Riverland & Sunraysia Avocado Growers Study Tour of Western Australia, April 2006

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South Australian Avocado Growers Association

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South Australian Avocado Growers Association

(SAAGA)

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HAL PROJECT - AVO 5002

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Statement about the purpose of the report

The WA Avocado Industry and SAAGA have similar issues with canopy management, increasing Australian & New Zealand production, and also concerns of corporate expansion of avocado plantings in Australia and more importantly within WA.

SAAGA growers have problems with alternate bearing, and maintaining tree size and shape. WA avocado production areas are very similar in latitude to Riverland/Sunraysia, and have less problems with alternate bearing.

The objectives of the trip were to investigate cultural techniques used by the Western Australian avocado industry to maintain high cropping levels.

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Acknowledgment of all Funding Sources - HAL, SAAGA.

Date of report - 29th June 2006

TABLE OF CONTENTS

Media Summary

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The WA Avocado Industry and SAAGA have similar issues with canopy management, increasing Australian & New Zealand production, and also concerns of corporate expansion of avocado plantings in Australia and more importantly within WA.

WA has expanded avocado production over the last 30 years. Southern WA has proven to be an ideal Mediterranean climate to produce a sub-tropical species. The coastal influence allows more consistent mild temperatures to be experienced during the flowering and fruit set period, and moderate to warm temperatures experienced in summer, which are not as severe as that of the Riverland/Sunraysia region. Extreme heat this season in January 2006 caused severe fruit drop in our local districts. This has not occurred in WA, and the full bearing potential of Avocado trees was apparent. In some cases spectacular crops had set. The coastal climatic differences appear to be the single most important factor in consistently achieving these yields. Whilst we cannot change our climate, it showed us the critical importance of trying to manage irrigation, orchard temperatures and humidity during fruit set.

A focus of our tour was to investigate differences in canopy management. Most growers were still removing trees when too big, or applying remedial limb removal methods when trees were too big. Very little annual regular tree shaping was carried out to modify canopies, and growth regulators were only being experimented with. A grower reportedly carrying out regular pruning was not open to visit to view this technique. Several SAAGA growers have more advanced methods, experience and knowledge in this area than the WA growers visited.

Other cultural techniques which may prove useful in canopy management included the use of lower vigour rootstocks such as Hass and Reed. The use of lower vigour rootstocks, in combination with milder temperatures naturally reduces vegetative growth. The ability to set heavy crops also lowers vigour. WA growers are able to keep tree size moderate for a few more years because of these factors. A trial site should be commenced to evaluate rootstocks for canopy growth rates, and cropping potentials in the Riverland/Sunraysia district.

Mulching of rootzones especially in younger trees was also widely practised to keep optimum temperature and moisture regulation in the soil. An abundance of saw mill waste in one area gave a cheap mulching source. In our districts growers would need to import straw or grow their own forage crop for mulching. Mulching will also help keep our rootzones cooler and preserve topsoil moisture during the extreme heat of summer over fruit set, and should be encouraged.

Another major difference to our growing techniques was daily watering in summer, and no restriction on water use. As nearly all soils were well drained and water supply was plentiful, growers were not as conscious about water usage. This is a major advantage in summer when combined with milder temperatures.

A very important aspect of our trip was to witness the cooperation of growers amalgamating to market their crops. This provided our group much food for thought. Larger volumes of fruit for a lengthy period of time gives the advantage of orderly marketing, an ability to negotiate prices, and reliably supply a quality line of fruit to both large and small buyers in the market. This type of marketing will be essential in future to safeguard small grower viability from competition with New Zealand exports, and corporate horticultural holdings. It would be advisable for Riverland/Sunraysia growers to adopt a similar concept, and/or explore the possibility of linking with the WA models.

Main Report/Discussion

Production

The majority of Western Australian avocado production is located in two main geographical areas, 50km north of Perth in the Gin Gin area, and the southern Pemberton region. The Pemberton region accounts for 75% of total Western Australian production.

Both regions have different climates, water quality and soil profiles. Production within the two regions is very good, however, greater yields are generally recorded in the south.

Year	Production Tonnes
1996/97	1252
1997/98	1873
1998/99	2192
1999/00	1988
2000/01	2263
2001/02	2521
2002/03	2695
2003/04	2902
2004/05	3236
2005/06	1796
2006/07	estimate 5988

Production per hectare varies significantly from grower to grower and region-to-region, however, the yearly average is around 15 tonne per hectare with some growers achieving >20t/ha. Hass is the predominant variety with harvest commencing in August north of Perth, and extending to November, followed by the southern harvest which continues until the end of February. Fruit quality is exceptional, with very little wind blemish and growers are well aware of the need to harvest when the fruit is at its optimum, and the need to supply a quality consistent product. Hass crops are not as alternate bearing as those of the Riverland/Sunraysia despite their harvest time being the same or later. The likely reason for their reduced alternate bearing appears predominantly climatic. Temperatures during flowering and fruit set are not as cold and more consistent. The proximity to the coast also alleviates extreme heat and low humidity conditions in summer which has a big

influence on fruit set in Riverland/Sunraysia during Jan/Feb. Other factors that potentially reduce their alternate bearing include slower vegetative growth rates from lower tree vigour, rootstocks, irrigation and nutrition strategies. These factors will be discussed further in the report.

Rainfall ranges from 600mm in the northern production areas to 1600mm in the south. The majority of the precipitation falls throughout the winter months. The high rainfall generally has no dramatic impact on production, however, this does cause some issues with water catchment and drainage for some locations . An autumn/winter fungicide program for the control of Anthracnose is also required. In 2005/06, a very light crop was harvested despite the trees flowering and initially setting very well. The majority of the fruit dropped when it reached match head size. The cause is unknown, but it is believed to be either excessive moisture from constant drizzly rain or cold temperatures at the time.

Temperatures during the growing season are significantly lower than that of the Riverland/Sunraysia and therefore summer fruit drop and sunburn are of less concern. These temperatures also result in slower vegetative growth rates. Frost is an issue in some orchard locations where temperatures can reach as low as –5C, but frost is not a widespread issue for the industry.

Avocado plantings have increased steadily over the last 5-10 years, particularly in the south and more recently with the planting of 230 hectares by Timbercorp in the Busselton region. The increase in plantings has been a result of down turns in other industries such as apples, some vegetables and cattle, and good returns in the Avocado industry. Corporate expansion appears to be a move to control year round supermarket sales.

Avocado growers and fruit growers in WA face issues with increasing labour costs as a result of competition from other labour sectors – particularly mining. Growers are therefore very aware of labour costs and the need to be as efficient as possible. Efficiency has involved rationalising the number of packing sheds and integrating them with other horticultural crop packing operations to make greater use of labour.

Canopy Management

The canopy management issues faced by WA growers are similar to that of Riverland/Sunraysia growers. Trees are getting larger and larger and the volume being picked from the ground is continually decreasing. WA growers do not have a long term plan to maintain tree size and production, but most growers have a philosophy that 'doing something is better than doing nothing'. Various strategies have been adopted and trialled to manage both tree size and shape and maintain yield. WA growers are well aware of the need to harvest sunlight in order to maintain tree productivity, however, the challenge is still there to achieve this by maintaining tree size and shape. WA Growers are interested in understanding how flower induction takes place and when it takes place. By understanding this, growers feel they may be able to make more informed decisions on canopy management. Growth rates in WA depend on location, rootstock and nutrient regime.

The canopy management strategies that have been adopted or trialled include;

1) Alternate tree removal
2) Stumping
3) Mechanical pruning
4) Large limb removal
5) Selective limb removal
6) Clear fell and replant.

Alternate tree removal is a strategy that has been conducted widely, but its adoption is decreasing. It is only used when trees are planted at high density, particularly within the row. OHS&W issues in harvesting fruit from large trees,and declining yields by continually removing trees to try and maintain good light interception has stopped this technique.

Stumping is a practice that has been conducted extensively in the last 10-20 years and would appear to be one of the most common methods in managing tree height and re-generating an orchard. Stumping entire blocks has been the most preferred method, rather than stumping alternate rows. Stumping entire blocks allows all trees to be brought up at the same rate and to be managed to uniformity. Following stumping, production is returned in 3 years. This technique is also becoming less popular because of long return time taken to production, and rapid regrowth giving only a few years before it is needed again.

Mechanical pruning has been trialled, however, it has not been adopted widely due to the dramatic impact it has had on production. Growers have tried various options, but due to the late harvest of fruit have not been able to find a suitable solution to maintain tree size and productivity. Varying

degrees of mechanical pruning are being investigated. Light mechanical trimming is one method that is being trialled to maintain tree shape and size. This trimming is conducted during the autumn and winter when the potential for regrowth is low due to low sap flow in the cooler months. The integration of growth regulators and mechanical pruning has not been fully investigated. Some growers are concerned about the future of growth regulators and believe that an industry cannot be built upon them due to the possibility of consumer concerns and awareness.

Large limb removal is conducted by growers that are able to harvest prior to the next crop flowering. This limb removal will occur from the ground using chainsaws where a dominant limb will be removed, opening up light into the orchard as well as reducing tree height. Some investigation has taken place to minimise the excessive regrowth that occurs when removing such large branches. This process is being conducted with mixed success, however, getting the tree below 7-8m is very difficult without lowering production. Another strategy that is being investigated and integrated with limb removal is cincturing the largest most dominant limb. The limb is cinctured in June (south west WA timing) with a 2-3 mm wide cut down to the cambium. The width of the cincture will determine the amount of stress that is induced. In general, the thicker the branch the wider the cincture. The cincture breaks the sap flow and induces greater flowering on the cinctured limb. The desired outcome is that the cinctured limb will crop very heavily and then be immediately removed after harvest. This method has been conducted successfully in Chile. The timing to apply in the Riverland/Sunraysia would obviously be earlier, however, timing would need to be determined. The integration of cincturing with large limb removal requires a high degree of management and should be adopted with caution, especially in regard to sunburn and fruit size.

Selective pruning appears to be the most effective method at managing the canopy management mystery in the northern areas. Some growers have developed canopy management strategies, but have not divulged these methods to the industry. Selective limb removal involves removing limbs both from the ground and elevated platforms. This method of pruning is ideally conducted after harvest, but owing to the late harvest can be conducted through until July and August. Selective limb removal at this late stage involves pruning around fruit. This pruning involves removing a larger number of small branches rather than large individual limbs. This should be done on an annual basis to allow good light penetration, and maintain the canopy size.

Replanting is considered to be the easiest and most cost effective method to manage the canopy and orchard crowding. The objective of this strategy is to plant at high density (>500 trees/ha), crop trees very heavily in early years until the canopy is a problem at which timethe orchard is replanted. This is expected to be year 12-18, depending on location and growth rate. In order to successfully

implement this strategy, early production is required to maximise return in the early years. In some instances alternate rows are removed and sometimes replanted, leaving the older trees to provide wind protection for the newly planted trees.

Property visits in WA provided thought for discussion on canopy management. There was no method adopted that would radically change practices currently used in Riverland/Sunraysia. There are several local growers that have a better grasp of canopy management for our district, by trialling regular light selective pruning in combination with growth regulators.

Varieties & Rootstocks

Hass is the predominant avocado variety grown within WA. Most growers are reluctant to grow other varieties such as Gwen, Lamb Hass and Reed. Fruit drop problems prior to harvest has been the primary cause to the lack of acceptance of the above varieties, and the high demand and acceptance of Hass. Reed fruit is too large and is also prone to wind damage.

Rootstock selection varied depending on location, but its selection is mostly related to water quality and grower experience. At this point in time, the majority of the rootstocks are seedlings, but there is interest to head towards clonal rootstock. Growers in the south have greater choices with rootstocks as the water quality is far better. Commonly used rootstocks in the south include Reed, Hass and Guatemalan selections. Reed is a rootstock that produces a very upright tree, however, it is very susceptible to frost and some trees have been lost in various locations owing to frost. If Reed rootstock trees make it through the earlier years without frost damage, the potential risk of mortality due to frost is greatly reduced.

Hass is another rootstock that has been used with very good success. The growth rate of Hass on Hass appears to be much less than that of rootstocks we commonly use such as Zutano and Velvick.

Velvick as a rootstock is increasing in popularity in areas north of Perth, despite its poor tolerance of salinity. Water conductivity of 1000EC units can occur in these areas. Velvick as a replant is proving to be an alternative to the previously planted Topa Topa. This Mexican rootstock (Topa Topa) is highly productive, but it doesn't handle stress induced by phytophthora, irrigation or salinity.

Some local rootstock selections, and Merensky 2 (Dusa) are currently being evaluated. It is acknowledged that ongoing rootstock evaluation is required in order to monitor performance of rootstocks. Rootstocks have significant impact on production and also canopy management issues.

Low vigour rootstocks appear to be an excellent option in maintaining productivity but also limiting excessive canopy growth. The low vigour of some of the rootstocks observed were felt to be one of the significant features in maintaining high productivity for many years without the need to prune or make drastic canopy management decisions. Some of the negative characteristics of these low vigour rootstocks include smaller fruit size, which requires select picking the fruit, insufficient leaf growth to protect the fruit from sunburn, and less ability to handle adverse situations such as phytophthora and salinity.

The ideal tree density has not been determined, however, the future canopy management plan will ultimately dictate the row and tree spacing that is selected. If growers plan to remove every second row and plant high density, rows are normally planted at 6m. Where all trees are going to be maintained in single hedge rows by the use of low vigour rootstocks, rows will generally be planted at 7-8m. If the plan is to keep all rows and remove alternate trees when they are crowding, rows will be planted at 9-10m. Tree spacing within the row is generally 4-5m, with some growers favouring spacings up to as wide as 7m. Planting material is in most cases supplied from eastern state nurseries and trees are planted from September through until March. Most growers will use some form of tree protection from sun and wind. This will be a cage around each tree or inter-planted amongst larger trees whereby the larger trees are used as barriers.

Bees are used extensively for pollination. Some growers operate with permanent hives and others rely on native bees present as a result of the large amount of native scrub surrounding their orchards.

Soils, Nutrition & Irrigation

Soil types vary significantly between the two main production regions, from very sandy soils in the north, to loamy clay soils with a large percentage of coarse material in the south. Both soil types have very good drainage characteristics despite the vast differences in texture.

Soils in the north contain less than 4% clay and are extremely sandy. These soils are very difficult to manage in terms of nutrient availability and irrigation, however, growers have managed this soil type to successfully grow avocados. The soil pH varied from 6 in the south to 7 in the north. The

drainage qualities are obviously paramount for avocado growing. Soils in the south are described as gravely Karri loam with a clay subsoil located at around 1m. These gravely loam soils generally have good drainage qualities, however, small sections of some orchards suffer drainage problems and consequently trees decline through root rot. The poor draining areas once identified are not replanted as drainage is considered a very expensive exercise and as there is generally no shortage of land, and alternative locations are sought for replanting. In the south, most trees are generally planted on a small mound, up to 20cm in height. These mounds are to assist with protecting the tree from water logging by allowing excessive amounts of water to run away from the rootzone following heavy rain, and to increase the depth of topsoil.

Nutrition strategies vary from region to region and grower to grower, however, it is fair to say orchards are generally not as vigorous as those in the Riverland, and in some cases growers believe that trees should be treated on the mean side at various times through the growing season. Obviously there are rootstock and climatic effects, but there was also a significant influence of reduced nutrition on tree vigour. In some cases trees appeared to be struggling with excessive crop load, but despite the heavy crop loads and the lack of vigour, growers were not concerned about reduced flowering in the following spring. Nitrogen, Potassium and Boron are the three elements growers appear to be most interested in.

Generally growers fertigate through their sprinklers. The fertigation frequency varied, however, it was generally at least every two weeks. Broadcasting and hand applications of fertiliser were also conducted widely. Some interest also existed in applying Low Biuret Urea sprays during the winter to maintain tree health during the winter.

Nitrogen applications were applied continually through the growing season. In some seasons no fertiliser would be applied if the trees were deemed to be too vigorous. This was normally the case with stag horned trees or trees with a lighter crop. Growers are finding that the tree has an enormous ability to store nutrient and that the tree can cope very well without fertiliser should the vigour of the tree be too great. Nitrogen applications are predominantly applied during the late winter, early spring, late summer and autumn months. Applications during flowering and fruit set are reduced and in some cases not applied in order to ensure that excessive new growth is not pushed that may result in fruitlets being aborted. Seasonal nitrogen requirements were in the order of 120-150 kg of actual nitrogen per hectare or 200-400gm of actual N per tree.

Potassium applications were very similar to those of nitrogen. Boron applications were fertigated as well as foliar sprayed, and leaf tissue testing was conducted in order to ensure that it was in the

appropriate range. In most cases growers were aiming for 60-70ppm. Boron was foliar sprayed prior to flowering to increase pollination, up to 2 sprays were applied. These were applied around cauliflower stage. It was not determined whether there were low concentrations of boron in the water and therefore the need to apply boron.

Nutrient applications are monitored through leaf analysis, and its effect on the soil was also carefully monitored, particularly in the north. Growers in areas which supply ground water to urban areas, have to monitor leachate for nutrients to ensure they are not polluting ground water supplies. Growers are therefore very careful with fertiliser applications given their free draining soils to ensure that nutrients are retained in the root zone and used by the plant. Point lysimeters are used to monitor nutrient movement through the soil and in some cases are used as a tool to determine fertiliser programs by monitoring the efficiency of nutrient uptake throughout the season.

Despite the high rainfall in some regions, irrigation is still a very important factor in growing avocados in Western Australia. All trees are sprinkler irrigated, either as partial or full cover, with at least one sprinkler per tree. Full cover irrigation is a requirement in the north due to the salinity of the water. The ground water in the north used for irrigation is 1000EC units and increasing. This is placing extreme pressure on management in order to reduce salt uptake. Growers were tackling the highly saline water by irrigating regularly with timely large irrigations to regularly leach the root zone of salt without losing fertilisers. Gypsum is also used to manage the impact of the salt with some effect. Sodium is being effectively leached, however, removing chloride has not been very effective. Leaf chloride is currently around 1%. Water quality in the south is of excellent quality being predominantly catchment supplies from rainfall.

Water use varies from site to site due to an over abundance of good quality water, irrigation conservation management is not a consideration. Growers in the north report annual water use of around 18ML/ha. Growers in WA recognise the need to maintain active feeder root growth by applying frequent shallow irrigations. All growers irrigate daily during the warmer months to keep the topsoil moist, particularly during periods of potential fruit drop. Generally when temperatures are below 32-33C, trees are irrigated at night in order to capitalise on off peak energy charges. When temperatures exceed 32-33C, daily irrigation is applied and some cases pulsed throughout the day with up to 8 pulses applied per day. During summer, approximately 5-10mm is applied per day, depending on temperature.

Irrigation moisture monitoring equipment is not used widely, as all growers have plenty of water and there are no incentives in place to conserve water. Some growers use various devices as tools to

assist in ensuring the trees irrigation needs are met. Equipment used include tensiometers and some portable capacitence equipment. A CSIRO Western Australian invention (Fullstops) are being used by some growers to monitor the depth of the wetted front. These devices are relatively inexpensive and therefore multiples can be used. These are mostly used to stop leaching of nutrients past the rootzone rather than managing irrigation. No permanent capacitance equipment installations (eg Enviroscan) were noted on any properties visited.

Mulching is practiced widely as there are local sources to access material. The most commonly used material is composted timber products, and hay is also used extensively. Mulching is conducted in the early years to improve feeder root activity. Growers are getting excellent results from mulching. Mulches assist in retaining greater volumes of fruit on the tree by maintaining a healthy feeder root environment.

Pests & Disease

The Western Australian growing regions are very similar to the Riverland/Sunraysia in that they have very low pest and disease incidence. Although they have greater rainfall, the threat of pest and disease is significantly lower than other high rainfall avocado production areas of Australia. The majority of the precipitation is winter rainfall and therefore temperatures are not as conducive to disease development as Queensland. Disease is also minimised by the fruit being harvested before it is over mature and not left too late on the tree to develop any potential rots such as Anthracnose.

Anthracnose is an issue for WA growers, particularly in the southern production regions, where fruit is held later combined with high rainfall incidence. Growers in the north minimise the impact by applying monthly copper sprays, up to a total of 4-5. These are applied from autumn through the winter months. New chemicals are also being investigated as to their effectiveness in controlling anthracnose. Growers in the south may apply up to 7 sprays as they receive much higher rainfall.

Some minor insect problems exist. These are generally insignificant and rarely require treatment. Leaf roller, weevils, snails, Greenhouse thrips and Tea red spider mite were the pests encountered which may need treatment on occasion. Some scale problems can occur, however, these are not significant and do not require any form of control as they are normally induced problems. These pests were more problematical in the Northern areas.

The threat of *Phytophthora cinnamoni* is very low, as the well drained soils do not favour the development of the disease, this is particularly so in the northern production areas, where the soils are extremely sandy. Some tree injection does take place, however, monitoring is conducted prior to any injection treatments. Growers in the southern producing areas may apply up to 2 phosphonate sprays. Some growers choose to mix phosphonate with copper, but others don't as they feel it causes spray damage. Those that separate copper and phosphonate will alternate these sprays during March to August.

Mediterranean fruit fly doesn't cause any problems to avocados, although it can be a serious pest to other horticultural crops within WA.

Weed control is conducted using glyphosate, Basta and Sprayseed. Some growers have successfully used Diuron on mature trees to control difficult to kill broadleaf woody weeds.

Sportak is extensively used in packing sheds for rot control and is very effective. Calcium Hypochlorite is also being used by some packers to control rots.

Harvest

Harvest commences in April/May with the harvesting of Carnarvon fruit. These volumes are relatively small. The bulk of the harvest commences in August with the harvesting of Hass in the Carabooda/Gin Gin region. The harvest extends to the middle of November. Fruit could be harvested later, however, growers prefer to harvest their fruit at optimum maturity to reduce post harvest problems and to allow some time to prune trees prior to the set of the following crop.

The harvesting of Hass fruit from the south commences in mid October, and concludes at the end of February. This is normally followed by the harvesting of Lamb Hass. Harvesting Hass in March in the south may have a significant impact on the following seasons crop.

Depending on the season, fruit is select picked for size. Fruit harvested is count 25 and larger and smaller fruit is left on the tree to size up. The trees maybe picked over 3-4 times approximately every 4 weeks during the season. Early in the season, fruit on the outside of the tree is select picked in order to reduce the incidence of sunburn. Some growers strip pick, depending on size. Average fruit size for the season is normally a count 23.

From what we understand, the majority of growers snap harvest. The northern fruit from Carnarvon is snip picked. The preferred method of payment for harvest is wages, as the trees are select picked several times for size. Determining a contract rate is extremely difficult as many pickers on contract will not perform the task suitably. The cost to harvest a 500kg bin of fruit will vary from $20 to $100, depending on the size of the trees and the crop load.

Fruit is harvested with elevated platforms up to a height of 8m with picking poles also used. Some growers are aiming to use ladders only by maintaining a small compact tree.

Fruit was not waxed in any of the sheds visited as there are concerns of getting moisture under the wax. Some trials have been conducted on cool storing fruit for up to 6 weeks to extend market windows. These have proven to be unsuccessful as fruit ripens extremely quickly and unevenly once it is removed from the cool storage.

Markets & Marketing

The 2006/07 season will see the harvesting of the largest avocado crop in Western Australia with a predicted total of 1 million trays, more than double that of last season. As more young plantings come into production it is obvious that increased volumes of avocados will continue into the future.

Approximately 60% of the WA crop is marketed through eastern Australia, with the remainder sold within WA. Some small volumes are exported to Singapore, Dubai and Hong Kong. Exporting fills small gaps in certain markets, but further exporting is going to be very difficult due to competition from low cost countries such as Mexico and Chile.

Avocado consumption is increasing in Australia and is expected to double in the next five years. Woolworths and Coles in Western Australia increased the avocado category by 50% and 20% in the last 12 months respectively. Large fruit is not necessarily preferred as with other horticultural products, this is particularly the case with varieties such as Reed and Lamb Hass, which produce very large fruit size.

Returns per tray have traditionally been in the order of $20-30 net to the grower. These returns are significantly higher than those experienced in the Riverland/Sunryasia during similar times of the year. The difference in average pricing is most likely related to the volume supplied to the WA market, where freight is a very small component. The break-even farm gate price is around $10 per tray and is subject to management and yield. The greatest drivers of economic return for Western

Australian produce are yield and sale price.

Growers are collectively marketing and packing their fruit and believe this is the only way forward, in order to maintain price and supply agreements with the large retail chains. Currently one marketing group handle 60-70% of WA avocado production. WA marketing groups are also working with eastern state growers to manage the supply chain into WA supermarkets year round.

WA growers are in a very strong position with their remoteness from eastern state produce, but more importantly New Zealand. Growers are well protected by their local marketing authority, which will source local fruit from producers prior to sourcing fruit from interstate or overseas.

Growers are not concerned about the increasing volumes of NZ avocados being exported into Australia. They believe in time NZ will need to find an alternative market as they will not be able to compete on price as it costs $5-7 to get a tray of fruit to Australia. As NZ fruit clashes head to head with Western Australian fruit, producers believe it will only be a matter of time before the NZ look elsewhere to dispose of their increasing avocado crop. Agents in the Perth market consider that handling NZ fruit is a marginal exercise. They would prefer not to handle NZ fruit as it is generally of poor quality and has a short shelf life.

Growers are more concerned about the increase in production from managed investment schemes and how the increased volumes from these schemes will be marketed. Growers are concerned that they will be undercut in price and the price premiums which are currently around the $30 per tray will be eroded.

A statutory levy through the Agricultural Produce Commission is in place of 9 cents per tray for WA avocado producers. This levy is to be used for marketing, research and development. As large volumes of product are marketed in the eastern states and a national marketing levy is in place, spending the levy effectively has been difficult. The grower association is currently exploring the opportunity to joint fund with Horticulture Australia Limited an Industry Development Officer similar to other industries such as apples and citrus.

Summary of learnings and implications

- Amalgamated marketing by smaller grower owned packing facilities would be very worthy of consideration. The WA growers were doing this well and had volumes of fruit to access large and small markets.

- Mulching of rootzones is not widely practised in the Riverland districts. The benefits of using mulches were obvious where utililised in WA and would improve root health in our hot summers and cold winters.

- Rootstocks need more evaluation. SAAGA should consider the possibility of rootstock trials to evaluate potential for lower vigour rootstocks for canopy management. The present rootstocks have generally been chosen for salinity, pH or cold tolerance, and not canopy aspects. With improvements over the last 20 years in irrigation, nutrition and soil selection the previous parameters for rootstock selection may not be quite as relevant in the past.

- No new methods for managing canopies on a cultural basis were observed. Most growers agreed that new plantings should have some light selective pruning when trees were young to prolong manageable tree shape for as long as possible. Some Riverland orchards have examples of selective pruning and canopy management that are more advanced than those observed in WA.

- It was very apparent that avocados will set very heavy crops if given the right conditions during flowering and fruit set. The crops present on some trees particularly at Pemberton were exceptional. We should be paying as much attention as possible to orchard cooling, humidity and rootzone moisture levels during the period from November to February as practically possible.

- The implications of corporate expansion through managed investment schemes is of great concern to private growers.

Appendix 1

ITINERARY

Day 1 Arrive Perth, Western Australia - Sunday 30th April 2006

1000 Travel Adelaide to Perth – Adelaide Domestic Airport

Day 2 Perth to Carabooda - Monday 1st May 2006

530 Tour of the market with an opportunity to compare market strategies and setup with those in South Australia.
Travel north to the Gingin and Carabooda region approximately 50kms north of Perth.
Carabooda area visits at **Avowest** – host for this visit is **Alan Blight**– Secretary of the Avocado Growers Association of Western Australia.
Avowest property has 20ha of planted trees ranging in age from 1-25 years. The orchard is mostly Hass on various Mexican, Guatemalan and West Indian rootstocks. Consistent mild weather in spring ensures good fruit set, but high summer temperatures and winter storms pose challenges to keeping fruit on the trees.

1300 **The Avocado Grove –David and Helen Duncan** (an Avonova property) located close to Avowest in the Carabooda area. This orchard is again predominantly Hass, with tree ages ranging from new plantings to 31 years. This orchard is currently trialling various methods of canopy management, from trimming branches to keeping tree size manageable to tree removal for replanting with improved rootstock.

Day 3 Perth to Pemberton - Tuesday 2nd May 2006

830 Travel southwards through Bunbury to Pemberton.

1230 Visit **Appadene Park** – hosts **Robyn and Tom Winfield.** They have a water licence for 170,000 cubic metres of water held on farm which they utilise in the irrigation of Avocadoes (1000 – 7 year old trees, 1000 – 3 to 4 year old trees, 1000 – less than 12 month old trees), and a variety of other fruit/nuts.

Afternoon visit - **Wayne and Jennie Franchesci** to tour their orchards and packing shed. They also hosted this evening for a social BBQ with avocado growers from the region.

Day 4 Pemberton – Wednesday 3rd May 2006

830 Visit **Delroy Orchards** where **Russell Delroy** discussed production matters, environmental strategies and marketing ideas from the perspective of a larger producer.

Afternoon visit – Following Delroy Orchards you will travel on to visits with the **French family** orchards and **Mark Roach**.

Day 5 Pemberton to Bunbury – Thursday 4th May 2006
Return travel towards Perth via Margaret River. Visiting Leeuwin Estate Winery.

Day 6 Depart Perth – Friday 5th May 2006
Return to Adelaide.

Appendix 2

CONTACT LIST

1. Perth Market Authority – Mr Mike Donnelly 0428 100 252
2. Mercer Mooney Processing – Mr John Mercer 0418 924 348
3. Avowest Avocados – Mr Alan Blight–WA Growers Association Secretary, 85 Carabooda Road, Carabooda p:08 9407 5100 m:0417 179 127
4. The Avocado Grove (an avonova property) Mr David Duncan – 89 Bailey Road, Carabooda WA p:08 9407 5383 f:08 9561 8015
5. Appadene Park – Mr Tom Winfield–Appadene Road, Manjimup WA p:08 9771 2067
6. Avonova Propery of Wayne Francheschi – Pemberton WA p:08 9776 1332
7. Delroy Orchards, Lot 2 Froomes Road, Pemberton WA – Mr Russell Delroy p:08 97761436 email: delroy@delroy.com.au
8. Mr Will French p:08 9776 1319 – on the Channeybearup Road, Pemberton email: frenchs1@bigpond.com.au
9. Mr Mark Roche–East Pemberton WA p:08 9776 1510 email: MarkRoche6@westnet.com.au
10. Mr Eric Skipworth – Horticultural Expert – Mobile: 0428 866 875

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