



Hemp Disease in Kentucky: Grasping the Reality of Yield Loss

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Hemp in KY

Hemp cultivation in Kentucky

- 2014- 32 acres planted
- 2018- approx. 7,000 acres planted
 - 18% grain, 4% fiber, 62% CBD, 16% dual purpose
- 2019-
 - 56,000 acres approved
 - 2.9 M sq ft greenhouse approved
 - 109 processors approved
 - 1200 growers approved
 - **26,500 acres planted**
 - **92% CBD/cannabinoid**





No.
Hemp is not
disease-resistant.

Confirmed Reports of Diseases of Kentucky Hemp

- Anthracnose
 - Botrytis Gray Mold
 - Botrytis Canker
 - Cercospora Leaf Spot
 - Corynespora Leaf Spot
 - Downy Mildew
 - Fusarium Foot & Root Rot
 - Fusarium Head Blight
 - Fusarium Wilt
- Hemp Leaf Spot (Bipolaris Leaf Spot)
 - Powdery Mildew
 - Pythium Root Rot
 - Rhizoctonia Damping Off
 - Rhizoctonia Web Blight
 - Rhizoctonia Stem & Root Rot
 - Septoria Leaf Spot
 - Southern Blight
 - White Mold, Sclerotinia Rot



Fiber



Grain



CBD-CBG



Greenhouse Disease vs Field Disease



Greenhouses Diseases

Primary Greenhouse Diseases

- **Powdery Mildew**
- Botrytis Canker
- Pythium Root Rot
- Downy Mildew

Golovinomyces spadicus

Not *Sphaerotheca macularis* or
S. humuli, as reported



Primary Greenhouse Diseases

- Powdery Mildew
- **Botrytis Canker**
- **Botrytis Tip Blight**
- Pythium Root Rot
- Pythium Damping Off
- Downy Mildew

B. cinerea



Primary Greenhouse Diseases

- Powdery Mildew
- **Botrytis Canker**
- **Botrytis Tip Blight**
- Pythium Root Rot
- Pythium Damping Off
- Downy Mildew

B. cinerea



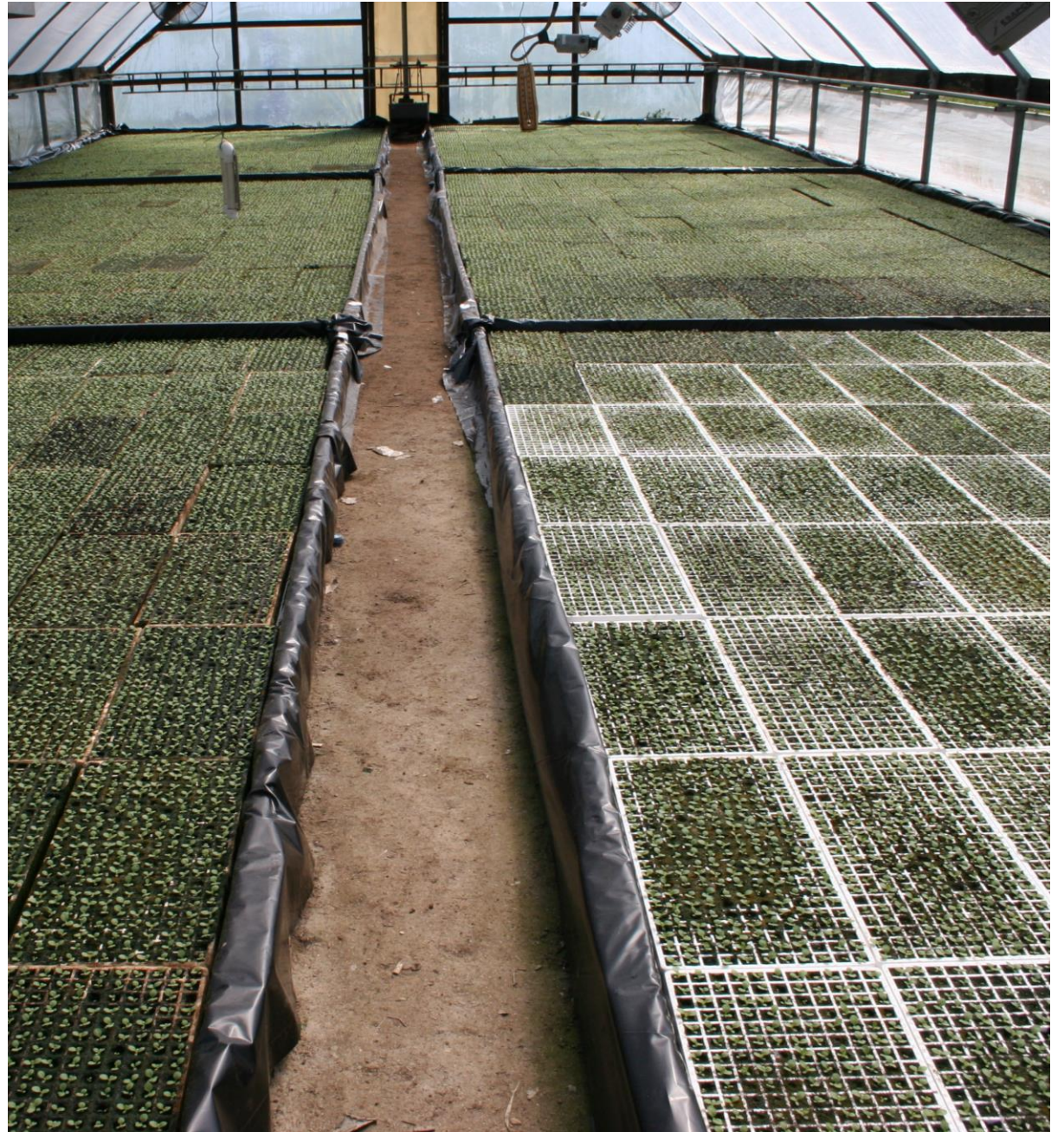
Primary Greenhouse Diseases

- Powdery Mildew
- Botrytis Canker
- Botrytis Tip Blight
- **Pythium Root Rot**
- **Pythium Damping Off**
- Downy Mildew

P. myriotylum

P. ultimum var *ultimum*





Abiotic Maladies

New and inexperienced growers

Fertility – deficiencies and toxicities

Irrigation – overwatering

Too Late: Unidentified Pathogens

- Secondary
- Saprophytic





Field Diseases

Primary Field Diseases

Leaf Spots

- **Anthracnose Leaf Spot**
- Cercospora Leaf Spot
- Hemp Leaf Spot
- Septoria Leaf Spot
- Corynespora Leaf Spot

Colletotrichum fioriniae

Hosts: apple, blueberry, strawberry,
celery, clover, dandelion, honeysuckle,
poison ivy, wild grape



Primary Field Diseases

Leaf Spots

- Anthracnose Leaf Spot
- **Cercospora Leaf Spot**
- Hemp Leaf Spot
- Septoria Leaf Spot
- Corynespora Leaf Spot

Cercospora flagellaris

Hosts: soybean, aster, amaranth,
cosmos, hydrangea, poplar,
johnsongrass, citrus, water hyacinth



Primary Field Diseases

Leaf Spots

- Anthracnose Leaf Spot
- Cercospora Leaf Spot
- **Hemp Leaf Spot
(Bipolaris Leaf Spot)**
- Septoria Leaf Spot
- Corynespora Leaf Spot

Bipolaris gigantea

Hosts: monocots



Primary Field Diseases

Leaf Spots

- Anthracnose Leaf Spot
- Cercospora Leaf Spot
- **Hemp Leaf Spot**
- Septoria Leaf Spot
- Corynespora Leaf Spot

Bipolaris gigantea

Hosts: monocots



Primary Field Diseases

Leaf Spots

- Anthracnose Leaf Spot
- Cercospora Leaf Spot
- Hemp Leaf Spot
- **Septoria Leaf Spot**
- Corynespora Leaf Spot

Septoria species undetermined

Groups near *S. sigesbeckiae*

Morphologically similar to
S. neocannabina



Primary Field Diseases

Blights and Molds

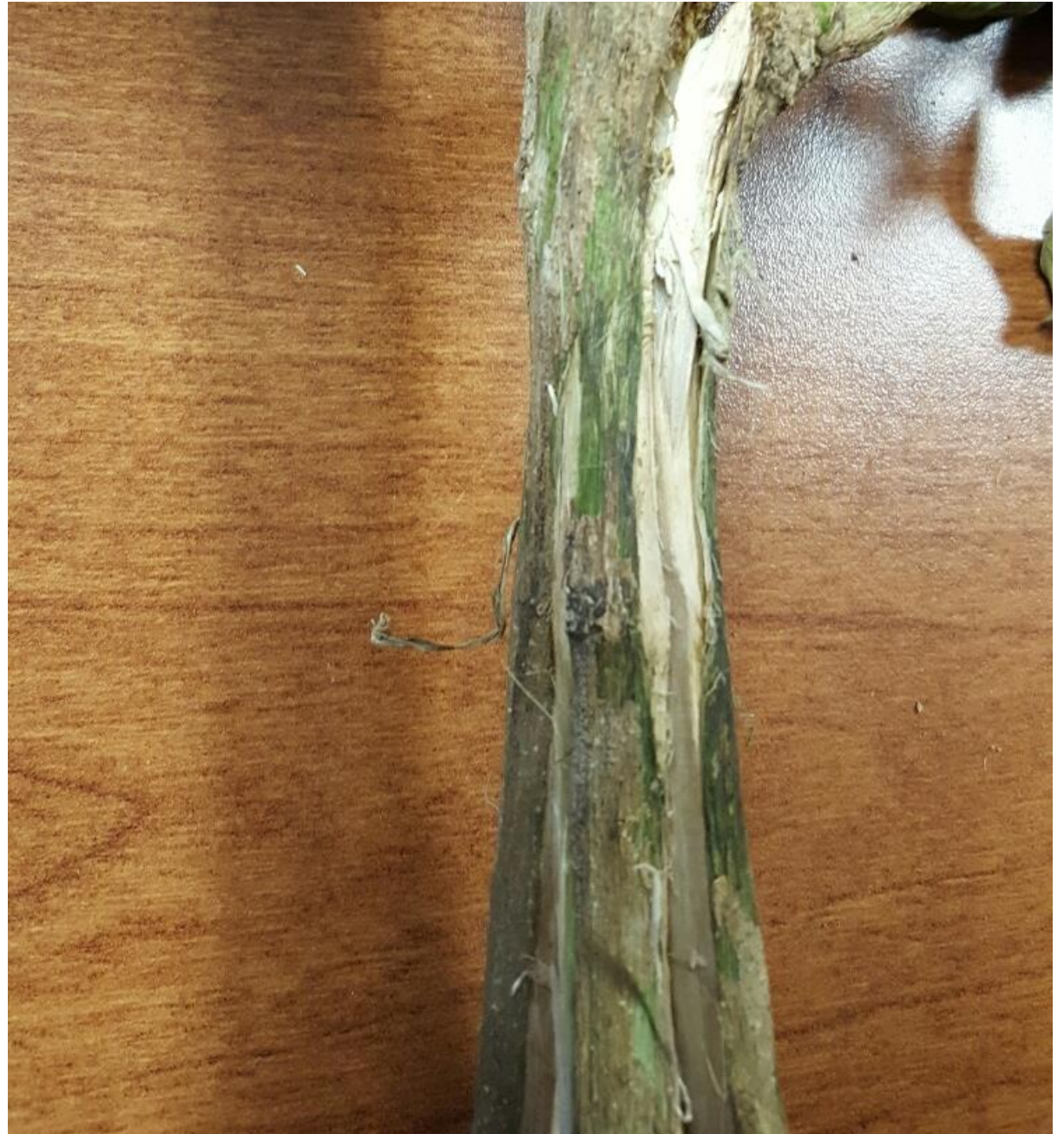
- Botrytis Gray Mold
- **Fusarium Canker**
- **Fusarium Head Blight**
- **Fusarium Wilt**
- Rhizoctonia Aerial/Web Blight

F. graminearum and
F. solani complex









Primary Field Diseases

Blights and Molds

- Botrytis Gray Mold
- Fusarium Head Blight
- **Rhizoctonia Aerial/Web Blight**

R. solani



Primary Field Diseases

Root and Crown Rot

- Fusarium Damping Off
- Fusarium Crown Rot
- Pythium Root Rot
- Pythium Damping Off
- Rhizoctonia Damping Off
- **Southern Blight**
- White Mold/Timber Rot

S. rolfsii



Abiotic Maladies

Experimental Crop

New and inexperienced growers

Unstable market

- Poor Site
- Poor Planting
- Weak Stock
- Weeds









Management

Managing Greenhouse Diseases

- Sanitation
 - Transmission
 - Rouging
- Environment
 - Relative Humidity
 - Soil Moisture
 - Air Circulation
 - Temperature – air & soil
- Plant Vigor
 - Prevent Wounding
 - Soil and Tissue Analysis
 - Control Insects
- Fungicides - biologicals
 - EPA list
 - State-registered



Managing Field Diseases

- Site Selection, Site Prep
 - Drainage (internal and surface)
 - Fertility
 - Weed Management
- Sanitation
 - Clean Plants
 - Rouging
- Environment
 - Air Circulation
- Plant Vigor
 - Healthy Stock Plants/Seeds
 - Prevent Wounding
 - Soil and Tissue Analysis
 - Control Insects
 - Timing



Risks for Yield Loss

- Disease
- Time of Infection
- Pathogenicity
- Environment/Weather
- Plant Health, Resilience



Questions and Considerations

- Primary disease?
- Secondary disease?
- Saprophytic pathogen/disease?
- Preventable problem?
- Abiotic or cultural problem?



KYHempDisease.com

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