Ear Infections and Abnormal Corn Ear Development

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A list of common ear abnormalities.

Just when you think pests and diseases couldn't do any more damage to your cornfields, in steps Mother Nature. Depending on her mood, she can cause her own set of damage to your corn in the form of abnormal ear development. That crazy lady.

“Environment is probably the major factor (affecting abnormal ear development), especially weather conditions like extreme temperatures and drought,” says Peter Thomison, crop science professor, Ohio State University (OSU). “However, there may be interactions between environmental conditions and certain cultural practices — sensitive hybrids, chemicals and high populations — that can exacerbate problems.

“Chemicals — injury from certain herbicides and crop adjuvants (non-ionic surfactants) — hybrid susceptibility, diseases, insects and nutrient deficiencies can all play a role depending on the particular disorder,” he says of ear abnormalities.

Bob Nielsen, Purdue Extension agronomy specialist, has done research showing that herbicides, pesticides and insecticides can definitely affect ear development.

“Certain combinations of foliar pesticides and spray additives applied at approximately growth stage V14 have the potential to arrest or otherwise deform ear development in corn,” he says. “The preliminary data suggest that growers should be cautious using spray additives, especially non-ionic surfactants, when applying pesticides within 10-14 days prior to tassel emergence.”

According to Nielsen, “Further research is needed to better understand the nature and mechanism of the causal factor(s) that contribute to arrested or malformed ear development.”

To familiarize you with the abnormalities that can occur, Corn & Soybean Digest offers this guide to “ear infections.” Based on information and research from Thomison and Nielsen, these descriptions and photos should help you recognize ear deformities that may occur in your fields.

MULTIPLE EAR SYNDROME
(BOUQUET EARS)

SYMPTOMS: Multiple ears on the same ear shank. Side ears may be well developed or remnants.

CONDITIONS FAVORING: Unknown, but temperature stress is a possibility.

EAR PINCHING
(BEER BOTTLE EARS)
SYMPTOMS: Kernel rows decrease by half from bottom to top of ear; normal ear length.

CONDITIONS FAVORING: Severe stress during 7-10 leaf collar stage; late broadcast application of sulfonylurea herbicides.

POOR, INCOMPLETE KERNEL SET

SYMPTOMS: Poor, reduced kernel set; limited number of kernels pollinated; in severe cases, ears show mostly cob with just a few kernels.

CONDITIONS FAVORING: Poor pollination or inadequate pollen supply; severe drought, high temperatures; uneven crop development; insect feeding; silk clipping; phosphorus shortage.

POOR POLLINATION AT EAR TIP

SYMPTOMS: No kernels on last inch or more of cob.

CONDITIONS FAVORING: Poor fertilization of ear tip ovules at silking; drought and high temperatures; silk clipping; phosphorus shortage.

CHAFFY EARS

SYMPTOMS: Lightweight ears with poorly filled shrunken kernels; spaces between kernels.

CONDITIONS FAVORING: Severe stress at dough through early dent stages; frost damage, high plant population; foliar diseases; potassium deficiency; hail.

TIP DIEBACK

SYMPTOMS: Poor tip fill; little or no kernel development on last inch(es) of ear tip; kernel abortion at tip end at blister/milk stages; unfertilized ovules and aborted kernels appear dried up and shrunken; aborted kernels have slight yellowish color.

CONDITIONS FAVORING: Stress during early kernel development; severe drought; high temperatures; nitrogen deficiencies; foliar diseases; cloudy weather; uneven plant development.

KERNEL RED STREAK

SYMPTOMS: Red streaks on sides of kernels, usually limited to tips of ears.

CONDITIONS FAVORING: Toxins secreted during feeding by wheat curl mite; varies among hybrids.

BLUNT EAR SYNDROME (BEER CAN EARS)

SYMPTOMS: Bottom end of cob has normal rows with good kernel set, but is stunted part way up with a rudimentary tip and no silking evidence.
CONDITIONS FAVORING: Cold temperature shock or wide temperature swings during V6-V10.

TASSEL EARS

SYMPTOMS: Tassel and ear in same structure with limited kernels on ear; produced at a terminal position on the tiller where a tassel would normally appear.

CONDITIONS FAVORING: Near field edges when growing point is destroyed/injured by hail, frost, flooding, herbicides or mechanical injury before V6; early season soil compaction and saturated soil conditions.

BIRD DAMAGE

SYMPTOMS: Lightweight weathered ears with damaged, discolored moldy kernels.

CONDITIONS FAVORING: Poor husk coverage at maturity; upright ear orientation; moisture accumulation at base of ear.

ZIPPER EARS (BANANA EARS)

SYMPTOMS: Missing entire or parts of kernel rows on outside or underside of ear; ears often misshapen and bent.

CONDITIONS FAVORING: Unknown, but associated with severe drought or defoliation injury following pollination.

FOR MORE INFORMATION

OSU has a descriptive poster showcasing the following abnormalities, along with other ear issues. To order one, go to: http://agcrops.osu.edu/corn/EarAbnormalities.php. For more about Nielsen's research, go to http://tinyurl.com/CSD0809-ears.

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endosperm. These may flatten as kernels on both sides press in during grainfill, if there are only a few, scattered "bubble kernels" on an ear.

Links referenced within this article

http://agcrops.osu.edu/corn/EarAbnormalities.php
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