

Oklahoma, November 2, 2013

S-1053 project Meeting Minutes

8:30 am **Session starts with the following members:**

1. Kirk Broders - Univ. of New Hampshire - Durham
2. Craig Canaday_ Univ. of Tennessee - Jackson
3. Carla Garzon - Oklahoma State University - Stillwater
4. Jim Kurl- University of Minnesota - St. Paul
5. Craig Rothrock - - Univ. of Arkansas - Fayetteville
6. Luisa Santamaria - Oregon State Univ - NWREC Aurora - OR
7. Terry Spurnock - Univ. of Arkansas - SEREC

Joined later to the group:

Rebecca Bennett (USDA-ARS- Stillwater, OK)

Nathan Walker (Oklahoma State U - Stillwater)

8:45 am. **Introduction and presentations**

Craig Canaday: Importance of Calcium to prevent seedling diseases. Solarization treatments for soil, no substantial differences with non-treated soil. Combination of chemicals and pathogens. Question to participants: Population assessment of *Pythium* spp in soil using water agar procedure to identify species, how to incubate? selective media? Answer: baiting technique. Discussion.

Jim Kurl: Soybean diseases-soilborne problems/screening for resistance. *F. solani* important soilborne pathogen on soybeans. Results from research shows that *F. solani* represents 60% from isolates and is related with Phytophthora and Pythium effect in seedling rots. Now working with breeders in soybean to understand relation between host and pathogen because pathogenicity test show some odd results. *F. solani* inoculated in different host plants could produce more robust plants, increase yield and root length. There is some research on the effect of substrate supporting *F.solani* inoculum. Standard substrate sorghum: white, red, and sudan grass. Unifested sorghum cause significant damage to the plant. Why this results?: Sorghum seems to produce some metabolite product. *Discussion:* production of inoculum without substrate, different growth media in the GH using silica sand, consider that *F. solani* very sensitive to temperature. Interactions plant -pathogen: varietal response, seed treatment, soybean cyst nematode, and different isolates cause different effect, epiphytes.

Carla Garzon: Hormesis concept, presentation about current research. Determine fungicide dose parameter (EC50 and NOAEL) two soil borne pathogens *Sclerotinia homeocarpa* and *Pythium irregulare*. Results of low dose

effect of T-methyl on *Sclerotinia* spp. Strains resistance to propamocarb.
Discussion with participants.

Luisa Santamaria: Applied research on soilborne pathogens in ornamental production for the nursery industry in Oregon. Results of efficacy test of ten different treatments for root rot on geranium caused by *Pythium ultimum*. Brief discussion about results. Also it was presented some current extension and outreach programs to educate and train nursery workers to prevent plant diseases especially the ones caused by soilborne pathogens such as *Phytophthora* and *Pythium*

Craig Rothrock: Rhizoctonia populations from cotton, corn, peanut, soybean, and rice, using baiting techniques: tooth stick-baiting method, plant baiting (seedling isolation). Results *R. solani* isolates from plants show diversity of AG11 isolates from plants and soil samples.

12:30 pm Morning session close. Participants take a break for lunch

1:40 pm Afternoon session starts:

Students' presentations:

Patricia Garrido: (C. Garzon's graduate student). Presentation: Molecular characterization and population genetics of *Pythium* spp. from ornamental crops in greenhouse production in Long Island-NY. Population analysis based on multigenic and microsatellite analysis.

Gabriela Orquera: (C. Garzon's graduate student) Presentation: *Phytophthora infestans* study in production fields of potato in Ecuador.

Francisco Flores: (N. Walker's graduate student) Presentation: Spring spot of Bermuda grass. *Ophiosphaerella* species phylogenetics. Four projects in genomic and morphology analysis.

2:50 pm break

3:00 pm Presentation from attendees continues.

Terry Spurlock: Aerial blight on soybean. Distribution of *R. solani*, AG1-1A, AG11. Canopy density related to leaf density, logical areas of collection: scouting, planting less dense varieties. 30% of plants are colonized by AG11. Summary: scouting logical areas of collection. Systems management of disease requires multiple strategies targeted to logical areas of collection. Consider colonization of pathogen on stage 1, 2 or 3, then plants get bigger and higher density.

Kirk Broders: Ecological and genetic diversity of soil borne pathogens and indigenous flora in the Northeastern region. Four main projects:

1. Effect of cultivar mixtures on soil microbial communities and feedback to plant biomass. Ryegrass cultivar mixture trial to extend perennial grass, blend of cultivars. 2. *Verticillium dahlia* on strawberry and mint. Cover crop programs to be evaluated. *Fragaria vesca*: ancestor of domesticated strawberry: diploid genome. Identify resistance genes and identify primers looking for resistant.

- AFRI-Foundation grant to study plant-microbe role in N and C acquisition. *R.solani* diversity in Canadian prairies: 7AG's, AG2-1 most abundant, diversity of *R. solani* isolated from wheat roots. Interested in interactions with other groups to find a better alternate ITS . Future directions: sample from soil,

5:20 pm presentations end.

5:30 pm Final discussion and summary of the meeting.

- Future collaborations to work with Rhizoctonia.
Maybe work with selected isolates of *R. solani* AG 11 and *R. solani* binucleate from collections. Pull together a set of isolates to identify phylogenetics. Comparative analysis, screen for genes for phylogenetic studies. Natural population studies to see how the markers work. Genetic markers.
- Terry Spurlock interested in collaborate, his lab already has isolates of 10-12 different AG, microsatellite markers .
- Carla could be interest to collaborate in the differentiation of anastomosis groups, screening genomes, identify genes, multi gene phylogenetic genes.
- Craig Rothrock, interested in microvirus. NSF could be a place to look for funds for genomes to understand systematic, look all genome, individual population and check flow of genes, and interaction of movement of virus in the populations.
- Kirk Broders mentioned that he has a draft of a proposal that will share with the group to see if someone could be interested to join to the proposal, add information and look for funds.
- Kirk also shared information about the AFRI grants on Food Security Challenge Area, which could be of interest for the group. Food Safety Challenge Area, Childhood Obesity Prevention Challenge Area, Water Resources Challenge Area RFA January 2014. (Topic areas are detection, diagnostics, prevention, and potential impacts of new and emerging diseases and pests)?
- Craig Rothrock, mentioned interest in Pythium. Carla says it is difficult to find funds to work with Pythium.

Business section: the current secretary Kurk Lamour was absent. He was because he is currently in sabbatical leave in France.

Election for new secretary: Kirk motioned Luisa Santamaria to be the new secretary of the group. The attendees unanimously accepted motion. Luisa Santamaria was elected as the next secretary.

Location for the next meeting was discussed. Kirk Broders will contact Kurt Lamour, the next chair, to determine if the meeting could have place in Tennessee. The second option is still Oklahoma.

6:30 pm Adjourn