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### EC03-1888 Ear Rots and Grain Molds of Corn

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Stack, James P.; Giesler, Loren J.; Harveson, Robert M.; Watkins, John E.; and Chaky, Jennifer L., "EC03-1888 Ear Rots and Grain Molds of Corn" (2003). *Historical Materials from University of Nebraska-Lincoln Extension*. 1539.

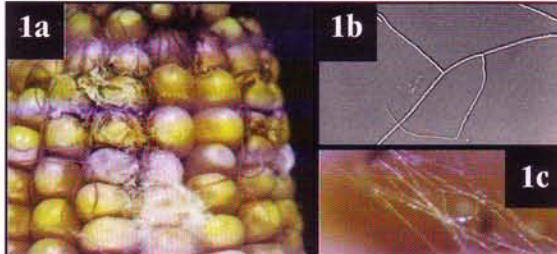
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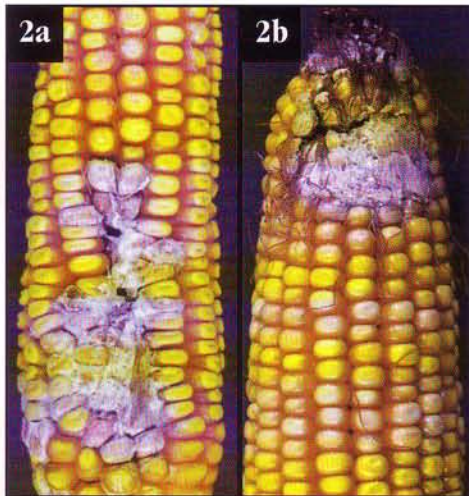
# Ear Rots and Grain Molds in Corn



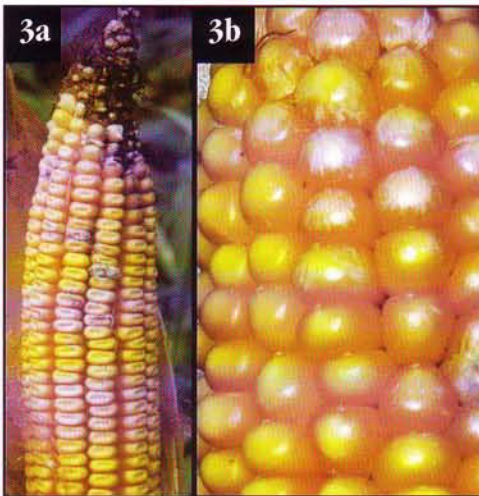
NU Extension Plant Pathology Team  
James P. Stack, Loren J. Giesler, Bob M. Harveson,  
John E. Watkins, and Jennifer L. Chaky



1. Grain Molds



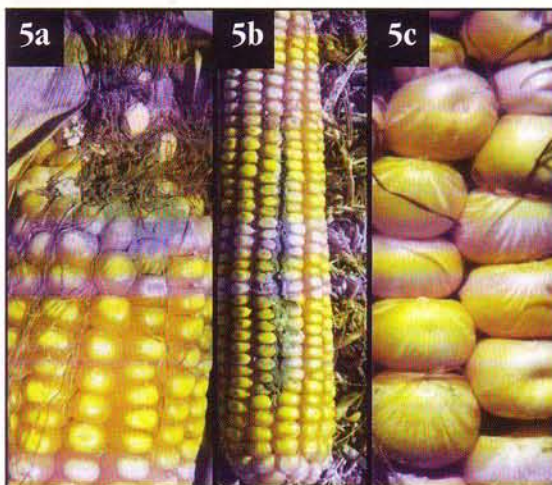
2. Gibberella Ear Rot



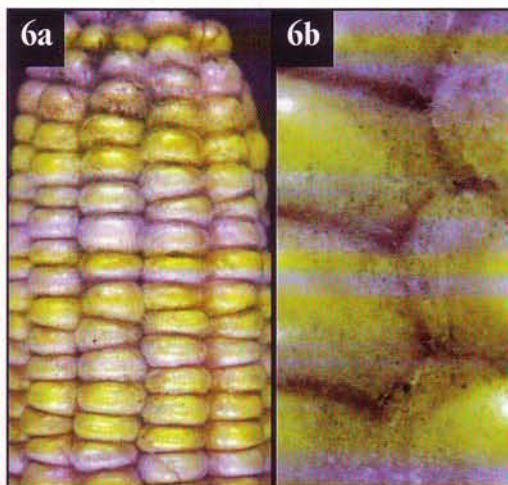
3. Fusarium Kernel or Ear Rot



4. Red Streak



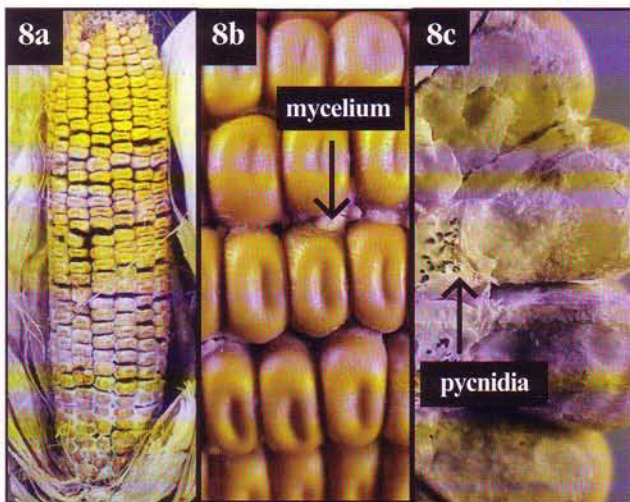
5. Penicillium Ear Rot



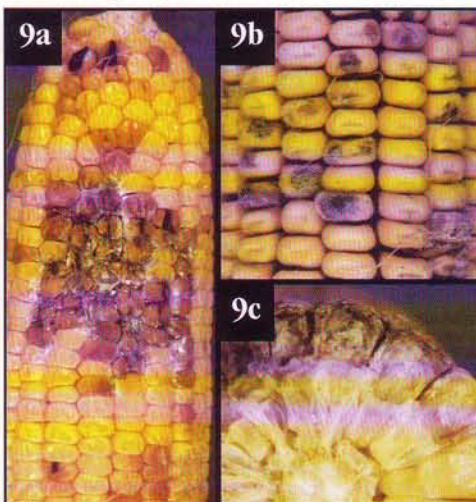
6. Aspergillus Ear Rot



7. Blue Eye



8. Diplodia Ear Rot



9. Nigrospora Ear Rot



Healthy

Disease	Symptoms
1. <b>Grain Molds</b> <i>Many species</i>	Grain molds are caused by fungi and can develop in the field and after harvest in storage (Fig. 1a). Grain mold infections are not always visible. Because some grain mold fungi produce mycotoxins (see Neb Guide G00-1408, "Grain Molds and Mycotoxins"), accurate identification is very important. Microscopic filaments, called hyphae, allow the molds to grow through soil or grain piles as well as inside the grain (Fig. 1b). A network of hyphae (Fig. 1c), called a mycelium, is responsible for cementing grain together in storage bins.
2. <b>Gibberella Ear Rot</b> <i>Gibberella zeae</i>	<i>Gibberella</i> ear rot (asexual stage: <i>Fusarium graminearum</i> ) is characterized by a white mold frequently with red pigmentation. It develops on any part of the ear (Fig. 2a) but is most often found at the tip (Fig. 2b). Some strains of this mold produce mycotoxins, including deoxynivalenol, zearalenone, and trichothecenes.
3. <b>Fusarium Kernel or Ear Rot</b> <i>Fusarium</i> spp.	<i>Fusarium</i> ear rot (Fig. 3a) is caused by <i>Fusarium verticillioides</i> (mycotoxins: fumonisins), <i>F. proliferatum</i> (mycotoxins: fumonisins, moniliformin), and <i>F. subglutinans</i> , (mycotoxins: moniliformin). White streaks under the surface of infected kernels that radiate from the silk scar toward the base of the kernel (called starburst) are a common symptom (Fig. 3b).
4. <b>Red Streak</b> <i>Wheat curl mite</i>	Red streak is most often caused by a toxin excreted in saliva during feeding by the wheat curl mite (Fig. 4a). The red streaks usually begin where the silk attaches to the kernel. Close up of red streak symptom on white corn kernels (Fig. 4b).
5. <b>Penicillium Ear Rot</b> <i>Penicillium</i> spp.	<i>Penicillium</i> ear rot is most often found at the tip of the ear (Fig. 5a); however, it can occur on any part of the ear. It is frequently associated with insect feeding channels along the ear (Fig. 5b). It can infect the kernel embryo causing "blue eye" symptoms. Infected kernels sometimes have streaks (Fig. 5c) similar to the <i>Fusarium</i> starburst symptom. Dual infections of <i>Penicillium</i> with <i>Fusarium</i> or <i>Gibberella</i> are common.
6. <b>Aspergillus Ear or Kernel Rot</b> <i>Aspergillus flavus</i>	<i>Aspergillus</i> ear rot is characterized by a light green mold anywhere on the ear (Fig. 6a); growth is often sparse (Fig. 6b). Under some conditions, <i>A. flavus</i> produces the mycotoxin aflatoxin, that is toxic to many species of animals including humans. The spores of <i>A. flavus</i> can be allergenic to sensitive individuals and pathogenic to individuals with impaired immune systems.
7. <b>Blue Eye</b> <i>Aspergillus glaucus</i> or <i>Penicillium</i> spp.	Blue eye is caused by at least two species; the most common in Nebraska is <i>A. glaucus</i> . The fungus grows in the kernel embryo causing the blue eye symptom (Fig. 7a). <i>Aspergillus glaucus</i> usually grows between the kernels (Fig. 7b).
8. <b>Diplodia Ear Rot</b> <i>Diplodia maydis</i>	<i>Diplodia</i> ear rot (Syn. <i>Stenocarpella maydis</i> ) most often develops at the base of the ear (Fig. 8a), forming dense fungal growth between the kernels (Fig. 8b). Pycnidia, the spore-bearing structures, often are formed at the base of colonized kernels (Fig. 8c).
9. <b>Nigrospora Ear Rot</b> (Dry Ear Rot) <i>Nigrospora oryzae</i>	<i>Nigrospora</i> ear rot is characterized by black mold anywhere on the ear; infected kernels are clustered (Fig. 9a) or scattered (Fig. 9b); it can grow into the cob (Fig. 9c). It rarely causes significant losses and does not produce mycotoxins.

**Photo Credits:** All photos courtesy of faculty in the NU Institute of Agriculture and Natural Resources.

Issued in furtherance of Cooperative Extension work, Acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture. Elbert C. Dickey, Dean and Director of Cooperative Extension, University of Nebraska, Institute of Agriculture and Natural Resources.

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