

## **Invited keynote lecture**

# **DETECTION, DIAGNOSIS AND CONTROL OF LILY DISEASES**

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Lily diseases pose a major threat to crop productivity and quality unless they are controlled. During the past several years improved methods of controlling lily diseases have been developed. ELISA is still important in detecting many of the viruses infecting lilies. But new procedures include molecular detection of the viral nucleic acids and most recently, the development of microarray technology for detection of multiple viruses in a single test. Virus control has included the use of attenuated virus strains to protect lilies against the development of severe disease. Oil sprays in combination with insecticides are used in the field to reduce virus spread. Lilies resistant to virus and nematode diseases are being developed through transformation and the insertion of genes that confer resistance. Technologies involving the use of breeding for fungus disease resistance as well as the use of foliar applied biocontrol organisms and induced resistance in the lily host have been reported. In some instances these procedures are supplemented with more traditional chemical controls. Bulb and stem rots caused by both bacteria and fungi continue to be a threat to bulb and crop production. In addition to chemical controls, products for biocontrol control of these pathogens in storage and in the field are being developed. Phytoplasmas may cause severe disease in some regions where lilies are grown. Development predictive models of foliar disease based on elimination of field sources of inoculum, spatial separation of the crop from primary inoculum, and weather forecasts may also be important in predicting disease occurrence and implementing controls procedures. Effectiveness of a control strategy often depends on the environment in which the crop is grown. Growing a lily crop in protected structures significantly reduces infection from virus and foliar pathogens. Recent advances in the detection, diagnosis and control of lily pathogens will be reviewed.