

# Ear and Stalk Rots



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# Ear Mold Concerns

- Mycotoxins
- Yield loss
- Price dockage
- Feed quality

# Mycotoxins

- Compounds produced by fungi that accumulate in grains
- Heat stable
- Can be toxic to humans and/or livestock

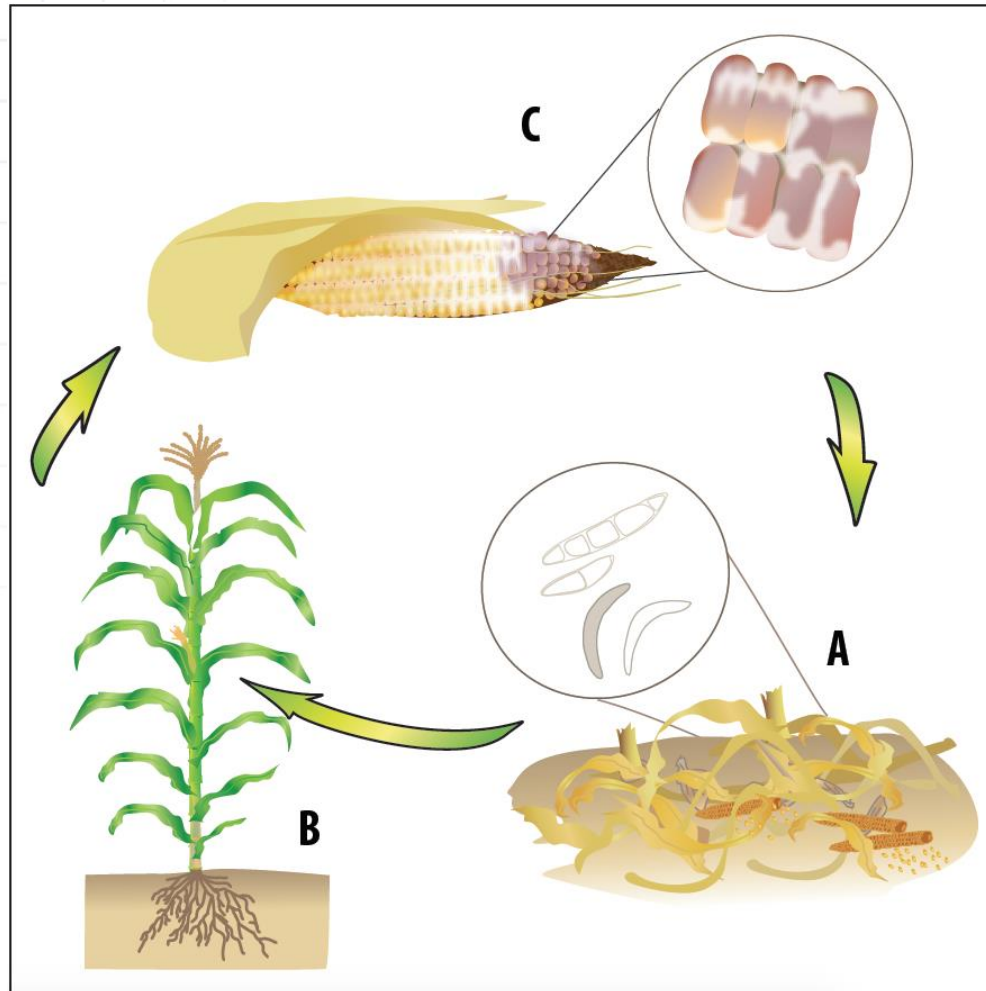
# Is this corn contaminated with mycotoxins?



pxleyes.com



# Gibberella ear rot



# Gibberella Ear Rot



- Vomitoxin

- Also known as deoxynivalenol or DON

- FDA Advisory Limits

- 1 ppm

- Human Food

- 5 ppm

- Swine, <20% of diet

- 10 ppm

- Cattle and chickens, < 50% of diet

- 5 ppm

- All other animals, <40% of diet

# Zearalenone

- Swine

- Prepubertal gilts
- Sexually mature gilts
- Bred sows
- Juvenile boars
- Mature boars

Hyperestrogenism, prolapse

Anestrus, pseudopregnancy

Early embryonic death, small litters

Reduced libido, small testicles

No effect

- Cattle

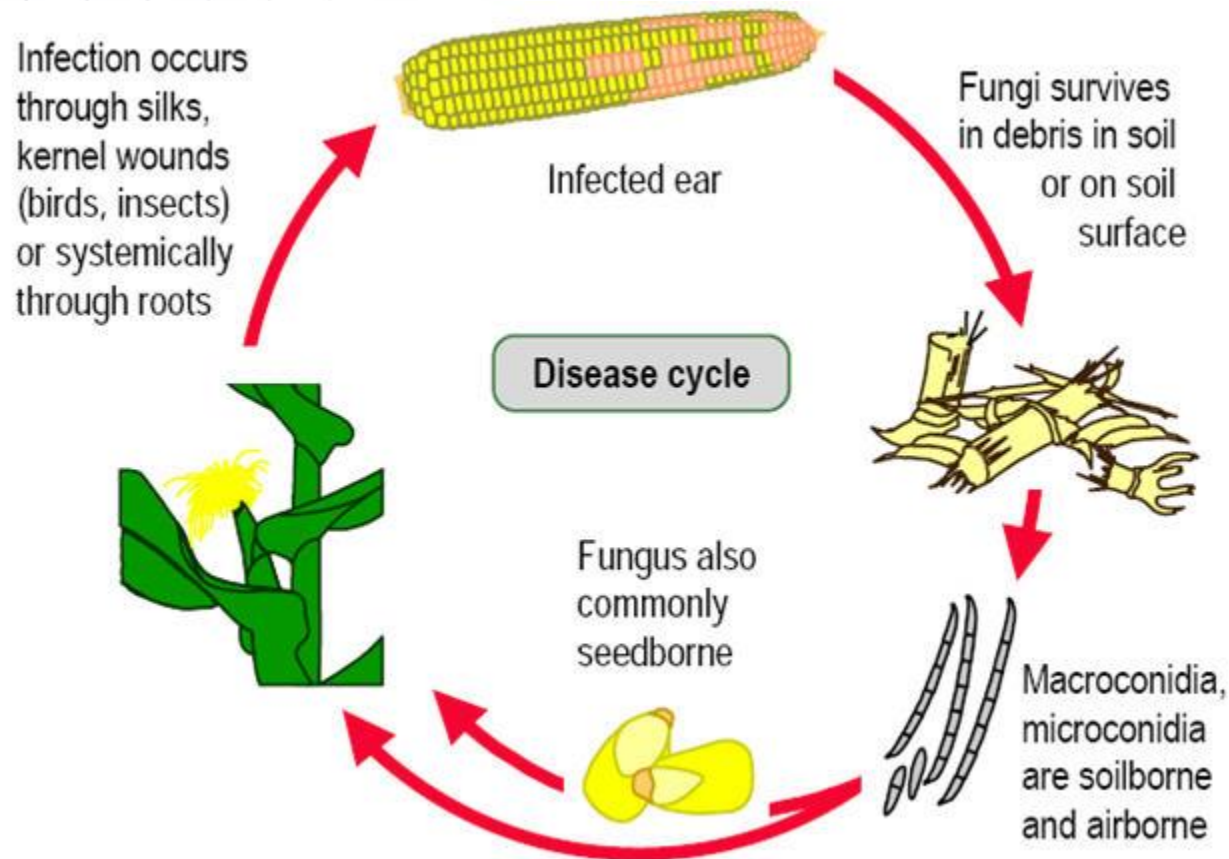
- Virgin heifers
- Dairy cows

Reduced conception

Reduced conception



# Fusarium ear rot life cycle



# Fusarium ear rot



# Fumonisin: FDA Advisory

- Food 2-4 ppm
- Horses 5 ppm, <20% of diet
- Swine 20 ppm, <50% of diet
- Ruminants 30 - 60 ppm, <50% of diet
- Poultry 100 ppm, < 50% of diet

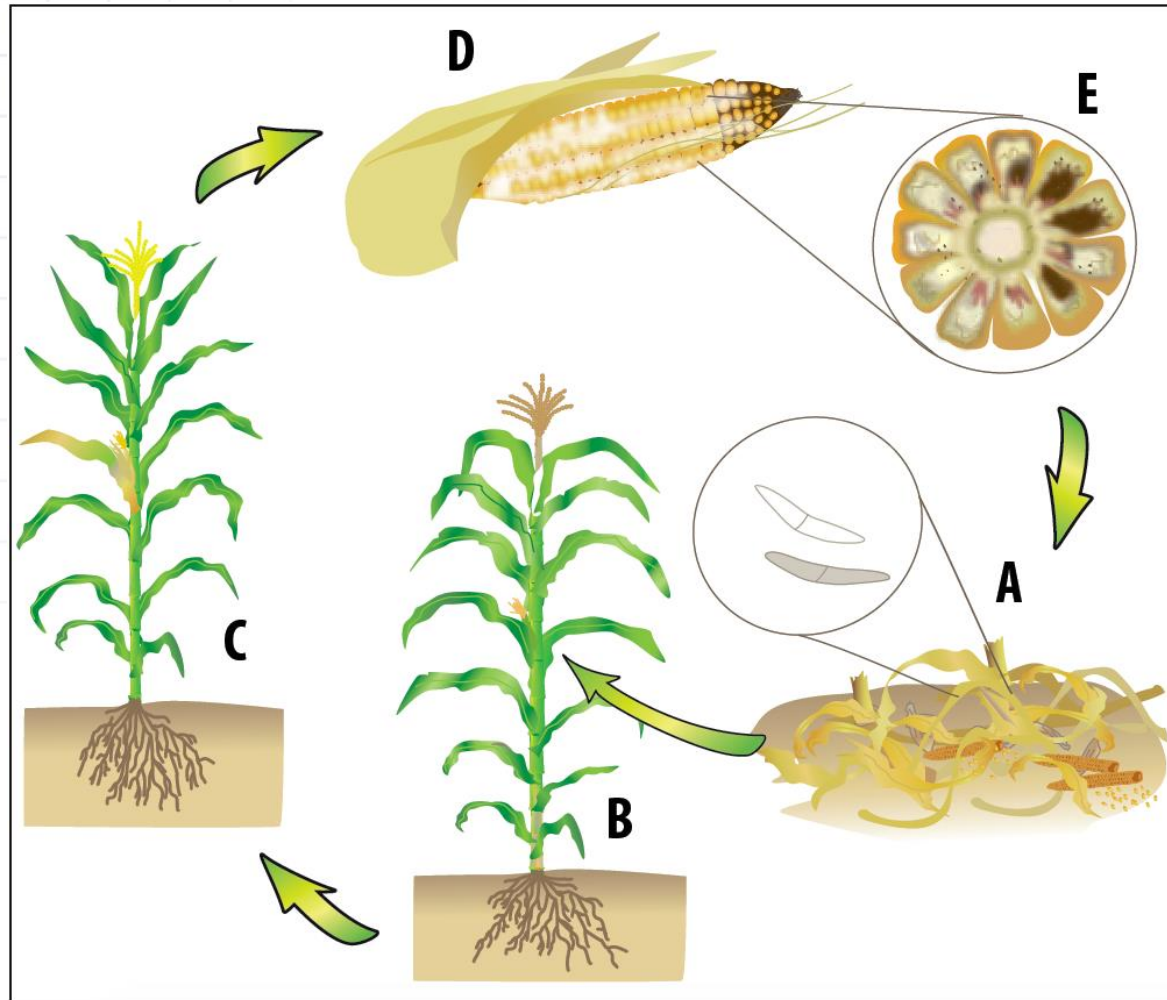


# Diplodia ear rot





# Diplodia ear rot life cycle

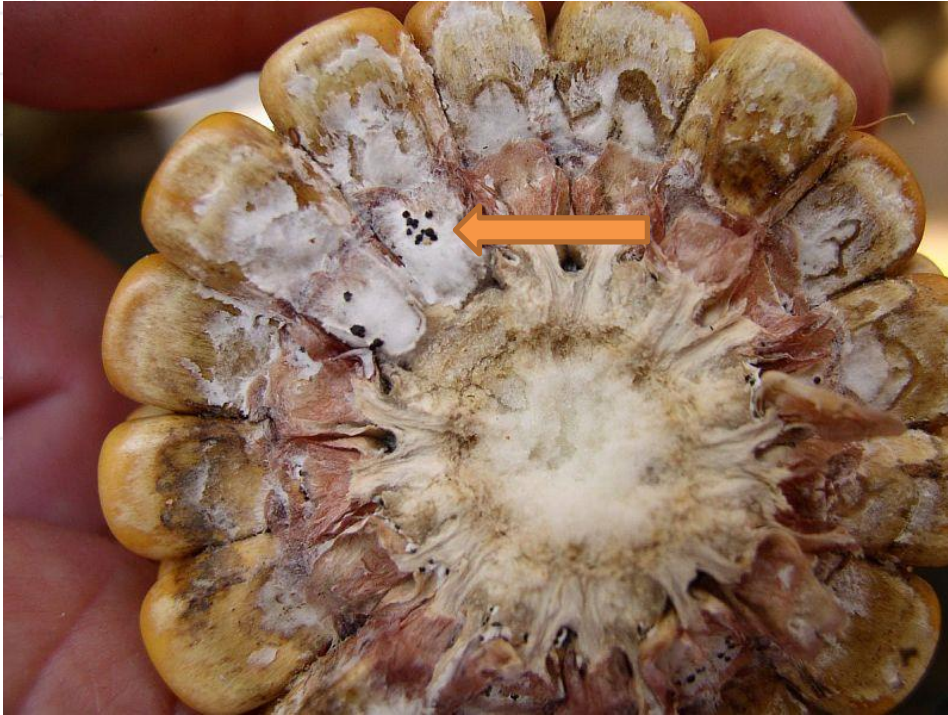


# Diplodia ear rot





# Diplodia ear rot



# Diplodia Facts

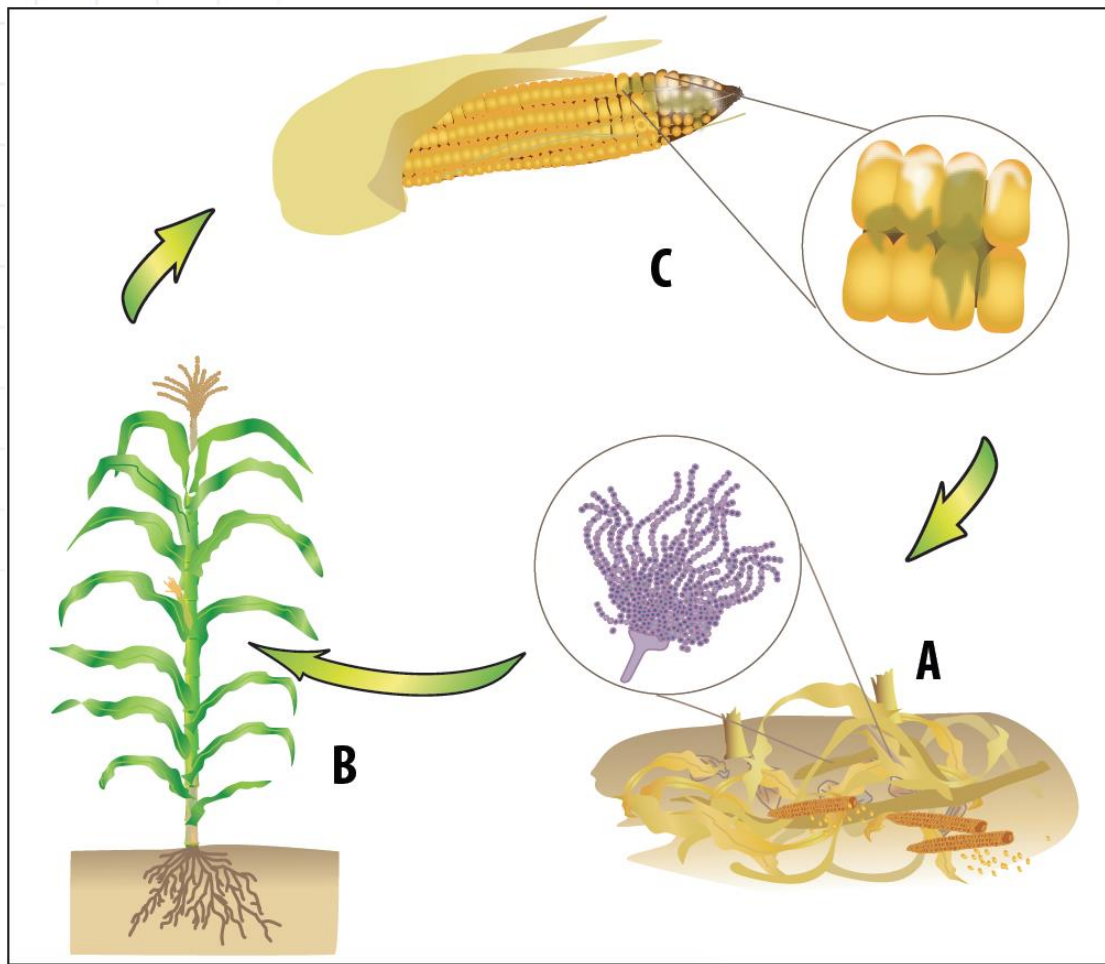
- It can survive on corn residue for at least 17 months (e.g. Nov 2014 to April 2016)
- It's favored by rainy weather at silking plus 2-3 weeks after
- The real economic loss comes from discounts due to Total Damaged Kernels (TDK's) and Broken Corn and Foreign Material (BCFM)
- Hybrid resistance varies



# Storing Diplodia infected grain

- Dry to  $\leq 14\%$  moisture
- Cool to 50°F as quickly as possible
- Cool to 30°F for long term storage
- Empty bins before the following summer

# Aspergillus ear rot



# Aspergillus ear rot



# Aspergillus ear rot

- Fungus survives in soil and corn debris
- Drought, heat stress and insect damage to ears favor development
- There is no strong disease resistance



# Aflatoxin

- FDA Action Limits

- 0.5 ppb

- 20 ppb

- 100 ppb

- 100 ppb

- 200 to 300 ppb

Milk

Human Food and interstate trade

Breeding cattle and swine

Poultry

Swine and finishing cattle

# Other ear rots



Nigrospora ear rot



Trichoderma ear rot



Penicillium ear rot

# Stalk Rots

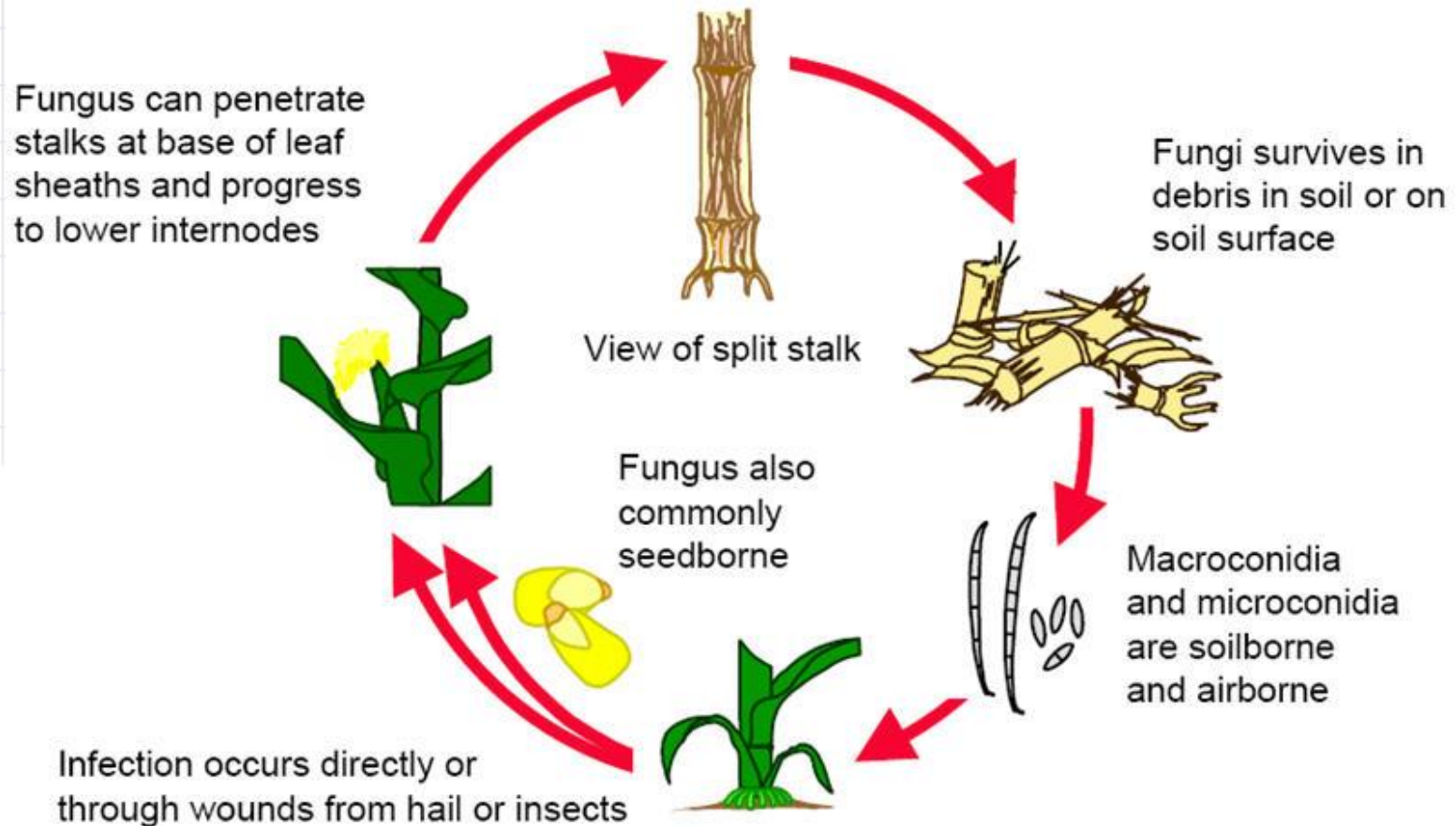
- Fusarium stalk rot
- Charcoal Rot
- Anthracnose stalk rot
- Diplodia Stalk rot

# General symptoms





# Fusarium stalk rot



# Fusarium/Gibberella Stalk Rot

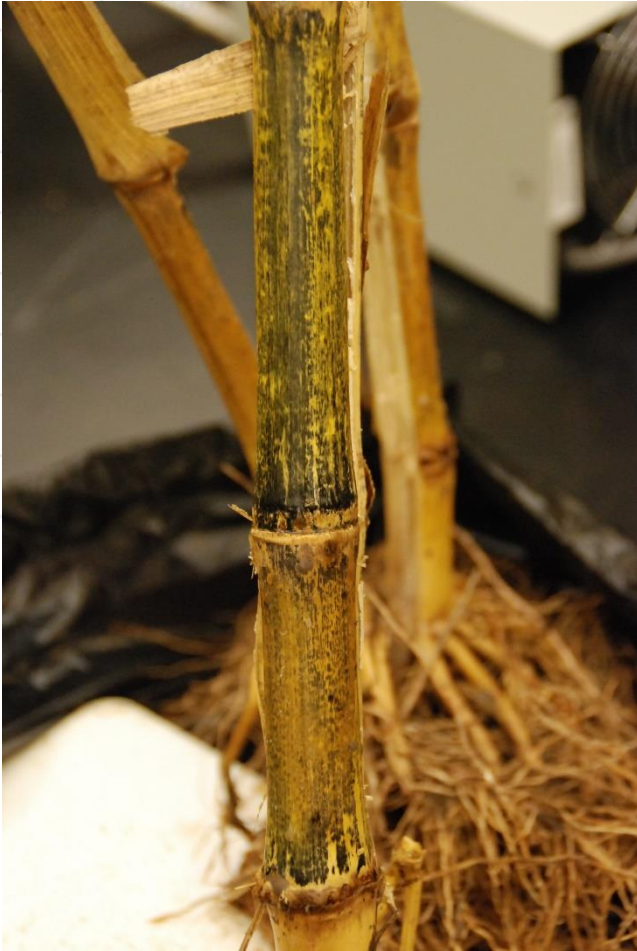




# Charcoal Rot



# Anthracnose stalk rot





# Anthracnose top dieback



# Diplodia stalk rot



# Conditions favoring stalk rot

- Fusarium – wet early, dry mid-season, wet late
- Charcoal rot – hot and droughty mid- to late-season
- Anthracnose – wet mid- to late-season
- Diplodia - wet mid season

# Stalk rot management

- Choose hybrids with good root, stalk and stay-green characteristics
- Maintain healthy leaves
- Provide adequate nitrogen
- Harvest early to avoid lodging





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