Anthrax, a disease caused by the fungus *Fusarium oxysporum*, affects strawberries and other crops. In the study described, *Fusarium oxysporum* f. sp. *conglutinans* was used to test the ability of *Trichoderma viride* to control this pathogen. The fungus was found to be effective in reducing the disease incidence in strawberries.

The study was conducted using potted strawberry plants infected with *Fusarium oxysporum* f. sp. *conglutinans*. The treated plants showed a significant reduction in disease symptoms compared to the control group. The results indicate that *Trichoderma viride* can be used as a biocontrol agent to manage *Fusarium* infection in strawberries.

The study highlights the potential of using biocontrol agents like *Trichoderma viride* to manage fungal diseases in horticultural crops. Further research is needed to understand the mechanisms of action and to develop effective strategies for managing *Fusarium* infections in strawberries and other crops.
positive for the presence of the bacterium. Under field conditions, the bacterium is known to thrive well in certain seasons only. Retail stores without temperature extremes and with plants having new growth flushes throughout the year probably serve as an ideal environment for psyllids and the bacteria. The study shows the importance of psyllid-free nursery retail stores as a part of disease management in locations where HLB is not yet established.

A new phytoplasma associated disease of chile peppers

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Chile pepper producers in NM have been reporting the increasing occurrence of plants that fail to set fruit over the past several years. Other than failing to set fruit, phenotypes of affected plants varied. Occasionally, affected plants also displayed a mosaic chlorosis with leaf thickening and cupping consistent with virus infection. Close examination of these plants showed that the failure to set fruit was due to aberrant flower development. All affected plants displayed abnormally large green buds that failed to develop into flowers. These symptoms are similar to those reported for several phytoplasms caused diseases in other solanaceous crops such as Big Bud of Tomato. Light and electron microscopy showed phytoplasma-like bodies distributed throughout the phloem tissue of affected plants while no similar objects were observed in healthy control plants. Polymerase chain reaction testing with phytoplasam specific primers 16S and 23S rDNA primers produced amplions of the expected size in symptomatic plants. When no amplions were received from symptomless plants. Ribosomal gene and ITS region sequences were most closely related to other phytoplasmas but differed significantly from previously described phytoplasmas, especially those reported to infect solanaceous crops. Together these data suggest that the failure to set fruit phenomenon recently observed in the Southwestern U.S. is a new disease of chile peppers caused by a novel phytoplasma.

Distribution and variability of a new chile pepper infecting phytoplasma

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A new phytoplasma associated disease of chile peppers (capsicum annum) was recently characterized by our group. The disease causes a failure in fruit set and therefore has the potential to greatly decrease yields. Affected plants develop abnormally large buds that fail to develop to flowers and has thus been named “Brote Grande” (Spanish for big bud) of pepper. Associated symptoms also include phylophy and leaf thickening on affected plants. Stunting and chlorosis are also observed in some affected plants. The disease was initially described near the city of Las Cruces in Southern New Mexico. As part of this characterization, a reliable PCR based assay for amplification and sequencing of 16S-23S rDNA amplions was developed. Here we report results of a survey across chile producing areas in New Mexico and Arizona where these primers were used to characterize phytoplasma sequences in symptomatic plants. The results of this survey show: 1) that this disease was present at low frequency in all chile production areas tested across the Southwestern U.S., 2) that there is very little variability in the pathogen across the region, 3) that double infections with the phytoplasma and Beet Curly top virus are common, and 4) that this double infection is associated with the stunted chlorotic phenotype sometimes observed with this disease.

Sunflower rust races in Manitoba, Canada

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Sunflower rust caused by Puccinia helianthi Schwein. is a common disease affecting sunflower (Helianthus annuus L.) worldwide. This disease is widely spread in the sunflower growing areas in North America and reduces the yield by up to 25% in addition to the reduction in quality of seed. This pathogen completes its life cycle on sunflower with a high frequency of the development of new races. Rust isolates were collected from all sunflower growing regions in Manitoba, Canada from 2003 to 2007, and the virulence of these isolates were assessed on a site of nine host differential sunflower genotypes in controlled growth room conditions. The rust race groups 300 and 700 were the most common in Manitoba. Race group 700 which includes the races 726, 776, and 777 proved to be more virulent than the race group 300 which includes the races 326, 334, and 336. However, the race group 700 is presently at a lower frequency than the group race 300 in Manitoba. Races 100 and 700, had a lower frequency in the rust population. Most commercial sunflower hybrids express various levels of resistance to race groups 100 and 500 but not to race groups 300 and 700.

Molecular characterization of Wheat Eqid mosaic virus

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Wheat Eqid mosaic virus (WEqMV) is a fleckous rod virus infecting several poaceous species in Eqid, a wheat growing region in the Fars province of Iran. Electron microscopy and limited molecular studies have previously shown that this virus is a member of the family Poospoviridae. In the present study, the complete genome of this virus was sequenced and analyzed. The genome consisted of 9636 nucleotides including 5' and 3' UTR of 127 and 172 nucleotides, respectively, and a single open reading frame coding a polypeptide of 3190 amino acids. Phylogenetically, WEqMV was closest to Wheat streak mosaic virus, with a similarity of 56.8% and 50.7% at nucleotide and amino acid levels, respectively in the total genome. It was less similar to other tritoviruses. The protease cleavage sites of the polypeptide in WEqMV were also very similar to those of other tritoviruses. Based on these data, WEqMV is regarded as a new member of the genus Tritovirus in the family Poospoviridae. This study was supported by funds from the Ministry of Science, Research, and Technology of Iran.

Relief of abiotic stress in corn by DAPG-producing Pseudomonas fluorescens strain Wood1R under acidic soil conditions

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Fluorescent Pseudomonas spp. that produce the 2,4-diacetylphloroglucinol (DAPG) are well known for their capacity to suppress diverse soilborne pathogens. However, little is known about their potential to improve plant health under abiotic stress conditions (i.e. low pH soils). Our objective was to determine if P. fluorescens strain Wood1R had the ability to improve plant health and productivity of corn in soils with a pH of 4.7. Two field and three greenhouse experiments were established in which corn seeds were treated with Wood1R. The plants were evaluated for stand, height, leaf area covered with lesions, and, for the field experiments, yields. Nutrient uptake in leaves was also assessed. In the field, plants treated with Wood1R were taller (P < 0.05), had less leaf area covered with stress-related lesions (P < 0.1) and had greater yields (P < 0.1) compared to the negative control. Two of the greenhouse experiments showed reduction in the foliar area covered with lesions (P < 0.05) when treated with Wood1R. No differences in stand were observed for any experiment, indicating that pathogen suppression was not a factor. Foliar levels of P and Mg were significantly greater (P < 0.1) in Wood1R-treated plants in two of four experiments. These data indicate that the plant health promotion conferred by DAPG-producing pseudomonads may be related to alterations in soil nutrient uptake by plants when grown in low pH soils.

Effect of isolate, environment, and a defeated R-gene (R23v3) on quantitative resistance of potato to late blight

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Phytophthora infestans, the causal agent of late blight is the most aggressive and costly pathogen affecting potato production worldwide. Genetic resistance is gaining importance as the pathogen continues to develop resistance to fungicides. However, little is known about the stability and specificity of quantitative resistance including the effects of defeated major resistance genes. In this study we analyzed resistance to P. infestans in two reciprocal inter-specific backcrosses of Solanum tuberosum and S. berthaultii. Analyses were done with five different strains of P. infestans. The experiments were conducted in different environments including field, plastic house and mist chamber. Inoculations on sunflower with a high frequency of the development of new races. rust isolates were collected from all sunflower growing regions in Manitoba, Canada from 2003 to 2007, and the virulence of these isolates were assessed on a site of nine host differential sunflower genotypes in controlled growth room conditions. The rust race groups 300 and 700 were the most common in Manitoba. Race group 700 which includes the races 726, 776, and 777 proved to be more virulent than the race group 300 which includes the races 326, 334, and 336. However, the race group 700 is presently at a lower frequency than the group race 300 in Manitoba. Races 100 and 700, had a lower frequency in the rust population. Most commercial sunflower hybrids express various levels of resistance to race groups 100 and 500 but not to race groups 300 and 700.