Where is the *Xylella*?

Forrest Mitchell (TAES-Stephenville) and Blake Bextine (UT Tyler)

This is an important question. It can be in the insects, it can be in the grape, it can be in other cultivated host plants and it can be in wild host plants. Symptoms may be used to detect an infection in some plants, but others do not show them or will show the same symptoms for more than one ailment. Insects are not known to show symptoms.

How then do we reliably detect the bacterium? Two commonly used methods are PCR and ELISA, acronyms for polymerase chain reaction and enzyme-linked immunosorbent assay. ELISA is rapid, inexpensive and flexible while PCR is expensive and fails easily if the slightest reaction condition is not met. PCR is the far more sensitive test however and is the one best used when accuracy is needed.

This doesn't mean that there is no place for ELISA. It may not be as sensitive (accurate) but it still can deliver useful information. We recently used ELISA to investigate the distribution of *Xylella* in a seven year old Shiraz grapevine that had been suspected of having Pierce's disease. The plant was collected in September from the vineyard and brought back to the lab where it was reduced into small pieces from roots to petioles and subjected to the ELISA. The graph below demonstrates the discontinuous appearance of the bacterium through plant.

Knowing how the bacterium is distributed will help in determining how many samples will be needed for diagnosis or where to put leafhoppers in experimental situations when we want the insects to acquire *Xylella*. Further tests on other vines will be conducted in the coming season to hone detection skills for both diagnostic and experimental purposes.