

Orosius argentatus and yanga bush: the missing links in Australian Grapevine Yellows?

P.A. Magarey¹, M. Fletcher², L.J. Pilkington³ and G.M. Gurr³

¹Loxton Centre, South Australian Research and Development Institute,
PO Box 411, Loxton, South Australia 5333

²Orange Agricultural Institute, NSW Agriculture, Forest Road,
Orange, NSW 2800

³Faculty of Rural Management, The University of Sydney - Orange,
PO Box 883, Orange, NSW 2800 Australia

Email: leigh.pilkington@orange.usyd.edu.au

Australian grapevine yellows (AGY)



Serious disease of grapevines in Australia causing more than 10% yield loss

Phytoplasma pathogen (*Phytoplasma australiense*)

Known vectors of all other phytoplasmas are phloem-feeding Hemiptera (leafhoppers & planthoppers)

•Overseas there are many similar diseases of grapevines though they are often associated with different pathogens (eg Flavescence dorée in France and Vergilbungskrankheit "VK" in Germany)

•implies that AGY pathogen and vector are native,

-grapevines not native,

-ergo, a native plant is the 'natural' host of AGY phytoplasma

The first author plotted the disease incidence and severity in vineyards in the Loxton district of South Australia and showed distribution of AGY within vineyards in random groups of 2-3 diseased canes and AGY severity and incidence between vineyards shows a correlation with "overflow" areas associated with the irrigation system

Suggests vector does not live in vineyards - that it spreads out from an alternative host in the "overflow" areas

Random distribution of AGY within vineyards indicates alternative host is not present in vineyards

Hypothesis...

"Overflow" areas harbour a native plant not present in vineyards. This plant hosts a native leaf/planthopper vector of AGY



Peter A. Magarey

Murray J. Fletcher

Leigh J. Pilkington

and Geoff M. Gurr



Following the lead

All authors visited Loxton in May 2002 where sweep net sampling was carried out in vineyards, "overflow" areas and in other areas near high intensity AGY vineyards.

A total of 28 samples was taken and the most common species was the common brown leafhopper *Orosius argentatus* (Cicadellidae: Deltocephalinae) which was present in 14 of 15 samples swept from yanga bush, *Maireana brevifolia* (Chenopodiaceae)



Orosius argentatus

O. argentatus was absent from 13 samples collected from 10 other plant species/communities

O. argentatus was also present in large numbers in a single sweep net sample from yanga bush growing near an AGY affected vineyard near Griffith NSW in June 2002

A clear association between common brown leafhopper and yanga bush

Much of the yanga bush at Loxton had pink or yellow discolouration which may indicate the presence of a "yellows"-type disease. Five samples of yanga bush tested negative for presence of AGY using primers developed for AGY - more testing needs to be performed



Yanga bush

A working hypothesis

- *O. argentatus* is a vector for AGY
- Yanga bush is the winter host of *O. argentatus*
- Yanga bush is the primary native host of AGY
- AGY spreads from yanga bush to neighbouring vineyards when *O. argentatus* disperses in Spring