

**House of Assembly
1 December 2009**

WATER LIMITATION PROJECT

530Mr PEDERICK (Hammond) (15 September 2009).

1.Are the technology and methods identified by SARDI to improve crop yields to assist perennial horticulture now available for general use and if not, when will they be?

2.Given that SARDI has established that root architecture is a strongly genetically driven trait, how will this opportunity to develop drought tolerant crops be pursued?

3.What are the new types of drought tolerant pasture crops that have been released by SARDI and have they been taken up by farmers in South Australia and in other states?

The Hon. P. CAICA (Colton—Minister for Agriculture, Food and Fisheries, Minister for Industrial Relations, Minister for Forests, Minister for Regional Development): I am advised:

1.The project on water limitation and its impact on yields in perennial horticulture is progressing well. The initial study period was funded by South Australian government through the Drought Response Team (DRT). First year on-farm results indicate a strong relationship between annual irrigation volume and potential yield for citrus, vines, almonds and avocados in the Riverland.

Additional funding has been sourced from Horticulture Australia Limited (HAL), to supplement the DRT seed funding and continue the on-farm monitoring until June 2013 to collect data from the same sites over multiple seasons, analyse the long term impacts of the drought and assess crop survival and recovery. The HAL funding will also support a scientific research trial investigating management strategies to maximise citrus crop survival and production at low water availability. SARDI has collated a full year's data on a range of citrus and wine grape plantings. This data is preliminary and once SARDI has data replicated across a number of seasons it will be used to develop strategies that minimise the impact of drought on permanent horticulture. It is envisaged that informed decisions will be possible once we have completed the collection of the third season's data.

2.In relation to root architecture and drought tolerance—the finding that root architecture is a strongly inherited trait is important information for wheat breeding programs and research agronomists. It means breeders can select for it using a minimum number of sites, instead of running trials in each cropping region. SARDI has also developed DNA assays to determine root distribution in field trials. This is a novel technique which makes the assessment of plant roots and their ability to access water in the soil easier to assess.

Australian Grain Technologies Pty Ltd (AGT) is currently looking at the possibility of using this technique in their breeding program. Once this has been determined, it is expected that new projects will be developed to characterise the variation in root architecture available to wheat breeders and determine which systems are best suited to maximise yield in different soil types and climatic conditions.

3.New types of drought tolerant pasture crops which have been or will be released over the next couple of years include:

- One vetch variety (2008)
- One lucerne variety (2011)
- Eight annual medics and clovers (2012)

Commercialisation of these varieties is still progressing.