Gib-Infected Corn a feeding problem of Swine

Purdue University Cooperative Extension Service
GIB-INFECTED CORN
a feeding problem of swine

Occasionally in Indiana and adjoining states, there are reports of swine problems associated with the feeding of certain lots of corn. During 1957-58, for example, some lots of wet stored corn, when fed to swine, caused prolapse (falling down) of the vagina and/or rectum, and development of mammary glands. In 1965, various lots of freshly-harvested corn from north central and northeast Indiana either were refused by swine or were eaten then vomited.

What caused these problems? Under what conditions will they likely occur? What should be done if they do occur? And what can be done to prevent them?

THE CAUSE -- GIB FUNGUS

One fungus, growing in the corn kernels, caused the troubles described -- estrogenic effects, refusal and vomiting. That fungus is Gibberella zeae, or the "Gib" fungus. Under the right conditions, it can attack corn both in the field and in storage.

What It Does in the Field

The Gib fungus attacks corn ears around silking time if the weather is cool and moist. While attacking the ears, it appears to produce two undesirable substances. One causes refusal; the other is an emetic which induces vomiting if swine are hungry enough to eat. Hogs will sort Gib-infected ears, eating only those portions lightly infected or uninfected.

These refusal or emetic substances persist in the grain for several years. And they can be neither disguised by additives like molasses nor removed by grain drying or sealed storage.

What It Does in Storage

Except in the case of air-tight bins, the Gib fungus attacks corn in storage if kernel moisture is over 23% and temperature is above 40°F. When wet corn is stored below 70°F, the fungus may produce a female hormone (estrogen). If corn containing this estrogen is fed, the result may be abnormal growth or damage to certain organs in swine.

The estrogenic substance is not usually produced in the field because of high growing temperatures. On the other hand, neither are the refusal and emetic substances produced in storage.

HOW TO RECOGNIZE GIB FUNGUS
ATTACK IN FIELD AND STORAGE

In Gib-infected corn fields, the tips of ears are covered with fine white, pink, or red threads called mycelia (Figure 1). Kernels may also exhibit these color variations. But do not mistake the Gib coloring condition in kernels with the recent "red streaking" phenomenon of kernels (Figure 2). Red streak is not caused by the Gib fungus and does not affect feeding value or livestock.
In severe cases of Gib infection, the husks are "glued" to the ears and covered with the fungus' powdery black fruiting bodies. Other fungi also attack corn in the field, but they usually affect the butt portion or random areas of the ear, not the tips.

Gib fungus attack in storage is more difficult to recognize. Here, any part of the ear is susceptible, and there may or may not be kernel discoloration. Therefore, the fungus usually has to be isolated on agar culture medium to confirm its presence (Figure 3). This takes 4 to 5 days.

PRESENT CONTROL RECOMMENDATIONS

Storing corn at under 22% moisture and below 35% will prevent growth of the Gib fungus but not necessarily all grain fungi. Leaks in grain storage structures should be avoided, since localized areas may allow sufficient growth of Gib fungus to cause trouble. Although little can be done to prevent spread in the field, Indiana weather at silking does not usually favor its growth. Corn varieties resistant to the fungus are being developed.

If you suspect field invasion of Gib, contact your local County Extension Agent so he can have it confirmed. The infected corn may be safely fed to beef cattle or sheep, either alone or mixed with sound corn. Palatability and nutrition may be lessened for these animals also, but not to the extent that they are for swine.

Don't waste money trying to disguise the grain with additives or try to remove the harmful substances by drying or washing. None of these procedures is effective.

As with field infection, if you suspect Gib fungus in storage, contact your County
Extension Agent for confirmation. Although lightly-infected corn can be fed sparingly to cattle and sheep, destroy all severely-infected grain. In no case should the corn be fed to breeding stock.

Gib infected corn should not be sold unless the buyer is fully aware of the hazards involved. Also, have apparent estrogenic upsets in swine confirmed by a veterinarian before incriminating feed and the Gib fungus.

RELATED PUBLICATIONS

The following are free to Indiana residents from their county Extension office or Mailing Room, AGAD Building, Purdue University, West Lafayette, Indiana 47907.

BP-5-6, "Stalk Rots of Corn"
BP-5-8, "Identifying Corn Diseases" (Color)
BP-5-10, "Corn Smut"
BP-5-12, "Leaf Blights of Corn"
BP-5-13, "Ear Rots of Corn"
BP-5-14, "Molds of Stored Grain"
EC 536, "Maize Dwarf Mosaic"