Pathogenicity of *Corynespora cassiicola* in Upland Cotton

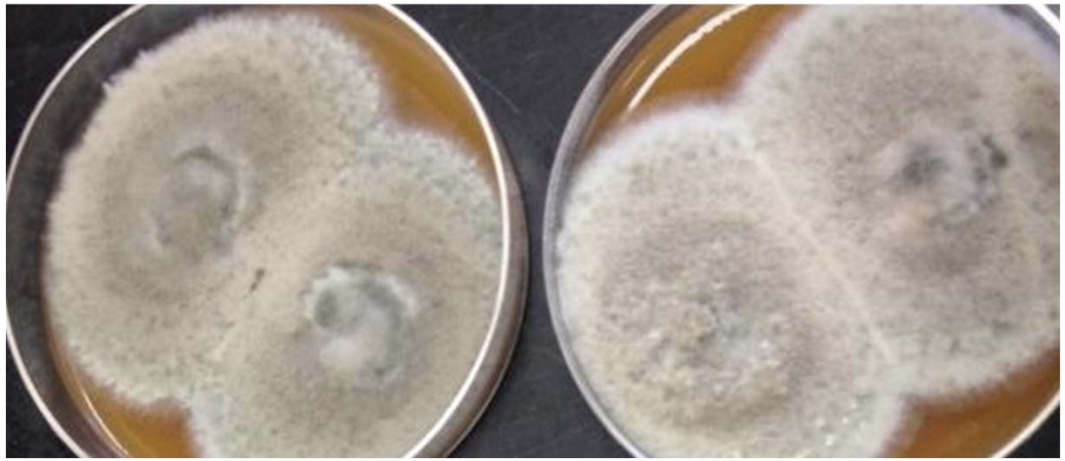
Jenna May, Graduate Research Assistant at Auburn University
Dr. David Weaver, Major Professor

Research Objectives

1. Develop a protocol for screening large numbers of genotypes for resistance to *Corynespora cassiicola* using controlled conditions in the greenhouse
2. Apply that protocol to evaluate cotton genotypes represented by commercial cultivars and entries into the Regional Breeders Testing Network
3. Secondary focus is to develop an inoculation system for plants in the field, and assessing disease symptom development in a range of genotypes

Current Research at Auburn University

- Extension
  - Dr. Kassie Conner
  - Dr. Austin Hagan
  - Dr. Kira Bowen



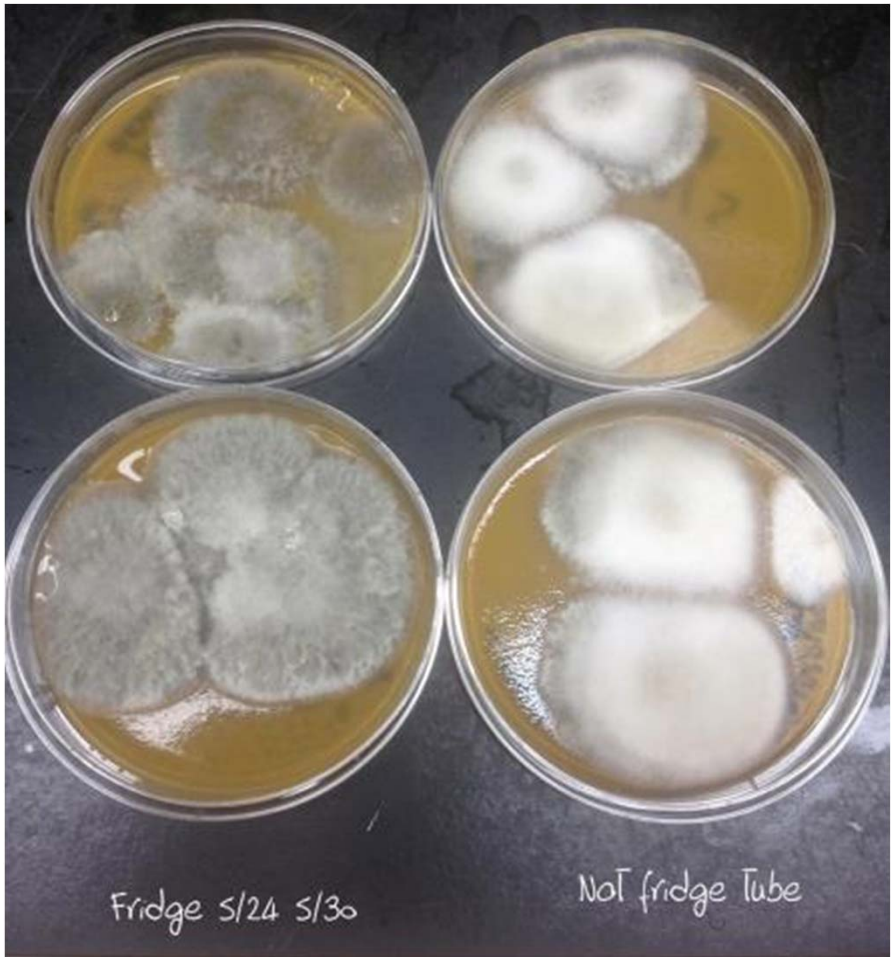
- "Disease intensification on all varieties continued until the onset of cooler and drier weather in mid-September."

- "At the Gulf Coast Research and Extension Center, final defoliation levels varied from an estimated 38% for Stoneville 4288 to 83% for Phytogen 499 with most varieties suffering between 50 and 60% premature leaf shed."

- "In a mid- and late season flex variety trial at the location, **Phytogen 499, Phytogen 375, Phytogen 565, and DPL 1252** suffered similarly high target spot-incited defoliation."

-Hagan, et al. 2012

In the Lab



- V8 agar medium: V8 juice, water, $CaCO_3$, agar, kanamycin
  -Dixon, et al. 2009
- Best grown in incubator at 23°C
- Most researchers have prepared inoculum of this fungus by macerating agar cultures in distilled water, filtering them through cheesecloth and spraying the mixture onto plants
  -Onesirosan, 1975

In the Lab

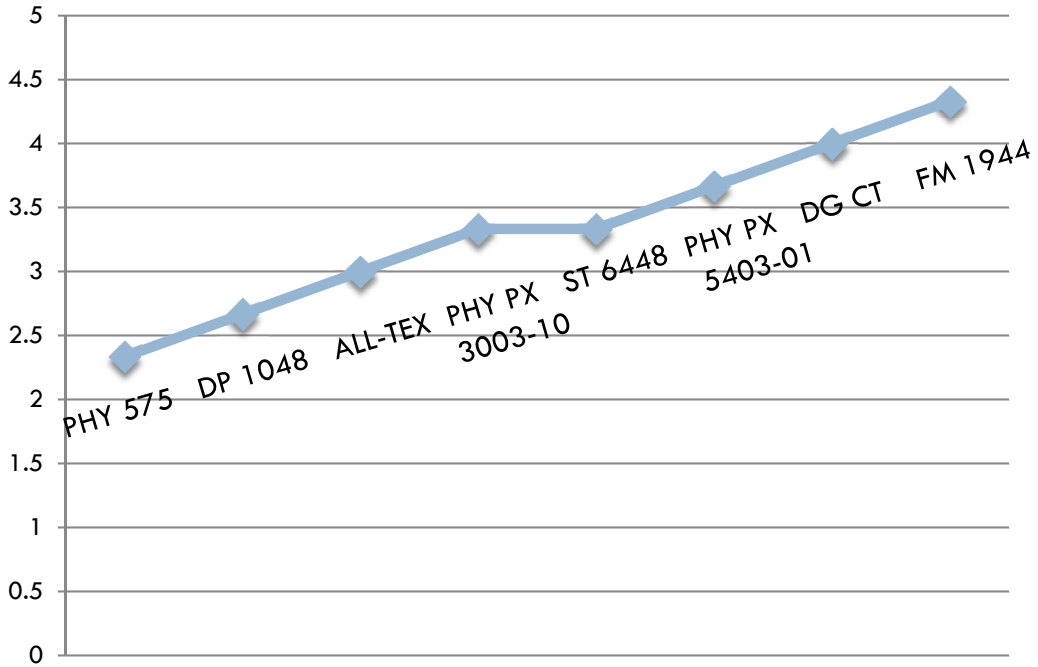
Greenhouse Trials

- Spraying method has been used with *Corynespora* since 1945
- two to four true leaf stage
  -Fulmer, et al. 2012
- Individual bagging method with white trash bags
- Spray controls with water and bag

2013 Cotton Variety Trial entries

ID	Variety	Season
1630	All-Tex DG CR108788 B2RF	E
1629	All-Tex DG CT12353 B2RF	E
1620	All-Tex Nitro 44B2RF	F
1583	Americot AM 1511 B2RF	E/F
1473	Americot AM 1550 B2RF	E
1604	Americot NG 5315 B2RF	F
1597	Croplan Genetics CG 3428 B2RF	E
1570	Croplan Genetics CG 3787 B2RF	F
1497	Deltapine DP 0912 B2RF	E
1552	Deltapine DP 1034 B2RF	E
1553	Deltapine DP 1048 B2RF	F
1554	Deltapine DP 1050 B2RF	F
1523	Deltapine DP 1137 B2RF	F
1632	Deltapine DP 1212 B2RF	E
1555	Deltapine DP 1219 B2RF	F
1556	Deltapine DP 1252 B2RF	F
1602	Deltapine MON 12R224 B2R2	E
1601	Deltapine MON 12R242 B2R2	F
1600	DeltapineDP 1321 B2RF	E
1571	Dyna Gro DG 2285 B2RF	E
1574	Dyna Gro DG 2610 B2RF	F
1598	DynaGro CT 13414	E
1616	Fiber Max FM 1944 GLB2	E
1449	PHY 375 WRF	E
1548	PhytoGen PHY 339 WRF	E/F
1516	PhytoGen PHY 367 WRF	E
1548	PhytoGen PHY 499 WRF	E/F
1517	PhytoGen PHY 575 WRF	F
1606	PhytoGen PX 3003-10 WRF	E/F
1609	PhytoGen PX 3122-40 WRF	E/F
1608	PhytoGen PX 4433-25 WRF	E/F
1608	PhytoGen PX 4433-27 WRF	E/F
1607	PhytoGen PX 4444-13 WRF	E/F
1607	PhytoGen PX 4444-14 WRF	E/F
1611	PhytoGen PX 5403-01 WRF	F
1610	PhytoGen PX 5538-40 WRF	F
1611	PhytoGen PX 5540-10 WRF	F
1635	ST 4946 GLB2	E
1636	ST 6448 GLB2	F

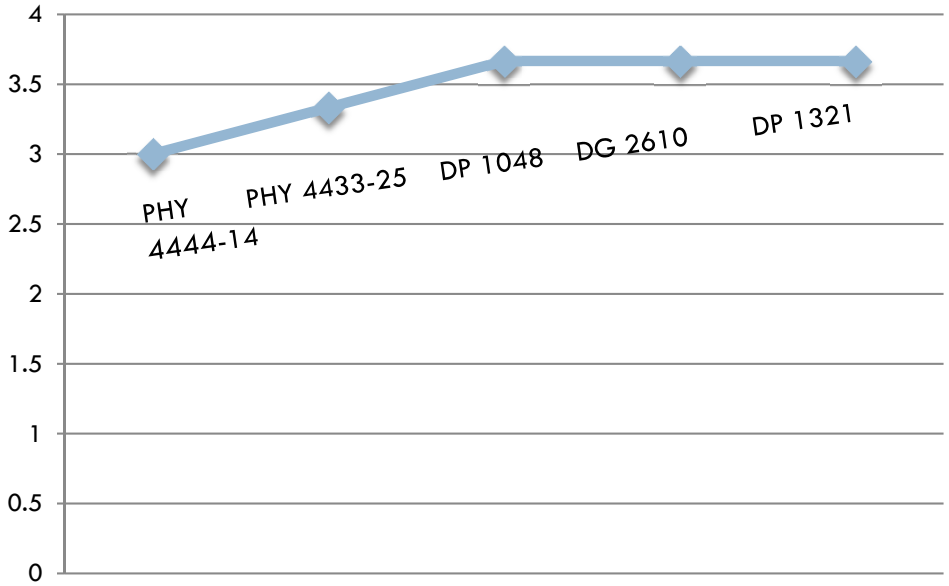
E - Early F - Full

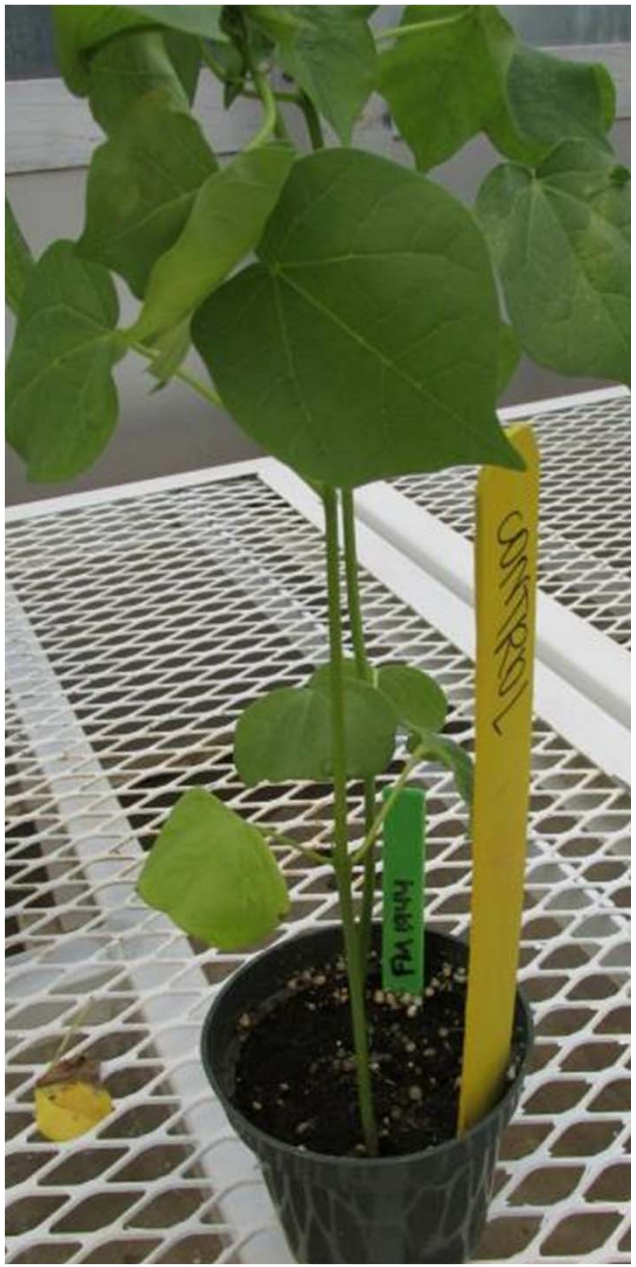


1st trial: 8 varieties
- -PHY 575
- -DP 1048
- -All Tex DG CT 12353
- -PHY PX 3003-10
- -ST 6448
- -PHY PX 5403-01
- -DG CT 13414
- -FM 1944

2nd trial: 5 varieties
- -PHY 4444-14
- -PHY 4433-25
- -DP 1048
- -DG 2610
- -DP 1321

- 2 randomized greenhouse trials completed from the 2013 Alabama Cotton Variety
- Severities are shown on line graphs using a 0-5 target spot severity scale





FM 1944

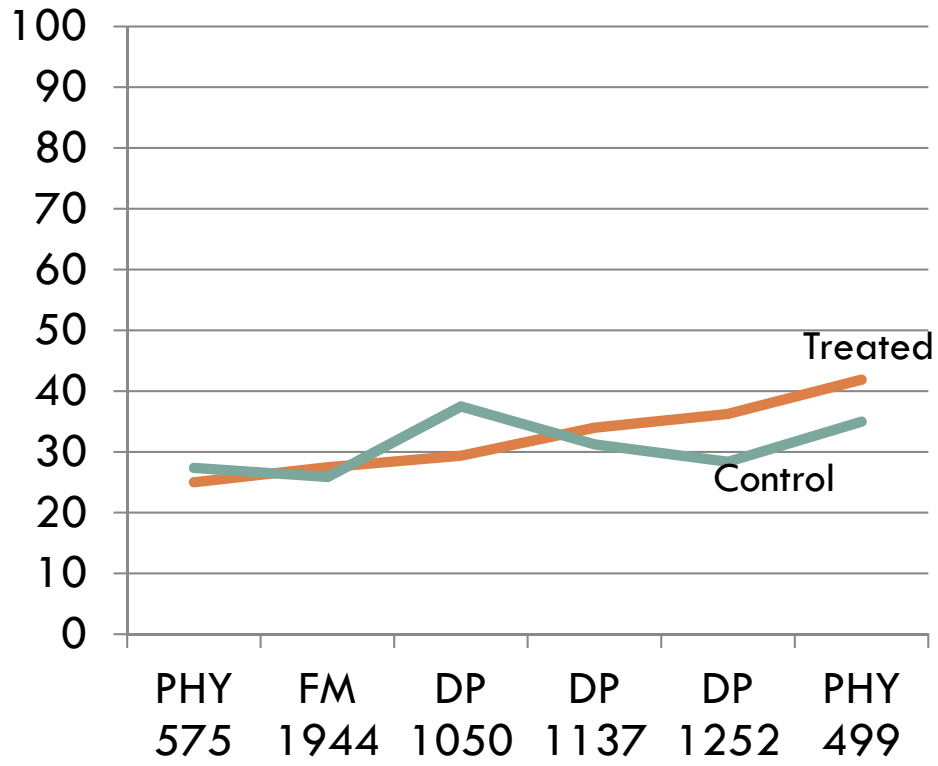
Field Test at Plant Breeding Unit, Tallassee Alabama

CORN	CORN	CORN	CORN	CORN	CORN	CORN	CORN	CORN
CORN	101	CORN	201	CORN	301	CORN	401	CORN
CORN	102	CORN	202	CORN	302	CORN	402	CORN
CORN	103	CORN	203	CORN	303	CORN	403	CORN
CORN	104	CORN	204	CORN	304	CORN	404	CORN
CORN	105	CORN	205	CORN	305	CORN	405	CORN
CORN	106	CORN	206	CORN	306	CORN	406	CORN
CORN	CORN	CORN	CORN	CORN	CORN	CORN	CORN	CORN
CORN	CORN	CORN	CORN	CORN	CORN	CORN	CORN	CORN
CORN	501	CORN	601	CORN	701	CORN	801	CORN
CORN	502	CORN	602	CORN	702	CORN	802	CORN
CORN	503	CORN	603	CORN	703	CORN	803	CORN
CORN	504	CORN	604	CORN	704	CORN	804	CORN
CORN	505	CORN	605	CORN	705	CORN	805	CORN
CORN	506	CORN	606	CORN	706	CORN	806	CORN
CORN	CORN	CORN	CORN	CORN	CORN	CORN	CORN	CORN

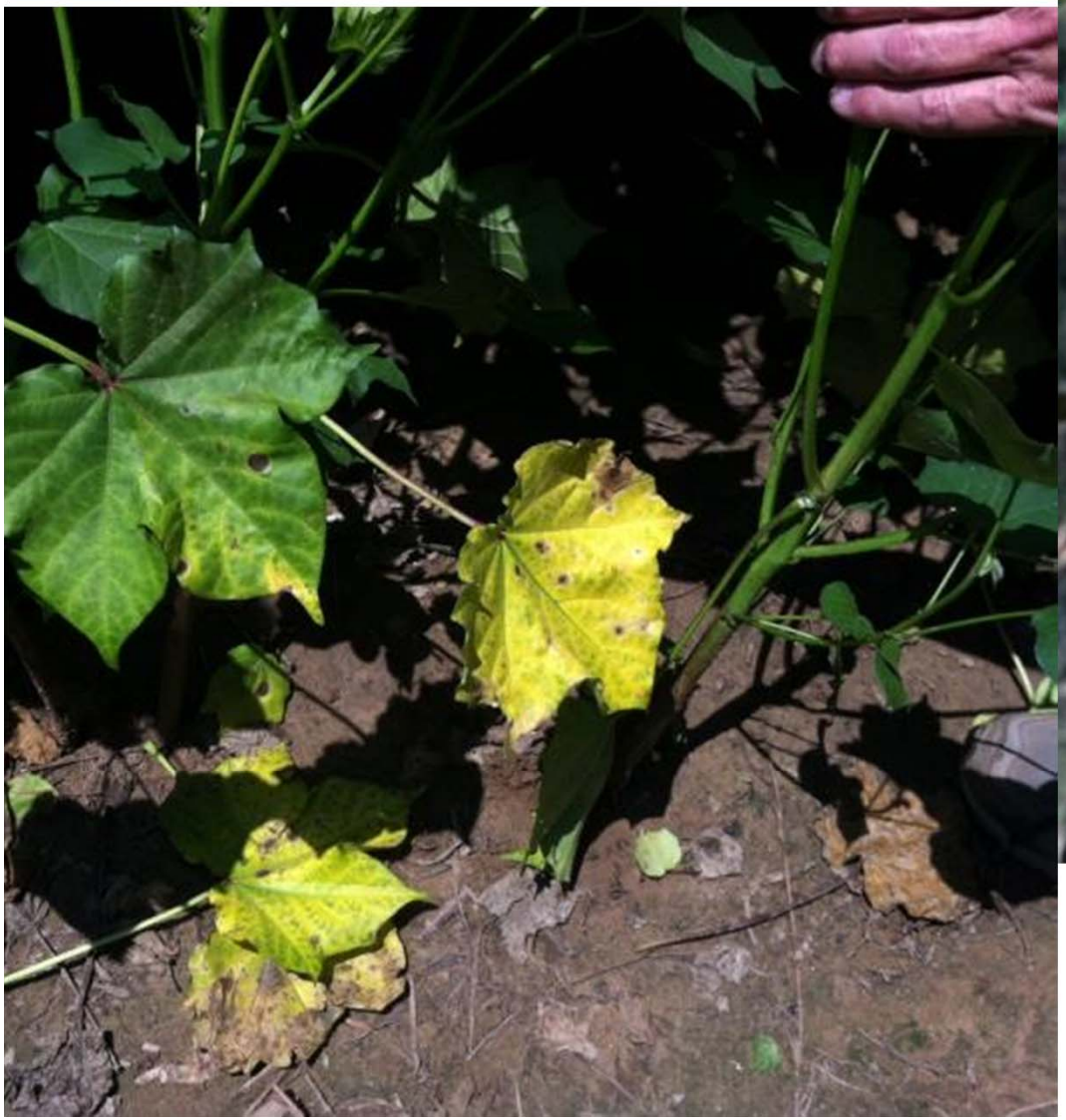
Randomized by Agrobase SQL

Field Trials- PBU @ EV Smith

Variety Test



Phytogen 575
Fibermax 1944
Deltapine 1050
Deltapine 1137
Deltapine 1252
Phytogen 499



Recent appearances in the Southeast

- Georgia
- Alabama
- Plant Breeding Unit- EV Smith
- Gulf Coast Research Station

"To our knowledge, this is the first report of this pathogen in Georgia."
-Fulmer, et al. 2012

Rating *Corynespora cassiicola*

- Tennessee Valley Station
  - Belle Mina, Alabama
- Prattville, Alabama
- Plant Breeding Unit
  - Tallassee, Alabama
- Gulf Coast Station
  - Fairhope, Alabama
- Regional Breeders Testing Network
  - Tallassee, Alabama
  - Tifton, Georgia