The most abundant leafhopper species collected during 2006 were previously reported on muscadine grapes (Corrette 1981). The unusually warm winter in 2007 might reflect this, because this insect has previously been reported only from a vineyard located in this county. Abundant sharpshooters were found in 2007, but it was found mostly in the lower yellow sticky trap (0.5 m). The glassy winged carrier of $X. f. xanthocephala$ was found only in one vineyard located in Wake County (Piedmont) in 2007 and this is the first report of this insect in this county.

OBJECTIVES
1. Identify insects that carry Xf.
2. Study the seasonal abundance of the most abundant species of leafhoppers present in vineyards.
3. Identify insects that carry Xf.

RESULTS
Leafhopper identification is still in progress. We have identified a total of 40 species to date. We have found five large species (length ≥ 13 mm) of sharpshooters (Oncometopia orbona, Paraulacizes irratora, Cuerna costalis, Homalodisca insolita and H. vitripennis), 20 medium size species (length between 6 to 13 mm) including cicadellids (Paraphlepsius irratus, Graphocephala versuta, G. coecinea, G. hieroglyphica, Scaphytopius frontalis, S. acutus, Japanus hyalimus, Scaphoideus titanus, Gyponana sp., Colladonus citellarius, Agalliota constricta, Stirrelus bicolor, Norvelina seminude, Texanans scultus, Idionus sp., Mesama sp, Idiocerus sp, Dracucephala antica, D. angulifera, and Penthimia sp.), 4 membracids (Atymna sp., Spissistilus sp., Micrutalis calva, Entylia carinata), 2 clastopterids (Clastoptera obtusa and C. xanthocephala.), 1 cecropid (Prosapia bicincta) and 7 small species (length < 5 mm) (Empoasca fabae, Erythronoeura vulnerata, E. vitis, E. tricincta, E. ziczac, Illinigina illinoiensis, and Graminella sp.). Many of the small species were previously reported on muscadine grapes (Corrette 1981).

The most abundant leafhopper species collected during 2006 were G. versuta, A. constricta, P. irratora, O. orbona. However, in 2007, G. versuta, A. constricta, H. insolita and O. orbona were the most abundant. Paraphlepsius irratus is a carrier of Xf (Myers 2005), although its ability to transmit Xf has not been established. Homalodisca insolita was the most abundant sharpshooter in 2007, but it was found mostly in the lower yellow sticky trap (0.5 m). The glassy winged sharpshooter, H. vitripennis, was found only in 2007 in the Wake County vineyard and this is the first report of its presence in this county. Most H. vitripennis were collected from the upper yellow sticky traps (2.0 m). The presence of H. vitripennis may reflect the unusually warm winter in 2007, because this insect has previously been reported only from a vineyard located along the coast of NC, in Currituck Co. and crape myrtle (Lagerstroemia indica) in Pender Co.
CONCLUSIONS

Our data on the leafhopper species present in NC vinifera vineyards provide a framework for identifying which species of leafhoppers are likely to be important in $X_f$ transmission. *Graphocephala versuta* and *O. orbona* have been shown to transmit $X_f$ in NC (Myers 2005). Previous research has demonstrated that *C. costalis* (Kaloostain, 1962), *H. insolita* (Purcell 1979), and *H. vitripennis* are vectors of $X_f$. The latter species has the ability to disperse long distances, and its presence in Currituck Co. and Wake Co. may reflect the unusually warm winter in 2007. If we continue to experience mild winters due to global warming, *H. vitripennis* may spread further north and west in NC. Other species such as *P. irroratus* may be important in the spread of $X_f$. To identify other potential vectors of $X_f$, specimens of each species have been collected and stored at ~ 1°C; they will be subjected to PCR analysis to test for the presence of $X_f$ DNA. In 2008 we are planning to continue the survey and study the life history, host plants, and habitat preferences of the most abundant leafhoppers in vinifera vineyards in NC. We will also investigate potential pest management programs for leafhoppers in vinifera grapes.
REFERENCES
Corrette, K. B. 1981. Identification and biology of grape insects in North Carolina with special reference to phytophagous species on muscadine grapes. A thesis submitted to the Graduate Faculty of North Carolina State University, Entomology Department.

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