

Watermelon's hidden killer

September 4 2009

Watermelon vine decline (WVD) is a new and emerging disease that has created devastating economic losses for watermelon producers in Florida. Caused by the whitefly-transmitted squash vein yellowing virus (SqVYV), the disease created monetary losses estimated at \$60 to \$70 million in Florida during the 2004 growing season. The virus has become endemic in Florida and has appeared to varying degrees every season since it was first observed.

Symptoms of WVD typically occur at or just before harvest, when the vines rapidly collapse. Although affected fruit can appear healthy, rind necrosis and flesh degradation are often evident when fruits are cut, dramatically limiting marketability. The disease progresses rapidly; in some fields vine decline increased from 10% affected plants to greater than 80% within a week. In other cases, entire [watermelon](#) fields were lost to WVD. Clearly, the healthy and popular watermelon is under siege from the WVD plague.

Responding to producers' concerns, scientists recently identified the cause of WVD and are seeking ways to control the plague. Chandrasekar S. Kousik and colleagues at the U.S. Department of Agriculture-Agricultural Research Service (ARS) and SWFREC, University of Florida, published the results of a research study of WVD in a recent issue of the ASHS journal [HortScience](#). "In this study, we presented results of greenhouse and field evaluations of U.S. plant introductions for resistance to SqVYV", explained Kousik.

Although whitefly management can significantly reduce the population

of this SQVYV vector, complete control is not possible. Thus, the search for long-term and sustainable strategies to manage SqVYV remains important. Development of watermelon cultivars resistant to either SqVYV or its whitefly vector is a promising alternative.

Of the 218 plant introductions (PI) evaluated in the study, none were completely immune, but several PI showed varying levels of resistance and were further evaluated in greenhouse and field trials. "Our studies indicated that these PI could significantly slow down disease development over time compared with the susceptible cultivars, but also indicated that, under extreme circumstances, the resistance offered by some of the genes may not be enough to manage the disease," Kousik said.

The identification of potential sources of partial resistance to SqVYV suggests that watermelon germplasm with moderate resistance can be developed for breeding programs. The scientists suggest that even when some of these resistant genes are moved into commercial cultivars, an integrated approach that includes the use of reflective mulch, application of pesticides to manage whitefly populations, and weed/cucurbit crop volunteer control, will be needed to fully manage WVD.

More information: The complete study and abstract are available on the ASHS Hortscience electronic journal web site:

hortsci.ashspublications.org/content/abstract/44/2/256

Source: American Society for Horticultural Science

Citation: Watermelon's hidden killer (2009, September 4) retrieved 18 April 2024 from <https://phys.org/news/2009-09-watermelon-hidden-killer.html>

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