Threat of Root Rotting *Fusarium oxysporum f. sp. vasinfectum(s)* (FOVs) to U. S. Cotton Production

Robert Loring Nichols, Cotton Incorporated

Classification of FOVs

- **Skovgaard, K., H. I. Nirenberg, K. O'Donnell, and S. Rosendahl. 2001. Evolution of *Fusarium oxysporum f. sp. vasinfectum* races inferred from multigene genealogies. Phtyopathology 91:1231-1237**

- **Davis, R.M., P. D. Colyer, C. S. Rothrock, and J. K. Kochman. 2006. Fusarium Wilt of Cotton: Population Diversity and Implications for Management. Plant Disease 90(6):692-703.**

- **Bell A. A., Kemerait R. C., Ortiz C. S., Prom S., Quintana J., Nichols R. L., and Liu J. 2017. Genetic diversity, virulence, and *Meloidogyne incognita* interactions of *Fusarium oxysporum* isolates causing cotton wilt in Georgia. Plant Disease 101:948-956**

Some Difficulties with Current FOV Classification System

- Two highly virulent Australian biotypes are outside the race classification system
- FOV4 = FOV7 = VCG 0114
- At least three highly virulent Southeastern FOVs are outside the race classifcation system.

Bottom line:

- Need classification system based on disease mechanism
- The disease mechanism is unknown

Fusarium oxysporum f. sp. vasinfectum Race 4 (FOV4) in the San Joaquin Valley

Dr. Bob Hutmacher
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Phytogen 72
San Joaquin Valley

Symptoms of FOV4

Early Disease On-set

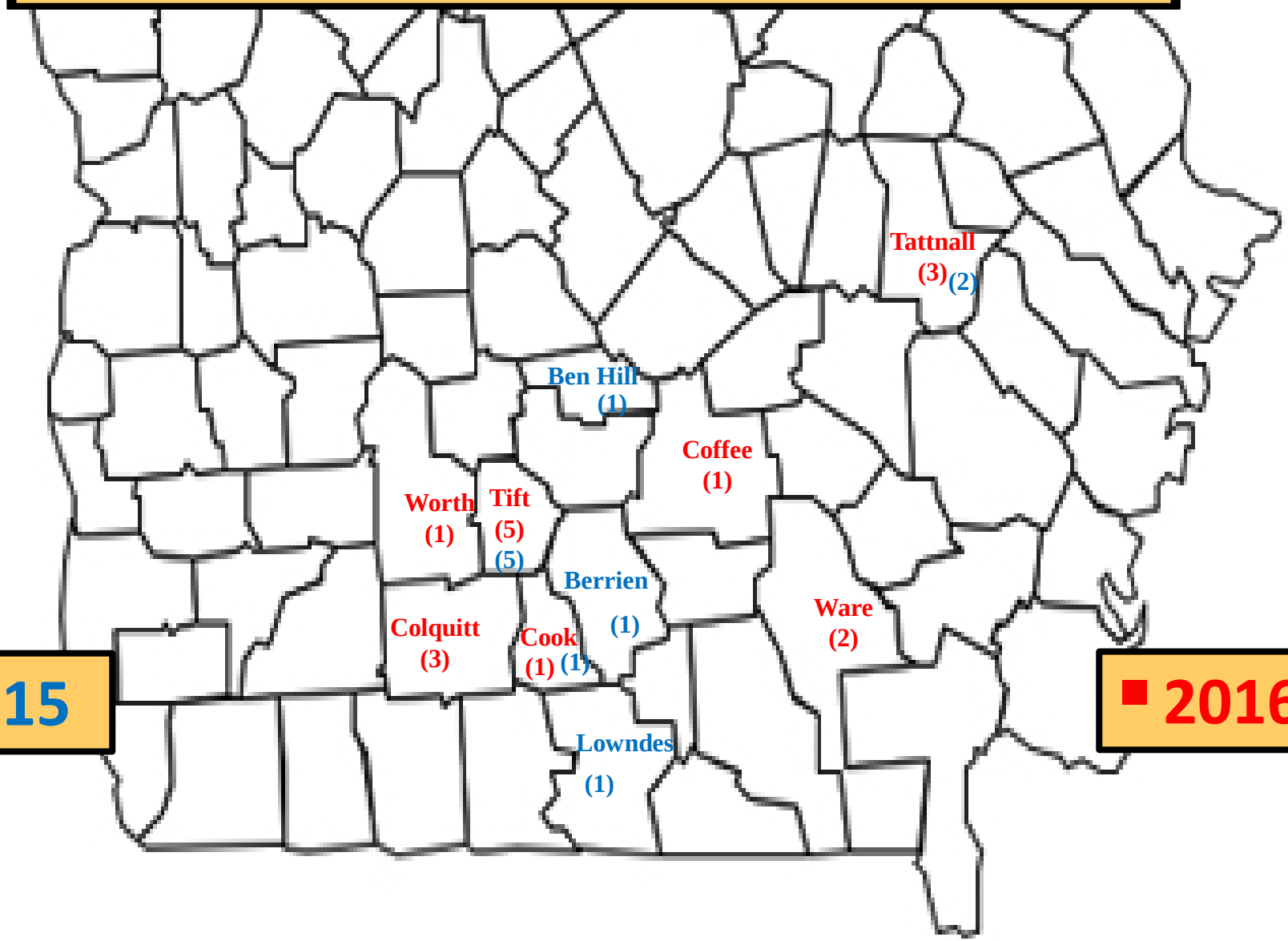
Photos from Dr. Hutmacher

Root Rotting FOVs - Georgia

Field Root-Rotting FOV Phenotype

South Georgia

Counties & Number of Fields Collected



■ 2015

■ 2016

Symptoms of FOV4 in Texas

FOV4 in El Paso County, TX

FOV4 in El Paso County, TX

Threat of Root Rotting FOVs

- **FOV1 managed by suppressing root knot nematode (*Meloidogyne incognita*).**
- **FOV4 does not need nematodes to infect.**
- **SE FOVs infect without root-knot nematode**
- **FOV1 and FOV4 are definitively seed-borne.**
- **FOV is persistent. (20 years?)**
- **True host resistance has not yet been found.**