

Identifying resistance to frog-eye leaf spot in plant introductions

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In 2003, a NCSRP project was initiated to address:

- ✦ Impact of the disease
- ✦ Pathogen variability
- ✦ Status of host resistance
- ✦ Chemical management strategies
- ✦ Management recommendations





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Status of Frogeye leaf spot

- ✦ Widespread in the north central region
- ✦ The incidence and severity has increased in some areas
- ✦ Lack a clear picture of the virulence spectrum
- ✦ Chemical control strategies
- ✦ Host resistance



Host Resistance – Past Work

Mian, R.M., Bond, J., Joobeur, T., Mengistu, A., Weibold, W., Grover, S., Wrather, A. 2009. Identification of Soybean Genotypes Resistant to *Cercospora sojina* by Field Screening and Molecular Markers. Plant Disease. 93:408-411.

1,350 cultivars (MG III –V) were screened for resistance to *C. sojina* (Race 11)

73 of the cultivars did not exhibit symptoms in inoculated trials over years

54 of the 73 cultivars were available for testing the presence of Rcs_3

13 of the 54 contained the Rcs_3 haplotype



The NCSRP project also helped university and private breeders by identifying adapted parents for crossing efforts

Registration of S99-2281 Soybean Germplasm Line with Resistance to Frogeye Leaf Spot and Three Nematode Species. J. Grover Shannon, Jeong-Dong Lee, J. Allen Wrather, David A. Sleper, M. A. Rouf Mian, Jason P. Bond, and Robert T. Robbins. Published online 1 January 2009; doi: 10.3198/jpr2008.06.0307crg
JOURNAL OF PLANT REGISTRATIONS 2009 3: 94-98

Objective

Identify resistance to Frogeye leaf spot in Plant Introductions



Trial Setup

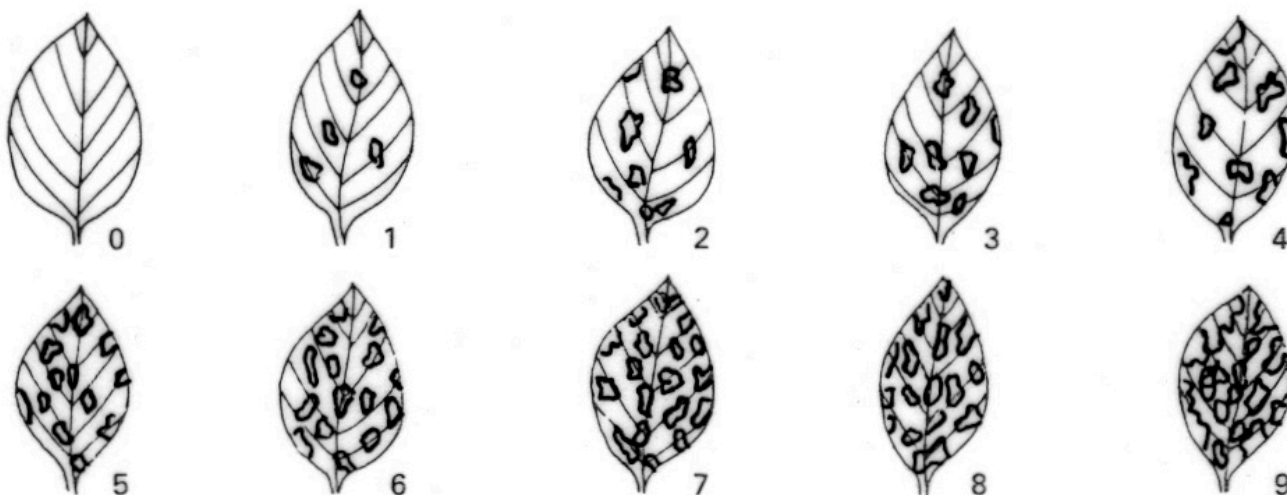


- ❖ Specific PI “subsets” (selected based on SCN resistance, High Yield, Drought and Flood Tolerance)
- ❖ Two locations: Tamms, IL and Portageville, MO
- ❖ Hill plots were used - 10 seeds of each PI were planted to each hill. Two replications were used at each location.
- ❖ Inoculum was increased, quantified and applied uniformly.

Inoculum Prep and Delivery



Rating Scale



STAGES OF FOLIAR DISEASES OF SOYBEANS

Disease rating 0 to 9

0 = no disease

9 = 90 percent and defoliation

Rating should be made 2 to 3 weeks after last application.

Rating sample - 10 to 20 trifoliolate/plot, taken at random.

SOUTHERN SOYBEAN DISEASE WORKERS



Results

From the 250 PIs tested, 22 did not have symptoms across years and locations

- Molecular markers will be used to confirm if the resistance is from *Rcs₃*



Research Needs

- ❖ Quick, inexpensive means for virulence assay
- ❖ A stable supply of host differentials
- ❖ The effectiveness of Rcs_2 against current races
- ❖ Updated resistance status of commercial cultivars

This project was funded by the
North Central Soybean Research
Program



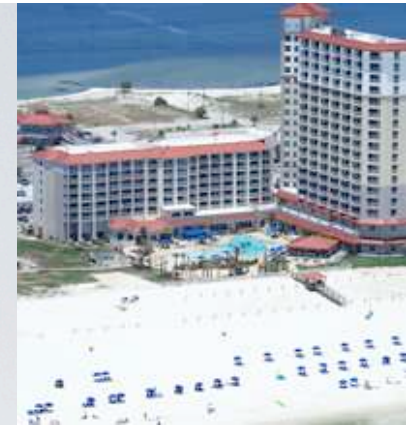
Any Questions?

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- March 10 and 11, 2010 – Wed. – Thur.
- Hilton Pensacola Beach Gulf Front, Pensacola Beach, Florida
- Talks covering Soybean Cyst Nematode, Seedling Diseases, Green Stem Syndrome, Charcoal Rot, Sudden Death Syndrome, Foliar Diseases, Breeding and Genetics, etc.

If you want more information or if you
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