

Study Tour of South Africa, New Zealand, the UK and the USA (also incorporating Chile)

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Study Tour Highlights

Highlights from the South African, UK, USA and New Zealand study tour include:

1. Visits were made to avocado nurseries where elite rootstocks were being commercially cloned. These included Westfalia Nursery in South Africa where 'Duke 7' and 'Merensky 2' were being cloned using the Brokaw "nurse seed" technique; Allesbeste Nursery in South Africa where the Brokaw "nurse seed" technique had undergone significant modification and micro-cloned rootstocks of 'Duke 7' and 'Velvick' were being produced; ACW Nursery in California which was using a modified technique similar to Allesbeste Nursery for the production of cloned 'Duke 7'; and Greenleaf Nursery in California which was also using a modified clonal technique similar to Allesbeste nursery for the production of 'Duke 7' clones. All nurseries visited indicated that they would like to participate in the exchange of new information on cloning and rootstocks as it develops.
2. Negotiations were held with Dr Stefan Köhne of Merensky Technological Services for access for ANVAS nurseries to the newly developed Phytophthora root rot tolerant rootstock Merensky 2. The rootstock is already in Australia under test agreement with ANFIC but Dr Köhne gave assurances that any commercialisation agreement in Australia would be inclusive of ANVAS nurseries (a written confirmation will be prepared by Dr Köhne).
3. A new product with fungicidal action has been developed and commercialised by Merensky Technological Services. The product called Westfalia Biocoat™ is a formulation of natural glycols and alcohols and is effective in controlling the postharvest diseases stem-end rot and anthracnose. The product can be safely used on fruit going into chemical-sensitive markets such as Europe. (*Note: since returning to Australia QHI has arranged importation of this product for testing*).
4. There is a growing demand for organic products in Europe and most of the farms visited in South Africa are targeting this market through managing some of their orchards to comply with European standards. Organic accreditation is only given following an on site inspection by the European certification body.
5. The germplasm block at South Coast Field Station, University of California was inspected and six Guatemalan types identified as potential rootstock material for Australian conditions. These will be sunblotch-viroid tested by the University of California prior to their introduction into Australia.
6. A visit was made to the USDA at Cutler Ridge, Miami where they are using AFLP technology to genotype avocado cultivars. There may be an opportunity for this group to apply their technology to avocado material in Australia for rootstock identification and this is currently being explored.
7. Our knowledge on ASBV has steadily increased as new, more sensitive detection methods have been developed. Centres were visited in Florida and California where PCR technology has been developed for ASBV detection. **With current knowledge it is recommended at this point in time that a zero-tolerance policy should be adopted for all trees being propagated and sold from ANVAS nurseries as soon as practicable and this be enforced through the routine sampling of leaves for ASBV analysis from nursery trees.** This policy should be supported by rigorous

testing of nuclear and multiplication blocks and that the Australian industry should work closely with the New Zealand industry to identify a reliable and affordable indexing service.

8. A visit was made to the Tissue Culture facility at the University of Florida, Homestead (Dr Richard Litz) where research is being carried out to “clean up” sunblotch viroid from infected cultivars. We also learnt from this group that in tissue culture avocado cultivars are very protocol specific. This may have implications in micro-cloning as differences in the success rate between rootstocks have been reported from nurseries involved in cloning.
9. Visited Mack Multiples in the UK who are a large importer of avocados from most major growing countries that supply Europe. They repack and supply all UK supermarkets using innovative pre-packages and nearly 100% returnable plastic containers (RPC's). Fruit is sprung and machine graded with a non-damaging firmness tester. They are also experimenting with using RPC's to import fruit directly in from the country of origin.

Progress with Nursery Research

A nursery facility with the capacity of 2500 trees has been established at Sunshine Horticultural Services Pty Ltd, Dulong Road, Nambour. An etiolation room for clonal rootstock production and all-weather tunnel house will be completed by the end of September. The latter will reduce the risk of inclement weather interrupting the research programme.

Collaborative links have been made with Allesbeste Nursery, Tzaneen, South Africa; ACW Nursery, Fallbrook, California; and Huerto California Nursery, Quillota, Chile. Reciprocal research on seed storage and scarification is being carried out with ACW Nursery to improve knowledge on seed handling in nursery production systems while the effect of light spectrum and intensity on nursery tree growth will be carried out with ACW and Huerto California Nurseries. Protocols have been supplied to both of these nurseries who will carry out the experiments. Reciprocal research on developing effective cloning technology for ‘Velvick’ is planned with Allesbeste Nursery in the forthcoming year.