

Final Progress Report: April 14, 2006

USDA APHIS – Texas Pierce’s Disease Research and Education Program

Title of project:

Epidemiology and Control of Pierce’s Disease in Texas Vineyards

Principal investigator: David N. Appel

Reporting Period: April 30, 2006 – March 31, 2005

Major accomplishments to date:

1. Survey and mapping completed for:
 - Texas Hills Vineyard (2003, 2005)
 - Becker Vineyard (2003, 2004, 2005)
 - Palacios Vineyard (2005)
 - Spicewood Vineyard (2003, 2005)
 - TAMU Experimental Vineyard (College Station) (2005)

2. Vines were rated according to Pierce’s Disease symptoms, and disease progress curves were completed, or initiated, for the following grape varieties (n = 43):
 - Viognier (Becker)
 - Le Noir (TAMU)
 - Malaga (TAMU)
 - Lomanto (TAMU)
 - Hussman (TAMU)
 - Delicatessen (TAMU)
 - Armalaga (TAMU)
 - Albania (TAMU)
 - Pixiola (TAMU)
 - Louisiana (TAMU)
 - Hidalgo (TAMU)
 - Ellen Scott (TAMU)
 - Beacon (TAMU)
 - Alexandria (TAMU)
 - Lost Tag. (TAMU)
 - Margarite (TAMU)
 - Extra (TAMU)
 - Carman (TAMU)
 - America (TAMU)
 - Blan duBois (TAMU, Palacios)
 - Villard Blanc (TAMU)
 - LaRouge (TAMU)
 - Shiraz (TAMU, Palacios)
 - Thompson Seedless (TAMU)
 - Roucaneuf (TAMU)
 - Sangiovese (TAMU)
 - Cynthiana (TAMU)
 - Cabernet Sauvignon (Texas Hills, Palacios, TAMU, Spicewood)
 - Champanel (TAMU)
 - Merlot (Texas Hills, Palacios, Spicewood)
 - Cabernet Franc (Texas Hills, Spicewood)
 - Chardonnay (Texas Hills, Spicewood)
 - Melbec (Texas Hills)
 - Petit Verdot (Texas Hills)
 - Pinio Grigio (Texas Hills)
 - Chambourcin (Palacios)
 - French Colombard (Palacios)
 - Muscat Blanc (Palacios)
 - Primitivo (Palacios)
 - Ruby Cabernet (Palacios)
 - Sauvignon Blanc (Spicewood)
 - Zinfandel (Spicewood)

3. Comparative epidemiology underway for survey data between and among vineyards and varieties.
4. Tested different diagnostic protocols on vines of different varieties and vines with varying disease histories.
5. Experimental treatments for direct control of Pierce's Disease were implemented
 - testing soil application of vines with Cambistat[®]
 - 60 vines (all of the variety Viognier) with different health ratings.
 - vines were rated before and after treatment, and canes measured for relative growth.
6. A draft of a brochure for diagnosis of Pierce's Disease was completed.
 - "Technical guide for diagnosis of Pierce's Disease of grapes in Texas"

Goals achieved:

1. Defined patterns of disease spread within vineyards at different locations and among different varieties. A few observations are as follows;
 - spreads along rows faster than across rows,
 - edge effect not consistent,
 - pattern appears to be changing as disease progresses,
 - a complex series of patterns exist for susceptible, tolerant, and resistant varieties,
 - mixing of susceptible varieties with resistant varieties appears to accelerate disease progress,
 - disease progress rates vary for the same varieties at different locations.
2. Begun to catalogue typical symptom expressions for different varieties, species, and cultivars.
3. Quantifying risk of planting different varieties and expectations for yield under disease pressure.

Relevance to the USDA APHIS – Texas Pierce's Disease Research and Education Program:

Pierce's disease has introduced a high level of uncertainty for grape growers in Central Texas. This uncertainty arises in part from difficulties in diagnosing the disease and from concern over the potential for vine mortality and reduced yields. These studies in epidemiology are designed to provide growers with the information needed to make informed decisions in their vineyard management operations. Specifically, with completion of these studies, growers should have greater confidence in our ability to diagnose the disease. Also, we should be able to meet grower expectations of our ability to predict the impact of the disease. These studies will also be essential for assessing the efficacy of treatments to control the disease and its vectors.

Publications submitted/published; presentations/posters presented at national technical meetings/conferences:

"Impact and response to Pierce's Disease of Grapes in Texas". Annual Meeting of the Southwestern Wine and Grape Growers, Feb. 24, 2006, Albuquerque, NM. (meeting presentation, to be published in proceedings)

Signature:

Date:

If prepared by someone other than the Principal Investigator, please provide name and contact information: