

## California Avocado Society 1997 Yearbook 81: 33-43

### THE NEW ZEALAND/AUSTRALIAN AVOCADO CONFERENCE—1997 BEFORE—DURING—AND AFTER ...

#### *H. Leonard Francis*

In 1992, as Production Research Coordinator for the California Avocado Society, I visited Australia and New Zealand as part of the California Avocado Society's international liaison program. A similar experience occurred in 1997. The New Zealand and Australian avocado growers were holding a joint conference in Rotarua, New Zealand, where I would be able to hear and meet with many avocado researchers of the southern hemisphere. Part of my responsibility would be to use wisely time available before and after the conference.

There was a lot that I had not yet seen in Australia, and I could take advantage of a great opportunity to see before the conference the northeast region of Australia's avocado industry, commonly called the Atherton Tablelands. It was my good fortune to have Don and Del Lavers invite me to stay with them at their home and avocado grove in Walkamin. They have quite a history, some of which I'll share later. My first activity in Australia was to attend an awards program where Don Lavers was one of the award recipients for his leadership in an avocado market development program.

The Atherton Tablelands is 30-40 miles inland from the coastline of Cairns and the Great Barrier Reef. There is a mountain range that separates it from the coast. The climate is tropical. There are close to 2,000 acres of avocados being grown there. The elevation is 1,000 feet at the north end and 3,000 feet at the south end of the avocado region of Atherton. The north end has granitic soil, with somewhat poor drainage, and receives less rainfall. The major avocado variety is Shepard, a minor California variety that does very well in the Atherton area. The Shepard is also the subject in the successful market development program mentioned above. The south end of the Tablelands has deep, well drained basalt soil. It also receives a lot more rain, averaging 50 inches per year. Most of the water needs of agriculture are provided by canals from Tinnaroo Lake on the Barron River. South Atherton also produces Shepard avocado, but its main variety is Hass. Fuerte, Sharwill, and Rincon are also grown.

Root rot is a problem with several of the avocado groves in the Atherton Tablelands. All the growers who do not have root rot know they will have root rot and will be injecting with one of the several available phosphonate products. In the meantime they utilize heavy mulching (*Figure 1*). They apply four bales of straw each year on three-year-old trees, or a twelve inch layer of grass down the tree rows every two years on trees six years and older—about ten bales of straw. (Dr. John Menge's work at UC-Riverside is finding that mulch does a lot more than just aerate the soil.)

Just as in California, pruning and grove thinning by tree removal are subjects of debate and action. Ted Winston, a former Extension Agent and my guide for a day, arranged a

grower field meeting at Vit and Peter Kochi's grove. We talked about root rot, pruning, marketing, and production comparisons. Later that afternoon and evening Don Lavers and I observed the Laverses' pruning program on previously 35-foot-tall trees. The accompanying picture (*Figure 2*), saves me a thousand words: one cut removed a 13-inch diameter, 30-foot-tall branch. Mr. Lavers painted the wound with a copper based paint, and the now exposed branches with a diluted white latex paint to avoid sunburning. The remaining branches are still producing. It is believed that little to no production will be lost; production should increase as new interior branches develop.

Pruning his trees is only one part of retired veterinarian Don Lavers's avocado operation. Upon returning from the field tour with Ted Winston, I found Don and Del Lavers in their packing house personally packing the remains of the days harvest, and arranging their delivery schedule— definitely "hands-on" grove owners. Their grove is partly encircled by a winding river. They had cleared the land, planted it themselves, starting in 1981, and lived in a tent until their home was completed. Some special friends they introduced me to were the rock wallabies who visit them every evening. Rock wallabies are one-foot tall kangaroos. I am indebted to Don and Del Lavers for a truly enjoyable, educational, heartwarming visit.



**Figure 1.** Heavily mulched tree in Ed and Jim Kochi's avocado grove in the Atherton Tablelands, Australia. Mulching is a serious program.



*Figure 2. Avocado tree in Don and Del Laverses' grove in the Atherton Tablelands, pruned to reduce its height and width and induce greater production.*

#### **NAMBOUR, MAROOCHY. AND DOCTORS TONY WHILEY AND CLIVE KAISER.**

Previous arrangements had been made to meet Tony Whiley at the Department of Plant Industry's research center in Maroochy. This required a one hour flight south from Cairns and a one hour drive north to Nambour, Dr. Whiley's hometown. The flight south was all along the coastline and included an awesome panorama of the Great Barrier Reef. The drive from Brisbane up to Nambour covered the kind of country California's San Gabriel and Pomona valleys must have resembled in the early 1900s: excellent climate, no smog, abundance of plant and animal life, and an absence of housing tracts. Australia still has fewer than 30 million people.

The next morning I was to drive out to the research center, but was pleasantly surprised. A group of South African avocado growers and Dr. Nigel Wolstenholme and Dr. Clive Kaiser met me at the motel and took me to the center to meet with Tony Whiley. I had met most of the Voortrekers at their research conference the previous year. The South African and Australian avocado industries have a great interchange of cultural and technical knowledge; and this group, too, had stopped off to visit with Dr. Whiley before going on to the conference in New Zealand.

Dr. Kaiser is currently working under Dr. Whiley via a grant from the Department of Plant Industries. He is pursuing some of his own projects, mostly pruning techniques, while being Whiley's right hand on other projects, such as root rot. Most of the groves in Australia have root rot. Growers continue the quest for a resistant rootstock just as we in California do. In the meantime, they want to know more about the longevity and possible weaknesses of phosphonate usage.

On our visit into the Bundenberg area of central Queensland, Dr. Kaiser showed his pruning project and John Dorian, a mango and avocado grower, explained his

hedgerow-pyramid pruning program on mature Hass trees. Dorian uses mechanical hedging machines on one side of his tree rows one year and the other side the next year, while topping all trees two times a year. This definitely maintains his tree size. Mr. Dorian is also maintaining his production. I keep trying to figure out how to use those hedging machines on our hillsides in California.

Clive Kaiser's pruning technique is very different. His work is both on young and newly staghorned trees. His objective is to keep the trees shorter than 12 feet tall, with a dome shape, and create early fruiting. This is especially difficult on the staghorned trees which grow back so vigorously and have an excess of new branches. Normally, these trees grow the next two years; and by the time the first fruit is harvested, the trees are already fifteen feet tall. Kaiser's technique on trees he plans to staghorn is to girdle at bloom time the branches he plans to cut. He girdles the branches at the height he plans to cut them. With the girdled branches fruiting heavier than normal, the regrowth after they are cut should be less vigorous. As the new branches grow, they are nipped at their tips. This temporarily stops growth. The next step of unique significance is that he then prunes the new branches back to where the last growth flush began. This zone where growth stopped and then began again is commonly called a "knuckle." The knuckle has several buds on it. When pruned at the knuckle, several of the buds commence growth of new branchlets. These branchlets are not vigorous, and Kaiser pointed to several of them that were less than 12 inches long and were beginning to flower (September is early spring in Australia). The staghorned trees pruned by Clive were compact, only 4-5 feet high one year after pruning, and were going to bloom.

Dr. Kaiser's procedure on young trees is much easier in that it starts with nipping the branch tips and later pruning back to the knuckles. We saw squat, compact, healthy one-year-old trees that were going to bloom.

#### **ROOT ROT AND PHOSPHONATES**

As mentioned, Drs. Whiley and Kaiser are researching *Phytophthora cinnamomi* (*P.c.*). They are doing some very interesting work. The most interesting is their study of phosphonates. One of the projects is studying whether or not phosphite (free ion form of phosphonate) exudes from the roots of avocados; if so, how much, how fast? Their work is being done "airponically"—their test trees are grown in big wood boxes with no support from soil and or water. The root systems are mist sprayed at frequent enough rates to keep the trees growing. The water that drips off the roots is collected and analyzed for phosphite. Their first conclusion is confirmation that avocado roots do exude phosphites that have been applied through the leaves. The work continues.

Work on possible tolerance of *P.c.* to phosphonates is ongoing. Preliminary results were later to be reported by Dr. Kaiser in a presentation at the conference in New Zealand. There are indications that tolerance may be developing in some situations. This is one trial where negative results are hoped for.

As in California, Australia hopes to find a rootstock tolerant to *P.c.* Australian trials with our most promising rootstocks are not showing success. Their own Velvik rootstock, as seedling or clonal, performs better. Dr. Menge of UC-Riverside is testing Velvik and

Evstro, both given to him by Australian researchers. Velvik has been difficult to grow under California conditions.

This visit to Australia was short, but dynamic. I am appreciative of the courtesy, openness, and friendship shown me. The growers and researchers all shared their knowledge, experiences, and results while driving me around, hosting meetings and receptions, even providing or arranging places to sleep. Before we left, Tony Whiley gave all of us a software disk of his Avoinfo program bibliography—another benefit of our international liaison.

Good-bye to a continent; hello to an island . . .

## **NEW ZEALAND**

The conference was officially to begin September 21 in The Millennium Hotel in Rotarua, on the north island of New Zealand, but a pre-conference tour of the avocado industry in the Northlands was conducted September 18-20. About 150 people were placed on three buses and driven north from Auckland through the beautiful, 200 miles-long Northlands peninsula.

Of New Zealand's 2,000+ acres of avocados, 1,000 acres are in the Northland peninsula. During the three day tour we visited at least ten avocado groves and one of their major packing houses. Their main variety is Hass, with Fuerte, Reed, and Zutano used primarily as pollinators for the Hass. Hass, Zutano, and Reed are also used as rootstocks. One grower found Reed to be the most vigorous and best producer of the rootstocks. Total production for the Northland this year will be 2,700,000 lbs.; they forecast 10,000,000 lbs. by the year 2008. New Zealand's total production currently is 5,000,000 lbs., with 17,000,000 projected by 2008. At least half of New Zealand's fruit is exported to Australia, but more and more is being sent to "California." Greater exports to the U.S. are definitely projected. After seeing several trees with over 1,500 pounds per tree, I am convinced of their production capabilities. Similar to California, however, they too can have severe alternate bearing. Their main problem is low temperatures during bloom, hence poor fruit set.

Pruning was a major topic during the tour, and later during conversations at the conference. Most of the groves in New Zealand are planted on fairly wide spacing such as 30X30 ft. or 35X35 ft. As trees become crowded, every other row is removed (yes, 30X60 ft.). They are doing more pruning in hope of avoiding whole row removal. While no definite programs were advised, we did see some very impressive machinery for performing the pruning: escalating platforms as high as 45 feet from which hydraulic pruners and saws can be used, a massive chipper that can mulch avocado and eucalyptus logs 15 inches in diameter, and helicopter spraying between windbreaks spaced only 300 feet apart.

Imagine trees 35 feet tall, 25 feet wide, sides full of fruit all the way down to the ground.

## **THE CONFERENCE: "SEARCHING FOR QUALITY"**

The thrust of this joint conference of the Australian and New Zealand avocado

associations was growing, packing, storing, shipping, and selling high quality fruit. Dr. Jonathan Cutting was the program organizer. Dr. Cutting made sure all the aspects were covered. Speakers from other countries included Alva Snider, past chairman of our California Avocado Commission. His presentation stressed the value of growers having a central organization working for the growers benefit establishing directions on consequent programs, use of promotion themes such as the "Magic of California", and adapting to changing markets. He also emphasized grower-problem programs such as the "Water Task Force" that so far has saved us over \$30 million in water costs.

The Republic of South Africa's Bill Blanden shared that country's marketing program to develop the United Kingdom as its primary export market which started with a doctorate thesis, "The Avocado Market in European Countries". The study for the thesis was partially funded by the Republic of South Africa's avocado growers' organization, SAAGA. There were nine conclusions; the three most relative to California are:

- Lack of knowledge of avocados is a major obstacle for furthering increased sales,
- Consumers emphasized quality above price (we knew this),
- There is a very real need for promotion to stimulate demand ahead of supply; otherwise prices fall to levels that make it uneconomic to bring them back up.

#### **A LESSON LEARNED FOR MINOR VARIETIES**

A very revealing speech was given by Rob Robson on developing a marketing program for a minor greenskin variety, the Shepard, for the northern Australian avocado growers. This was a program I learned a lot about during the Australia segment of this trip. The grower/government program took a lesser-known, high quality fruit from a limited market to a full-blown successful promotion. They fully integrated the grower, harvester, transporter, packer, merchandiser, retailer, and the consumer. It was their survey of the of the consumers that revealed housewives in Australia *expect* to find one bad avocado out of every four they buy. Part of their successful promotion program used pictures of a halved Shepard avocado with nice yellow color and the statement "Nature's Own Butter". They cross-merchandised with a salad dressing (Kraft), a fresh cut salad manufacturer, and a potato chip company. All of this for the only 12— to 14—weeks season of the Shepard.

The "butter" statement was backed up by an anecdote by another speaker, Russell Harray, who related that the population is aging. His mother eats avocados every day. Why ? Because she's been told not to eat butter or margarine. She uses avocado as a spread instead.

#### **INSTEAD OF HAND SQUEEZING—SMALL MACHINE MEASURES AVOCADO READINESS TO EAT**

The development and use of the "Anderson firmometer" was described by Anne White of the Horticulture and Food Research Institute of New Zealand. The firmometer gives a numerical measure to fruit softness instead of what even industry experts resort to: *hand squeezing* of the fruit. Most *consumers* are not adept with the hand-squeeze. The

original firmometer was developed by South African researchers. It measures displacement of the button of the fruit when pressure is applied. The Anderson firmometer has a digital meter and a few other modifications for simplicity and accuracy that allow anyone to measure fruit life and softness—even consumers. [How about having each store place a firmometer at its avocado display?]

## **PRUNING**

This topic was covered only by an apple researcher. I arranged one informal meeting of growers and researchers working on this subject. The most important question answered for me was, "What is the best program for a grower with a completely crowded grove and trees over 35 feet tall?" Many California growers have this problem. Many possibilities were discussed with the consensus being, "stump or staghorn the trees back to 5-12 feet tall, one section of the grove at a time. A section would probably be one-fifth or one-fourth of the grove." Take this recommendation and start cutting. Increased production and easier management are the rewards.

## **A DWARFING ROOTSTOCK**

Dr. John Palmer, the apple researcher referred to earlier, was very enlightening as to the production and pruning techniques of the apple industries of the world. When asked what advice he had for the avocado industries he said, "You have to develop a dwarfing rootstock." Growing 45 foot—tall trees didn't impress him.

A side trip after the conference was to visit an avocado grower on the east side of the North Island of New Zealand, David Grey—a college classmate and good friend. David is testing a dwarf rootstock that shows decreased growth of six-year-old Hass, Gwen, and Esther trees. The trees are grown on a Zutano root stock with Colin V33 dwarf stock grafted onto the Zutanos; then with Hass, Gwen, or Esther scions grafted onto the Colin V33 interstock. The six-year-old trees are 7-9 feet tall, about two—thirds the size of comparable 6-year-old trees. They had a good crop. The Colin V33 is known to have a virus complex, which is probably causing the dwarfing. UC-Riverside has the Colin V33, and Dr. Dodds of UCR has the ability to screen the viruses and check for transmissibility (a possible problem).



*Northlands Tour: Viewing 12-months-old Hass crop  
...1,000 pounds, front tree. Gil S. in awe of fruit set.*



*Colin V33 dwarfing interstock, three-year Hass.  
David Grey, owner.*