Abnormal Corn Ears

Peter Thomison*and Allen Geyer
Horticulture and Crop Science
The Ohio State University College of Food, Agriculture, & Environmental Science
*614-292-2373 (thomison.1@osu.edu)

ACKNOWLEDGEMENTS: Picture of Diplodia ear rot in corn ear with husk (Courtesy S.C. Dalmacio) reprinted with permission from American Phytopathological Society. We thank Pierce Paul and Dennis Mills, OSU Plant Pathology, for their contributions of ear rot pictures. Design by John Victor, Communications and Technology.

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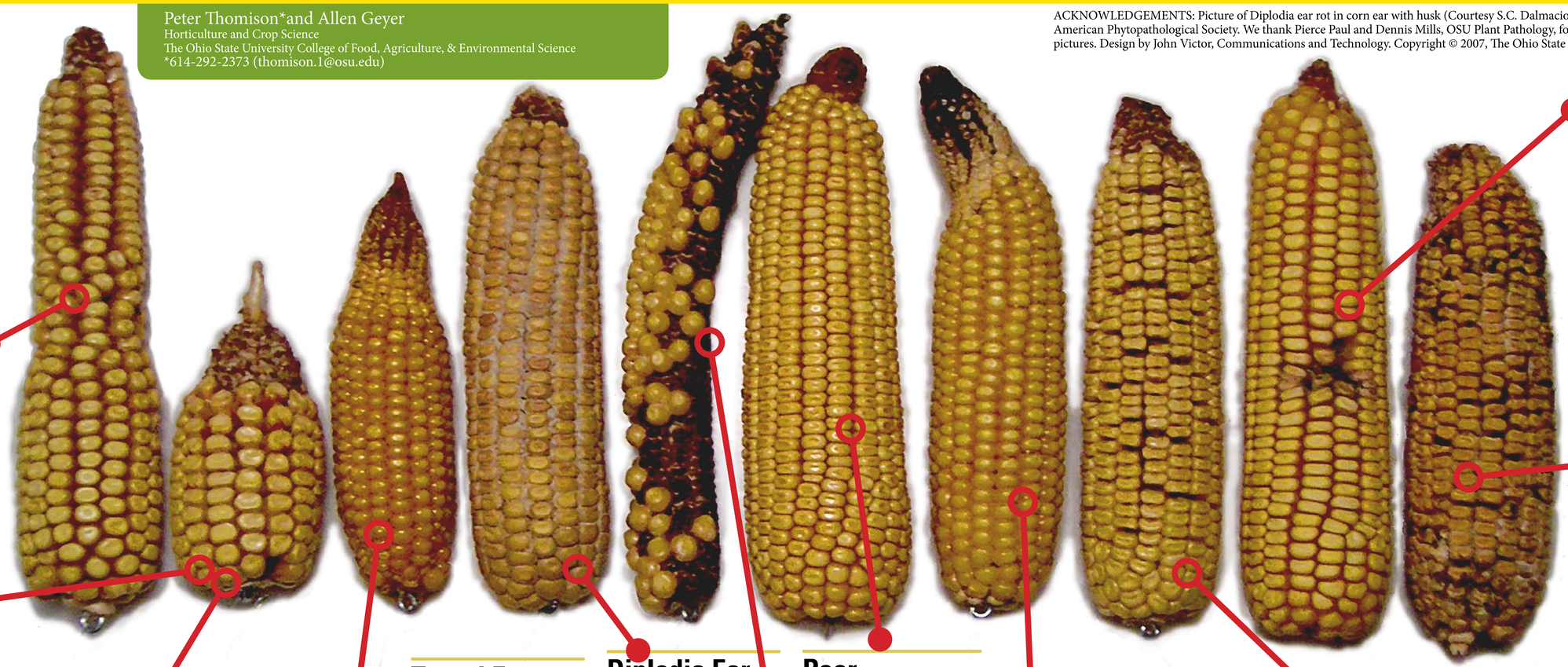


Ear Pinching
Beer Bottle Ears

Symptoms: Kernel row number may decrease by half from bottom to top of ear (for example - from 16 to 7 to 8 kernel rows/ear). Ear length is usually normal.

Causes: Severe stress during the 7 to 10 leaf collar stages may result in reduced numbers of kernel rows. Late broadcast application of sulfonylurea herbicides can result in ear pinching.

Blunt Ear Syndrome
Beer Can Ears
Ear Stunting

Symptoms: Characterized by ears with markedly reduced ear size and kernel numbers per row. Husk length and kernel row number may be normal. Sometimes associated with multiple ears at a node. Occurrence is usually rare and sporadic within a field.

Cause: Unknown? Associated with temperature stress (brief cold shock?) during early ear formation stages (V8-12)and more recently with pretassel applications of certain foliar fungicides. Differs in severity among hybrids.

Multiple Ear Syndrome
Bouquet ears

Symptoms: Characterized by multiple ears on the same ear shank. In some cases as many as 5 or 6 "side" ears may develop forming a "bouquet". Side ears may be well developed or may resemble "beer can" ears or mere remnant ears. Many probably fail to form kernels due to late silk emergence and lack of pollen.

Cause: Unknown. Similar to those noted under "Blunt Ear Syndrome".

Drought Damaged Ears
Nubbin Ears

Symptoms: Small misshapened ears with poor kernel set, especially at ear tip. Reduced kernel numbers associated with reduced kernel row and kernels per row.

Cause: Severe drought from mid vegetative growth through early to mid grain fill. Other stresses, including nitrogen deficiency and high plant population, can result in nubbin ears.

Tassel Ears

Symptoms: Combination tassel and ear in the same structure - a "tassel ear." The ear portion of this tassel ear structure usually contains only a limited number of kernels. Tassel ears often appear on tillers (suckers) arising from plants with normal ears and tassels. These tassel ears are produced at a terminal position on the tiller where a tassel would normally appear.

Causes: Tassel ears often produced by tillers (suckers) when growing point is destroyed or injured by hail, frost, flooding, herbicides, and mechanical injury. Some hybrids may also be more prone to tiller under certain environmental conditions and these tillers may give rise to tassel ears. Tassel ears are frequently observed along the edges of fields where early season soil compaction and saturated soil conditions may have contributed to this abnormal development.

Diplodia Ear Rot

Symptoms: Part or the entire ear is rotted by a white mold growing between the kernels. Infections generally start at base of ear and progress to the tip. Later the white mold changes to a grayish-brown growth over the husks and kernels. The entire ear may be shrunken, and the infected kernels appear glued to the husks. Hybrids vary in susceptibility.

Cause: Diplodia ear rot is caused by the fungus *Stenocarpella maydis*. Infection may occur from late vegetative stages to 3 weeks after midsilk.

Poor Pollination at Ear Tip

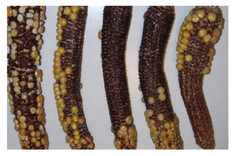
Symptoms: Cob tissue without kernels on the last one or more inches of the ear tip. Ovules not fertilized at ear tip.

Causes: Poor fertilization of ear tip ovules at silking. Same as those for Poor, Incomplete Kernel Set.

Poor, Incomplete Kernel Set

Symptoms: Poor, reduced kernel set; only a limited number of kernels (ovules) pollinated. When severe, ears show mostly cob tissue with just scattered kernels or no distinct kernel rows

Multiple causes: Poor pollination of ear due to asynchronous pollen shed and silking (poor "nick") due to severe drought and high temperatures; inadequate pollen supply due to uneven crop development, herbicides, insect feeding and silk clipping. Phosphorus shortages also interfere with pollination.



Tip Dieback

Symptoms: Poor tip fill or unfilled ear tips; little or no kernel development on the last one or more inches of the ear tip. Kernel abortion at tip end of ear at the blister and milk stages; usually associated with poor ovule fertilization at tip. Ovules not fertilized and aborted kernels may both appear dried up and shrunken, but aborted kernels often have a slight yellowish color.

Causes: Stress conditions during early kernel developmnt, including severe drought and high temperatures; nitrogen deficiencies, foliar diseases, cloudy weather.

Zipper Ears
Banana Ears

Symptoms: Missing entire or parts of kernel rows on the outside or underside of the ear primarily due to kernel abortion. Ears often misshapen and bend (like banana) due to differential kernel formation along ear.

Causes: Unknown. Often associated with severe drought stress or defoliation injury following pollination.

Chaffy Ears

Symptoms: Lightweight ears with poorly filled, shrunken kernels. Spaces between kernels indicating incomplete kernel fill.

Multiple causes: Severe stress (photosynthetic stress) at dough (R4) through early dent (R5) stages, including frost damage, premature plant death due to drought, high plant population, foliar diseases, severe potassium deficiency and hail.

Western Bean Cutworm Ear Injury

Symptoms: Scattered patches of partial and/or complete kernel destruction. Injury often associated with mold growth on affected kernels

Causes: Kernel feeding by western bean cutworm. Tends to be restricted to a limited parts of the ear. Western bean cutworm often enters ear through the husk in the sides of the ear. Partially consumed kernels may be further attacked by ear molds or secondary insect feeders that enter the ear through the cutworm's feeding channel.

Bird Damage

Symptoms: Lightweight, weathered ears with damaged, discolored moldy kernels that have been subjected to bird and insect feeding; often associated with kernel sprouting.

Causes: Poor husk coverage at maturity combined with upright ear orientation allows bird feeding of tip kernels that may lead to secondary insect feeders. Moisture accumulation at base of ear promotes molds and may result in germination of scattered kernels.

Kernel Red Streak

Symptoms: Red streaks form on sides of kernels and extend over the crown. Usually limited to kernels at tips of ear.

Causes: Caused by toxin secreted during feeding by the wheat curl mite. Severity of symptom expression varies among hybrids.

More information on abnormal corn ears is available online at http://agcrops.osu.edu/corn/EARABNORMALITIES.php