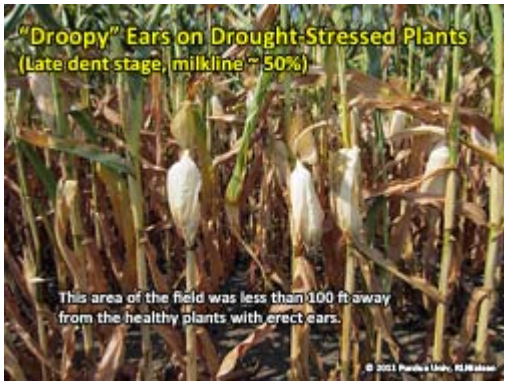

premature black layer development in the grain. If the droopy ears you've looked have not yet black layered, they soon will.

The timing of the onset of the collapsed ear shanks determines the magnitude of the expected yield loss. If grain fill were totally shut down at the full dent stage of grain development (milk line barely visible at dent of kernels), the yield loss would be as much as 40 percent. If grain fill were totally shut down at the late dent stage of grain development (milk line halfway between dent and tip), yield losses for the affected ears would equal about 12 percent.

Multiplying the percentage of affected ears in a field by the estimated yield loss per ear will give you an estimate of whole field loss. For example, if ten percent of the field contained plants whose ears drooped prematurely at the late dent stage, whole field loss would be estimated at 1.2 percent (10 percent of the ears multiplied by 12 percent yield loss per ear).

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