

**Progress Report – Submitted Sep 30 2006**

**First Quarterly Report**

**Long term effects of vineyard surroundings of three vineyard pests,  
and short term control**

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**Main areas of accomplishment in 1<sup>st</sup> Quarter:** Work was continued out on grape root borer, with establishment of a new mating disruption site, and sharpshooters that transmit Pierce's disease, *Xylella fastidiosa*.

**GRAPE ROOT BORER**

**I. Exploring mating disruption for control of grape root borer in southwestern Virginia - 2005**

**Introduction:** Grape root borer, *Vitacea polistiformis* (Harris) (Lepidoptera: Sesiidae), is a pest of increasing significance in Virginia vineyards (Pfeiffer et al. 1990, Bergh et al. 2005). Control is difficult; there are several approaches available, but none are highly effective or practical. Lorsban applied as a barrier treatment is not highly effective throughout the protracted oviposition and adult emergence period. Soil mounding is often impractical, and is difficult to time to control the entire generation. The use of entomopathogenic nematodes has received some attention. *Heterorhabditis bacteriophora* was one of the most effective species against GRB in a study by Williams et al. (2002). A vineyard in Patrick County has a severe infestation of GRB, and mating disruption was attempted there, as well as a rescue treatment in which a nematode-laden drench was allowed to soak the root zone close to the crown of the vines.

**Materials and Methods:** As reported earlier, mating disruption research was carried out in a vineyard in Patrick County over three seasons. Ropes were placed on 17 Jul 2003, 6 Jul 2004, and 26 Jul 2005. Rope style dispensers were obtained from CBC America, containing a blend designed for mating disruption of the currant clearwing, *Synanthedon tipuliformis* Clerck (Isonet Z): (E,Z)-2,13-octadecadien-1-yl acetate (100) (Z)-13-octadecadien-1-yl acetate (5) (Priesner et al. 1986). The GRB pheromone blend has been described as (E,Z)-2,13-ODDA (99), (Z,Z)-3,13-ODDA (1) (Snow et al. 1986). Ropes were applied to vineyard trellis posts at the rate of 494/ha (200/A). The area treated was 2.4 ha (6 A). The degree of larval feeding in grape roots has been reduced by this technique. Mating disruption has offered great promise to reduce infestation by grape root borer.

A new treatment block was established in this vineyard. Rope dispensers were placed in a 5-acre area on 12 Jul 2006. Results will be presented when data are available.

Discussions have taken place with CBC Americas on expanding the number of pheromone dispensers available in order to increase the number of experimental sites next season.

### References:

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Priesner, E., G. Dobler and S. Voerman. 1986. Synergism of positional isomers in sex-attractant systems of clearwing moths (Sesiidae). *Entomol. exp. applic.* 41: 311-313.

Snow, J. W., M. Schwarz and J. A. Klun. 1986. The attraction of the grape root borer, *Vitacea polistiformis* (Harris) (Lepidoptera: Sesiidae) to (*E,Z*)-2,13 octadecadienyl acetate and the effects of related isomers on attraction. *J. Entomol. Sci.* 22: 371-374.

Williams, R. N., D. S. Fickle, P. S. Grewal and J. R. Meyer. 2002. Assessing the potential of entomopathogenic nematodes to control the grape root borer *Vitacea polistiformis* (Lepidoptera: Sesiidae) through laboratory and greenhouse bioassays. *Biocontrol Sci. Technol.* 12: 35-42.

## SHARPSHOOTERS AND PIERCE'S DISEASE

A graduate student, Ms Anna Wallingford, continued to work on this component of the project. She has made regular visits to each of the vineyards depicted in the map in Fig. 1. In all study vineyards yellow sticky traps (Fig. 2) were placed in vineyard edges, centers and surrounding woods to detect activity of sharpshooters. In two vineyards, we are testing a clear intercept trap (Fig. 3, non-attractive) placed in block centers, edges and surrounding woods to further evaluate sharpshooter movement.

The two PD vector species predominating were reported earlier (*Oncometopia orbona* and *Graphocephala versuta*), but some vineyards have other known vector species present as well. A provisional list of leafhopper species collected to date is presented in Table 1. Vineyards seem to vary dramatically in sharpshooter populations, sometimes with a strong edge effect. In addition to several PD vector species, probable vectors of grapevine yellows are present as well. Data on these populations will be presented later.

In September sampling, plant tissue samples were collected for analysis to detect infection by *Xylella fastidiosa*. Possible symptoms of infection were observed; infection will be confirmed in the laboratory in Blacksburg.

Results will normally be presented at Virginia Vineyard Association meetings. Unfortunately, winter weather prevented a report at the latest meeting. Rather than wait until the next meeting, I will prepare a Breeze presentation on our results to date. This is a web-based version of a PowerPoint presentation with a voice track included.

Table 1. Preliminary listing of leafhopper species collected on yellow sticky traps in Pierce's disease vector survey in Virginia Vineyards – 2006 season.

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*Oncometopia orbona* (Fabr.)

*Graphocephala versuta* (Say)

*Graphocephala coccinea* (Forster)

*Paraulacizes irrorata* (Fabr.)

*Draeculacephala zae* Hamilton

*Draeculacephala* sp.

*Agalia quadripunctata* (Provancher)

*Agalia constricta* (Van Duzee)

*Agalia* spp.

*Cuerna costalis* (Fabr.) (a single specimen found in Fauquier County)

*Gyponana* spp.

*Penthimia* spp.

*Graminella nigrifrons* (Forbes)

*Endria* spp.

*Scaphytopius frontalis* (Van Duzee)

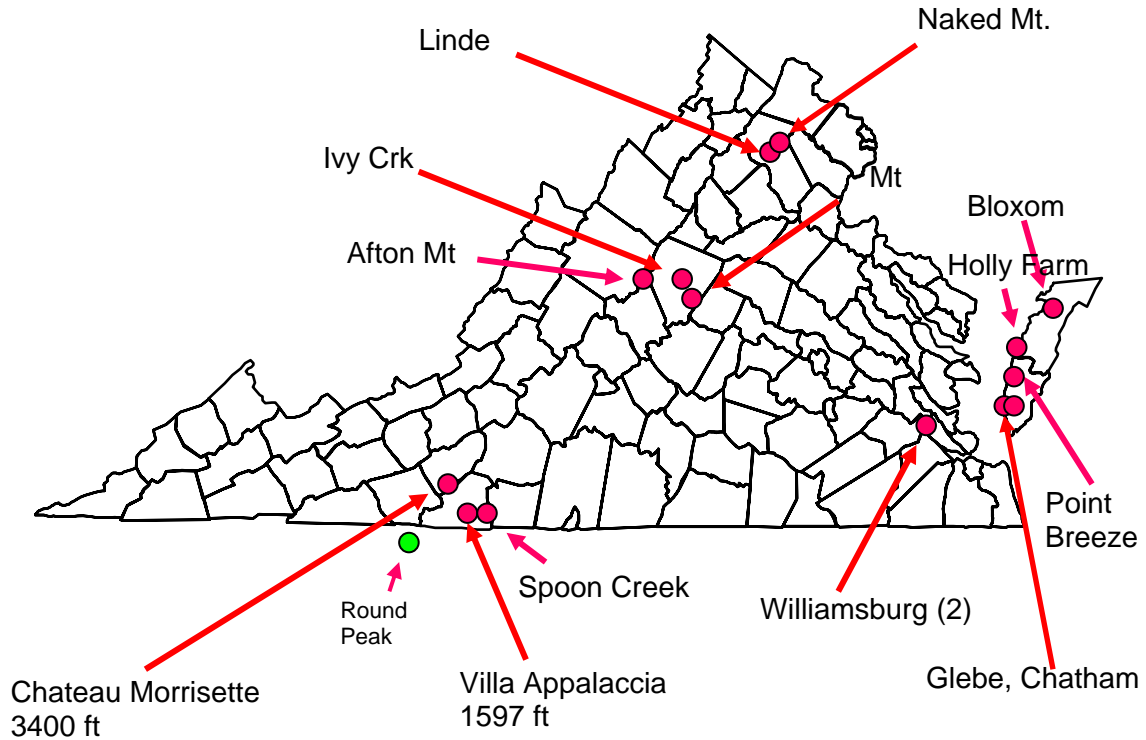
*Scaphytopius* spp.

*Paraphlepsius irroratus* (Say)

*Paraphlepsius* spp.

*Colladonus clitellarius* (Say)

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**Sample Vineyard for Sharpshooter Survey:**

**Appalachian**

Afton Mountain Vineyard  
Chateau Morrisette

**Northern Piedmont**

Linden Vineyard  
Naked Mountain Vineyard

**Central Piedmont**

Ivy Creek Vineyard  
Mountain Hollow Vineyard

**Southern Piedmont**

Villa Appalaccia Vineyard  
Spoon Creek Vineyard

**Coastal Plain**

Williamsburg Winery A  
Williamsburg Winery B

**Eastern Shore**

Bloxom Vineyard  
Holly Farm Vineyard  
Vineyard at Point Breeze  
Glebe Vineyard  
Chatham Vineyard

Fig. 1. Map of Virginia with sharpshooter study vineyards indicated.



Fig. 2. Yellow sticky trap attached to trellis post.



Fig. 3. Clear intercept trap in woods bordering a sample vineyard.



Fig. 4. *Oncometopia orbona* adult trapped on yellow sticky trap.



Fig. 5. Relative size of two Pierce's disease vector species common in Virginia vineyards, *Graphocephala versuta* (left) and *Oncometopia orbona* (right).