First Report of Alfalfa Witches Broom Disease in Oman Caused by a Phytomonad of the 16Sr II Group. A. J. Khan, K. M. Azato, M. L. Dehnen, and A. M. Al-Sobhi, Dept. of Crop Science, College of Agriculture, Sultan Qaboos University, Al-Khod 123, Sultanate of Oman; and P. Jones, Plant Pathogen Interactions, JACR, Rothamsted, Harpenden, UK. This work was supported by Sultan Qaboos University research grant IGAOR-PLN-99/01. Plant Dis. 65:1287, 2001; published online as D-2001-0922-02N, 2001. Accepted for publication 23 July 2001.

Alfalfa (Medicago sativa L.) is a primary forage crop in the Sultanate of Oman. A new disease of alfalfa in Oman is characterized by proliferation of roots and yellowing of leaves in 1- to 2-year-old plants and tilting of stems in 4- to 5-year-old plants. Annual loss due to this disease is estimated at more than US$ 23 million. Samples of healthy and infected alfalfa plants were collected from different regions. Total DNA was extracted according to Khadra et al. (1), with minor modifications. Amplification of 16S rDNA was done using a nested polymerase chain reaction (PCR) approach with primers P1/P7 and R16F2/R16F2R. DNA from healthy leaves and sterile water was used as a negative control, while DNA from periwinkle infected with faba bean phyllody (16SrII-C), aster yellows (16SrI), tomato big bud (16SrI-D), sweet potato tip (16SrI-F), cathanthus phyllody (16V3I), and sesame phyllody (16SrII-A) were used as positive controls and for restriction fragment length polymorphism (RFLP) comparisons. Nested 1.25-kb PCR products from infected plant samples were subjected to RFLP analysis. Results showed that None of the alfalfa samples were identified as "Candidatus Phytomonas australis, a known tomato witches' broom disease agent in Oman. Other phytomonads infecting alfalfa have been reported from Europe and North America (1,3), but they belong to 16SIV (clove phyllody) and 16SrI (aster yellows) groups. An alfalfa witches' broom reported from Italy (2) forms a separate grouping (4). To our knowledge, this is the first report of a phytomonad from a peanut witches' broom genus infecting alfalfa in the Sultanate of Oman.


In 1999 and 2000, decay of floral buds of Actinidia delicosa was observed in plantations in the Province of Asturias, Spain. Bud decay led to a decrease (up to 40%) in the production of kiwifruit. Floral buds with symptoms of browning and necrosis were collected from different areas (Villaviscosa, Grado, and Pravia) and processed for microbiological analysis. A fluorescent bacterium was recovered in King's B medium and identified as Pseudomonas syringae by the LOPAT scheme and Hoglund-Leatham reaction (2). Other biochemical features included esculin and gelatin hydrolysis and acid production from mannitol, eritritol, sorbitol, and m-inositol, which are features associated with P. syringae (3). Three isolates from different samples were selected to test pathogenicity using Koch's postulates. Overhead broth cultures of each isolate (10^5 CFU/ml) were used to infect A. delicosa in the trials by the following procedures: (i) atomization on branches and buds; (ii) bud inoculation (1 ml in each bud); and (iii) bud cutting with a scalpel dipped in the suspension. Branches and buds inoculated with sterile water were used as controls. Thirteen plants inoculated in each treatment, and ten plants left as a control, were repeated at least twice. Disease symptoms appeared 2 days later, initially as dark brown spots that developed into an extensive bud rot in all inoculated cases, while no symptoms occurred in controls. P. syringae was successfully recovered from infected samples but not from control samples. The data support the pathogenicity of P. syringae A. delicosa. Although P. syringae was previously reported in Italy as the causal agent of disease on floral buds of A. delicosa (1), to our knowledge, this is the first report of infection of kiwifruit by this pathogen in Spain.


First Report of Tomato yellow leaf curl virus in Mississippi. D. M. Ingram, Central Mississippi Research and Extension Center, Raymond, MS 39154, and A. Heta, Department of Entomology and Plant Pathology, Mississippi State University, Mississippi State, MS 39762. Plant Dis. 85:1287, 2001; published online as D-2001-0928-02N, 2001. Accepted for publication 12 September 2001.

Tomato yellow leaf curl virus (TYLCV) is a begomovirus (family Geminiviridae) that causes severe chlorosis, stunting, and cupping of leaves in tomato (Lycopersicon esculentum) throughout the world. The disease was first reported in the United States in Florida in 1997 (2). In 2000, TYLCV was confirmed as the cause of severe chlorosis, stunting, and cupping of leaves in tomato in Louisiana (3). In January of 2001, mild symptoms consistent with TYLCV were observed in a greenhouse tomato production operation in east-central Mississippi. Whiteflies (Bemisia tabaci) were present in the greenhouse during the previous month, but in relatively low numbers. Symptom severity slightly increased over time with chlorosis in the terminal, reduction in terminal leaf size, and upward cupping of leaves observed. Approximately 4% of plants in the greenhouse developed symptoms. Yield reductions thought to be negligible since the tomato plants harbored most fruit for that growing season. Terminal growth was limited, and no additional flower production was observed. The symptoms were observed on mature fruit; however, fruit set after leaf symptoms developed remained stunted. A representative sample of symptomatic tissue was submitted to an independent lab (Agdia, Inc., Elkhart, IN) screened for whitefly-transmitted geminiviruses, and the results were positive. Additional symptomatic tomato tissue was submitted to the Mississippi State University of Florida, Gainesville, and was observed for virus inclusion bodies. This test was positive for TYLCV based on morphology of virus particles located in the nucleus of tomato cells. Total DNA was extracted from the symptomatic plants for polymerase chain reaction (PCR) assay (2). Results from the PCR assay indicated the presence of TYLCV in symptomatic tomato tissue. The strain of the virus was not determined. To our knowledge, this is the first report of TYLCV in Mississippi.


During 2001, basal stem rot, wilt, and plant death were observed on 30% of the plants in a crop of Dianthus plumarius L., 'Teslaer' in Buenos Aires. Pieces of diseased stems ~1 cm long were surface-disinfested in 2% NaOCl for 1 min and cultured on 2% potato dextrose agar (PDA), pH 7, at 22 to 24°C. After 7 days, an identical fungus was consistently isolated from pieces of infected tissue. Colonies initially were white, turned brown after 2 to 3 days, and eventually formed irregularly shaped sori. Cultures exhibited morphological characteristics typical of Rhizoctonia solani Kühn (2) and were identified with known anastomosis group tester isolates (1). Positive anastomosis was observed with seven strains of R. solani AG-4-HG-II. One isolate was tested for pathogenicity by placing two pieces of PDA (1 cm²) containing 7-day-old mycelial growth <0.5 cm from the base of healthy 2-month-old plants. Control plants were treated with sterile pieces of PDA using the same procedures. Ten replicate plants were used for each treatment. Plants were maintained at 22 to 24°C under 95 to 100% relative humidity and a 12-h light/dark photoperiod. After 7 days, symptoms developed that were similar to those originally observed, and Koch's postulates were satisfied by isolating the fungus. To our knowledge, this is the first report of R. solani AG-4-HG-II causing disease on D. plumarius in Argentina.


(Disease Notes continued on next page)