

School of Agricultural and Wine Sciences

Honours Students 2009 Projects

Melaine Bower

My project is entitled "Decreasing fertiliser requirements using compost".

The rising cost of chemical fertilisers has decreased the profitability of crop production. Low cost alternatives to the current reliance on chemical fertilisers are required for the long term economic sustainability of agriculture worldwide. This project aims to determine to what extent chemical fertiliser use can be decreased by additions of compost. Pot trials are being conducted in Australia for validation in the field in Vietnam. The combined use of fertiliser and compost may be a solution to the problem of decreasing profitability in crop production.

Haley Rutherford

The control of Dillon Bush (*Nitraria*) on the Riverine Plain.

I am trialing several different control methods including slashing, burning and chemicals. As there is very little literature on this species I have had to relate anecdotal evidence to literature from other woody weeds. It is exciting research as I know that farmers in my region will use my findings.

Vanessa Connick

'Investigating the role of silicon in biological pest control of grapevines (*Vitis vinifera*); including enhanced natural enemy attraction and improved plant defences against insect and fungal attack, as well as monitoring changes in plant drought tolerance, plant photosynthetic ability and qualitative changes in the wine produced from treated vines.'

Much research has been carried out over the years proving beyond a doubt the beneficial effects of applied silicon to plants affected by herbivore insect attack or abiotic stresses. This research project will be investigating the unproven effects of Si. The role of Si on a tri-trophic level is only beginning to be understood. It is believed that Si alters the quantitative and qualitative properties of herbivore induced plant volatiles (HIPV), increasing the attraction of the attacked plant to predator pests and parasitoids. My research will also investigate the effects of Si on wine quality. Prior research has found increasing levels of Si in the soil resulted in increased baumé and decreased titratable acidity (TA) of grapes. However, composition of grapes is likely to be correlated to a wide range of plant-available cations present in the soil, and therefore, will be particular to an individual site and vineyard. Other factors such as drought tolerance, saline and heavy metal soil tolerance, and altered photosynthetic ability will also be monitored. Further research conducted on vineyards in the Orange area are important to determine the effects of Si in this area and the potential benefits of this study to the wine industry are great.

Sue Norman

"The metal uptake by indigenous wetland plant species"

My Honours project I am undertaking involves examining the metal uptake by four indigenous wetland plant species. I am measuring the uptake of copper and zinc in the roots and shoots of *Baumea articulata* (jointed twigrush), *Carex appressa* (Tall sedge), *Eleocharis acuta* (Common spike-rush) and *Juncus usitatus* (Common rush). The purpose of my research is to recommend plant species that are potentially suitable to accumulate copper and zinc from leachate for a proposed constructed wetland at mine rehabilitation site at Cadia Valley Gold Mine near Orange, NSW.