2007 Caribbean Division Meeting Abstracts

Abstracts presented at the joint meeting of the APS Caribbean Division and the Mexican Phytopathological Society and the Latinoamerican Phytopathological Association in Cancun, Mexico, May 20–24, 2007. The abstracts are arranged alphabetically, by first author's name.

Increased efficiency of disease resistance detection in wild and domesticated *Phaseolus* populations that coevolved with the bean rust pathogen *Uromyces appendiculatus*. M. ACEVEDO (1), J. R. Steadman (1), J. C. Rosas (2), and J. Venegas (2). (1) University of Nebraska-Lincoln, Plant Pathology Department 68583-0722; (2) E.A.P Zamorano, Honduras. Phytopathology 98:S199.

Common bean domestication and sub-domestication events in Central America have generated a continuum of wild, weedy and domesticated *Phaseolus* species growing in close proximity in Honduras. We present evidence that pathogen virulence diversity is greatest in Honduras. To test the hypothesis that higher levels of resistance can be found in natural populations where the host and the pathogen coevolved, 74 bean accessions including wild *P. vulgaris*, *P. vulgaris* landraces, *P. lunatus*, and *wild* and domesticated *P. coccineus* were evaluated for rust resistance. The accessions were inoculated with each of six *U. appendiculatus* isolates that represent the most common and virulent pathotypes found in Honduras. Intermediate to high levels of resistance were found in 52.5% of the accessions. Ten of the resistant accessions were *P. coccineus*, 14 were *P. vulgaris* landraces, 3 *P. lunatus*, 4 were wild *P. vulgaris* and 1 was a weedy accession. Despite susceptibility to bean rust being the norm in wild *P. vulgaris* populations, high levels of resistance are present in some wild *P. vulgaris* in Honduras. Plant explorations in the center of diversity of the pathogens should be used for the identification of new sources of resistance that broadens the genetic base for disease resistance in common bean.

Huanglongbing or citrus greening: A new disease for the Americas. R. H. BRLANSKY. University of Florida, CREC, Lake Alfred, FL 33850, rhby@ufl.edu. Phytopathology 98:S199.

In 2004 Huanglongbing or citrus greening disease was found in Brazil and in 2005 the disease was discovered in the U.S. in Florida. The Asian citrus psyllid, *Diaphorina citri* Kuwayama is the pathogen vector in both regions. The psyllid has been present in Florida since 1998 and is now found wherever citrus is grown. In Florida the disease was first found in south Florida and now has been found in most major citrus producing regions of the state. Symptoms, identification and detection, damage to tree health, economic losses, management strategies and research priorities are discussed.

Search for the insect vectors of Lethal Yellowing (LY), a phytoplasma disease in Mexico. J. F. Julia (1), S. Sanchez-Soto (2), M. Navarez (3), C. Oropeza (3), C. F. Ortiz (2), R. Castillo (4), and M. Dollet (1). (1) CIRAD-Bios UPR 29 TAA29/F 34398 Montpellier, Cedex 5 France (E-mail: s.t.julia@prodigy.net.mx); (2) Colegio de Postgraduados Campus Tabasco, 86500 Cárdenas, Tabasco, Mexico; (3) CICY calle 43 #130 Colonia Chuburna de Hidalgo, 97200 Mérida, Yucatán, Mexico; (4) INIFAP-Golfo Apartado P17 86400 Huimanguillo,Tabasco, Mexico. Phytopathology 98:S199.

The aim was to identify the insect vectors of LY in Tabasco. First of all, an inventory was made of Homoptera, then transmission trials were conducted. In addition to the Cixiidae *Myndus crudus*, the vector of LY in Florida, and *M. skarphion*, a neighboring species, all Homoptera (mostly Derbidae) were collected in coconut plantations with LY and released by species or groups of species into cages containing 5 coconut seedlings at least one year old, taken from a plantation free of LY for several years. The experimental design comprised 6 cages, including a control without insects. Releases began on 05/10/2006. By 28/02/2007 more than 21,000 insects had been released. According to the results obtained by F.W. Howard in Florida, symptoms could be seen from August 2007 onwards, or LY symptoms could be detected earlier by PCR. In addition, tests were carried out on plantlets germinated *in vitro* and maintained in a closed system into which *M. crudus* individuals were released. A group of control plantlets was not exposed to the insects. On those *in vitro* plantlets, phytoplasma acquisition was determined by PCR after exposure to the insects.

Multi-site screening for identification of small effect disease resistance traits: White mold of bean as a case study. L. K. OTTO-HANSON and J. Steadman. Dept. of Plant Pathology, University of Nebraska, Lincoln, NE 68583-0722. Phytopathology 98:S199.

The screening difficulties presented by small effect disease resistance traits, or Quantitative Trait Loci (QTL), can be reduced by using multiple location screening sites and understanding the role of pathogen variation in the screening system. Resistance in bean to white mold caused by *Sclerotinia sclerotiorum* has been shown to be partial and to involve QTL. Repeatability of resistance expression has been a consistent problem. Variation in white mold screening results can be due to variability of the screening sites, the screening methods used, and/or the variability of the pathogen. Our objective was to identify bean germplasm with broad partial resistance to white mold using multi-site screening. To accomplish this, putative sources of resistance developed by breeders were evaluated by field plot and greenhouse screening methods at multiple sites. Isolates of *S. sclerotiorum* were collected from multiple field test sites. These and other isolates used to screen beans for resistance in the greenhouse were tested for aggressiveness and genetic variation. The straw test greenhouse screening method was identified for common use across locations. Isolate characterization tests identified genetic diversity between *S. sclerotiorum* isolates used in greenhouse screening. Isolates found in white mold field screening plots also exhibited both within and between field variations. Aggressiveness differences were found between the ten greenhouse isolates. The combination of multi-site screening, a common greenhouse test, and use of characterized isolates for screening reduces variability between test sites and allows identification of resistance that is repeatable.

Biological effectiveness of Cymoxanil 10%, for the control of the potato late blight Phytophthora infestans Mont de Bary. A. Pérez-González, J. Santillan-Santana, P. Posos-Ponce, J. L. Martinez-Ramirez, R. Rodriguez-Ruvalcaba, C. M. Duran-Martinez, and V. A. Aceves-Núñez. Km. 15,5 Guadalajara - Nogales, Predio Las Agujas, Zapopan, Jalisco. C.P. 45110, aperez@cucba.udg.mx. Phytopathology 98:S199.

The national area of potato cultivated is of 70 thousand hectares, of which half are cultivated in rain stage conditions, the potato state producers are: Mexico, Puebla, Sinaloa, Coahuila, Veracruz, Guanajuato, Michoacán, and Jalisco that occupies the first place in harvested surface. Several factors limit its production being the potato late blight one of the most harmful ones. The infected tubercles present on the epidermis a light coffee to purple color as a

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dry or humid injury, and can not present symptoms during the harvest and be pronounced in the storage. The objective was to evaluate the biological effectiveness of the fungicide Cymoxanil 10%, for the control of potato late blight, in the potato culture. The experiment was established in 2005, in the locality of Guarachanillo, Mich. A random block design was used with 5 treatments: Cymoxanil 10% with 1, 2, and 3 kg/ha; Curzate M-8 2 kg/ha and absolute witness, with 4 replies. The size of the experimental unit was of 4 furrows of 6 meters in length. The best treatments were Cymoxanil 10% (300 gr. i.a./ha.) with a control of 95% in average after three applications, followed by the treatments Cymoxanil 10% (200 gr. i.a./ha) and the regional witness Curzate M-8 (Cymoxanil + 160+1260 Mancozeb gr. i.a./ha) with an 80% control. We recommend making applications of Cymoxanil in the rank of 2.0 to 3.0 kilos by hectare with intervals of 7 days between one application and another.

Phytoplasma associated diseases in organic vegetable crops in Santo Domingo Valley. A. Poghosyan, V. Lebsky, R. Servin-Villegas, and L. Landa. Centro de Investigaciones Biologicas del Noroeste, Mar Bermejo 195, Col. Playa Palo de Santa Rita; La Paz, Baja California Sur, Mexico 23090. Phytopathology 98:S200.

Santo Domingo Valley is one of the most important agricultural areas in the State of Baja California Sur (BCS), raising organic vegetables, destined for the USA market. Phytoplasma is among the most harmful and destructive pathogens, significantly reducing crop production and lowering the quality of fruits. In BCS phytoplasma-associated diseases have not been extensively studied. During 2006 and 2007 regular surveys were conducted in open fields and greenhouses at the “Espinoza Hermanos” farm to evaluate the role of phytoplasmas in yellow-type symptoms observed in organic cherry tomato, bell pepper, cucumber and basil fields. Disease symptoms resembled those caused by phytoplasma: shortened internodes, erect, reduced and wrinkled apical and internodal leaves, interveinal chlorosis, and marginal anthocyan. Floral parts in diseased tomato and pepper plants were dried and reduced, in basil and cucumber plants where was proliferation of inflorescence into a witches’-broom. Symptoms were transmitted to test plants by grafting and typical symptoms appeared in 2 to 3 months. Modified scanning electron microscopy (SEM) techniques were used to detect suspected pathogen in plant tissues of specimens taken from the field and greenhouse-indexed samples (apical leaf veins, leafstalks, axillary leaflets and floral parts) revealed phytoplasma cells in phloem tissue of symptomatic and some asymptomatic crops and wild plants among the crops, ranging in size from 400 to 2000 nm. The size of phytoplasma and its abundance in phloem tissue varied with growth stage and disease severity. Phytoplasmas were also first detected in volunteer cilantro and neem-tree, suggesting new reservoirs of phytoplasma in this region.

Erratum

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The following abstract was presented at the APS Caribbean Division meeting in Cartagena, Colombia, September 11–15, 2006.

Antimicrobial activity of *Minthostachys mollis* (Lamiaceae) essential oil. N. CHICA (1), J. Sánchez (1), A. K. Carrascal (2), and L. M. Melgarejo (1). (1) Biology Department, Physiological Stress and Plant and Microorganisms Biodiversity Group, Sciences Faculty, Universidad Nacional de Colombia, Bogotá, Colombia, Universitary City; (2) Food Microbiology Laboratory, Environmental Biotechnology and Microbiology Group Sciences Faculty, Pontificia Universidad Javeriana, Bogotá, Colombia. nchicab@unal.edu.co, lmmelgarejom@unal.edu.co. Phytopathology 98:S200.

The antimicrobial activity of *Minthostachys mollis* essential oil at different concentrations (3.5 to 100 µg/ml, and pure) was tested against the plant pathogens, *Erwinia amylovora*, *Pseudomonas syringae*, *Colletotrichum acutatum*, *C. gloeosporioides*, and *Alternaria alternata*, by antimicrobial disk susceptibility test for bacteria and the well method for fungi, using oxytetracycline and Acrobat™ (Dimetomorf and Mancozeb) as controls. The effect on count of viable of *E. amylovora* and *A. alternate* was tested by exposure to the essential oil. All microorganisms were susceptible to the oil and there was a direct relation between concentration and size of the growth inhibition zone. Strong antimicrobial activity was observed for *C. acutatum,* with 100 percent susceptibility for all concentrations, the bacteria were susceptible at 50 µg/ml and higher. Effect of the oil at 100 µg/ml was 2.5 and 3.5 times as strong as that of the oxytetracycline and Acrobat™. A total reduction in the count of viable (6 LU) for *A. alternate*, and a bactericide effect for *E. amylovora* were observed. Chemical composition of the oil was determined by gas chromatography-mass spectrometry. The main components of the essential oil were carvacril acetate, carvacrol, pulegone and mentone; antimicrobial activity was attributed to their way of action in the cell. This is the first report from *M. mollis* essential oil exhibiting antimicrobial activity against plant pathogens.