AUSTRALIAN AVOCADO GROWERS' FEDERATION INC.

- The Australian Newsline
Fourth Edition
December 1990

Talking Avocados

The Americans are coming

A.W. Whiley, Principal Horticulturist,
Maroochy Horticultural Research Station,
Nambour, Queensland.

New cultivars to any fruit industry offer chances of greater profitability to orchardists providing they are superior to existing cultivars being grown. However, the introduction and acceptance of a new cultivar into a tree fruit industry does not occur rapidly and may take many years to reach its full potential in the orchard and on the retail shelves. For instance, Hass is now the single most important avocado cultivar in the world yet it has taken about 20 years to reach its current domination.

Apart from its earlier recognised orchard performance and fruit quality, acceptance at the wholesale and retail levels was much slower. Consumers needed time to adjust to the black, pebble-skinned fruit in contrast to the familiar green, smooth-skinned, pear-shaped Fuerte.

Cultivars develop as either chance seedlings or from structured breeding programs. All current avocado cultivars in Australia owe their development to selection from seedling plants by observant growers anxious to improve the productivity and quality of fruit from their orchards. Gwen, Whitsell and Esther are the first named cultivars to come from a structured breeding program directed by Dr. Bob Bergh of the University of California. Dr. Bergh has devoted his professional career to avocado breeding and has been funded extensively by the Californian avocado growers.

Plant Variety Rights legislation is now present in many countries including Australia. This legislation provides the opportunity to recoup the extensive investment into breeding programs by granting ownership of the new cultivar to the plant breeder or his agent, and allowing the collection of a royalty for each tree propagated.

In February, 1987 the Queensland Department of Primary Industries signed as experimental agreement with the University of California Patent, Trademark and Copyright Office allowing us to evaluate Gwen, Whitsell and Esther under Australian conditions. Other cultivars added to this agreement included Julia, Ardith and five others which have not been named. We have also acquired the rootstocks Martin Grande, G1033, Thomas, Barr Duke, Toro Canyon and Parida under similar experimental agreements. The experimental agreement is a legal document which restricts the Queensland Department of Primary Industries (and other State Departments of Agriculture prepared to be co-signatories) to field testing the new cultivars and rootstocks under the different environmental conditions where avocados are grown. It is a non-propagation agreement in that we are limited to a specified number of trees that we can grow in the field. We are not permitted to release any of the scion wood to commercial interests without the specific direction of the University of California Patent, Trademark and Copyright Office.

In order to get Plant Variety Right protection in Australia for cultivars developed overseas, a descriptor protocol must be developed in Australia from cultivars that have been grown and cropped in this country. This includes descriptions of the new cultivars and how they relate to the nearest existing cultivar (Figure 1). To be eligible for registration in Australia an application must be make within 6 years of the commercialization of the cultivar in its home country. In January 1990, the University of California Patent, Trademark and Copyright Office was granted provisional protection in Australia for Gwen, Whitsell and Esther. Their Patent Attorney has since asked the Queensland Department of Primary Industries to develop the descriptor protocols necessary to complete Plant Variety Rights protection. This work is currently on target and we expect to have the descriptors published in the March edition of the *Plant Varieties Journal*. There is a six month waiting period after publication of the descriptors during which appeals may be lodged and staff of the Plant Variety Rights Office evaluate and visually confirm the accuracy of the data submitted. Assuming that the descriptor data is accepted and there are no successful appeals against registration then Plant Variety Rights for Gwen, Whitsell and Esther will be granted in September 1991. Once protection is

Editorial

From day to day, avocado growers are tackling various problems out in the orchard and quite often are solving them. This Newsline is all about sharing those sorts of experiences, creating discussion and relating information that is relevant to many industry members.

In the February/March Edition, there will be a feature on Water Management and Irrigation in Avocados. I am aiming to include case studies and comments from growers across Australia. Please contact me if you have a contribution to make of any kind i.e. experiences, methods, opinions etc. By contributing you are airing your thoughts and entering into an economically important discussion. Send me your ideas in a letter, by fax or phone me.

Happy new Year to you all. I have two wishes for your industry for 1991 - more quality fruit being produced and hence a further step forward with a quality assurance scheme for export and domestic avocados, and an organised profession fair dinkum strategy in the export arena.

Marie Piccone

obtained trees can be legally propagated and sold through the commercial sector.

The Australian Nurserymen's Fruit Improvement Company (ANFIC) currently hold exclusive rights to all fruit cultivars from the University of California.

Negotiations are being pursued by the AAGF Varieties Committee to obtain propagation right of these three cultivars for participation nurseries in ANVAS.

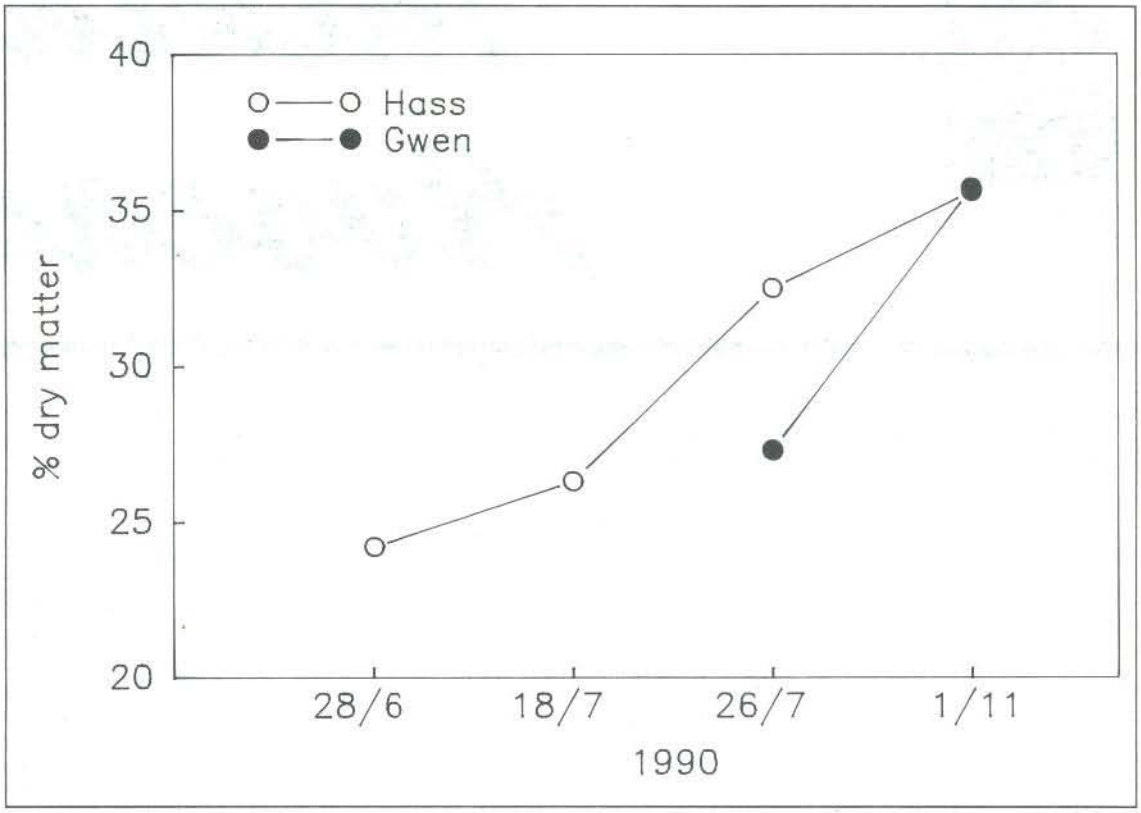

Figure 1.
Dry matter accumulation in Hass and Gwen fruit in S.E. Queensland. Mean fruit weight of Hass fruit harvested from experimental trees was 216g with flesh recovery of 70.9%. The mean fruit weight of Gwen fruit harvested from experimental trees was 277.7g with a flesh recovery of 70.7%.

Letters to the Editor

Dear Marie,

I just received the second issue of *Talking Avocados* and I would like you to know how much I enjoyed reading it. The magazine is both lively and informative and I'm sure will be appreciated by your avocado growers.

I would like to order a copy of your grade standard wall chart - to see if it is suitable for our conditions. Thanks.

Sincerely, David Croll
The Israel Fruit Growers Association.

Dear Marie,

A short note to advise you that we are 'in business' with a formulation containing Fos-Ject with Zinc only. The formulation is identical in phosphorous acid and zinc content of Fos-Ject ZB75 but does not contain any Boron.

Whilst we are developing this formulation system we (UIM) will be selling the product direct from Brisbane and it will not be sold by Du Pont.

As I mentioned to you on the telephone we have developed a formulation which contains 75g/L Phosphorous acid, considerably more Boron and less Zinc than was present in Fos-Ject ZB75. Hopefully, if the formulation and the injected trees behave in a "disciplined" way we will achieve the optimum levels of both Boron and Zinc in the leaves.

By the way, it is a syrupy mixture so injection times may be slow.

Regards, Clyde T. Waugh.
U.I.M. AGROCHEMICALS (AUST.) PTY. LTD.

Dear Marie,

The article regarding *Zincing Your Trees* in the latest *Talking Avocados* caught my eye.

The information presented was great but lacked some of the answers to the most asked questions. i.e.
1. What rate of Zn to apply,
2. What form of Zn to use,
3. How to apply it,
4. How to test for Zn levels,
5. What should these levels be generally (as low and high levels).

These are the practical questions that everyone asks and unfortunately to date there does not seem to be consistent answers.

I would hope that Incitec could elaborate on these points in a later issue of *Talking Avocados*.

Regards,
Jim Kochi (Schering Agrochemicals)

The answers to your questions are all available but must be addressed and answered on an individual farm basis. There is no general formula but the research and practical results are available. Contact your local government or private advisor to determine the best strategy for a particular site. The range of answers is too vast and complex to print in this newsletter. The strategy must be based on rootstock, soil type, current leaf levels, crop load, variety, tree health etc. Editor

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Dear Australian Industry Members,

Final plans are coalescing for the World Avocado Congress II to take place in California next April.

Because time is approaching and we want to host as many persons as we can we are announcing an extension of the initial registration fee of $595. We will accept registrations for this amount until March 15, 1991.

We are looking forward to seeing lots of Australians in California in April.

Sincerely yours,
W. H. Brokaw
World Avocado Congress II
Co-Chairman

Keeping in touch... What's happening on the Sunshine Coast?

Alex Banks
QDPI Extension Crop Specialist (Avocados)

The heavy flowering of August/September seems to have translated into a heavy fruit set for most varieties. There was not the leaf drop of previous years during flowering which indicates that trees are in a better state as regards root rot and water stress than previous years. This years wet season was not as severe as '88 or'89 and with better management trees are in better shape.

Pinkerton,wurtz and hass have generally set better crops than last year. Fuerte is better but is still not as good as it could be. Sharwil is its usual unpredictable self with some good and some poor sets around the region.

A number of storms have brought good rains at the beginning of November just when some growers were getting worried about water supplies for irrigation. The biggest problem with these storms was hail or wind damage but up till now this has only been minor.

In summary it seems as though this season will be an "on" year and it will be growers who pay attention to quality and marketing aspects who will reap the benefits of their trees productivity.

Any enquiries regarding articles or advertisements in *Talking Avocados* should be directed to:
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Talking Avocados
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Ph (077) 71 3388, Fax (077) 72 5413

WORLD AVOCADO CONGRESS II
The Shape of Things to Come

Important changes in fee structure and deadlines

The biggest event in the avocado industry-World Avocado Congress II-will be presented at the Doubletree Hotel, 21-26 April 1991. The theme of the Congress is "The Shape of Things to Come", emphasizing a week devoted to avocado research, production and marketing in the global avocado industry. The Congress program of 81 technical presentations and workshops is arranged and ready to go! We urge you to be a participant in this important and informative event. A week ripe with possibilities, the Congress promises the latest technology, products, and services.

WE ARE PLEASED TO ANNOUNCE THAT THE REGISTRATION FEE OF $595 HAS BEEN EXTENDED UNTIL MARCH 15, 1991.

Spaces also remain available for the Pre-Congress Tour to Mexico and Guatemala, scheduled from 7 April through to 20 April 1991. This two-week intensive tour will focus on both the origins of the avocado and the new industry developments in the state of Michoacan, the centre of the Mexican avocado production. The group will also visit the Guatemalan Highlands, home of the gene bank for avocado rootrot resistance and cultivar improvement. In addition, the group will have a chance to learn about Mayan culture through social functions, sightseeing and shopping.

For more information regarding registration or the Congress tours, please contact Cindi McKernan at the Department of Botany and Plant Sciences-072, University of California, Riverside, CA 92521-0124 (phone: 714-787-3423 / Fax 714-787-4437) or Thelma Piercy at the California Avocado Society, PO Box 4818, Saticoy, CA 93007 (phone: 805-647-2262 / Fax: 805-647-6493).

Important deadlines
1 Feb 1991 Payment in full for Mexico/ Guatemala Pre-Congress Tour.
15 March 1991 Deadline for payment of $595 registration fee.

Improving Uniformity through Tissue Culture

Mike Smith and Sharon Hamill
Maroochy Horticultural Research Station, Nambour Queensland

One of the biggest single gains in productivity in avocado can be achieved by the use of uniform planting material. In particular, clonally propagated rootstocks can lead to considerable yield increases.

Figure 1 indicates the potential benefits of uniform planting material - the data, in this instance, coming from recent field trials conducted in South Africa from plants multiplied by more conventional techniques. These trials have shown better than a two fold increase in yield but, in addition, uniformity of fruit size and maturity also boosts profitability. Considerable advantages also lie with the use of clonally propagated, *Phytophthora* - resistant rootstocks.

Conventional techniques of vegetative propagation (grafting, etoliation technique) are slow and expensive. Tissue culture propagation offers the potential of a rapid,cost-effective method to produce genetically uniform material for industry. Whereas much of the work on tissue culture to tree fruit crops comes from temperate species, little is known of the potential of these techniques in sub-tropical species. This is also true of avocado and we are still very much in the developmental stages of tissue culture propagation of this crop.

What is tissue culture?

Plant tissue culture means different things to different people. Taken in its broadest context it generally refers to the culture of all types of plant cells, tissues and organs under sterile conditions. This is called micropropagation, which is the area most people are familiar with and which most refer to as 'tissue culture'.

Usually one starts with just a bud or shoot from the desired 'mother' plant. By placing the bud on the right culture media under specific conditions, the bud may be induced to grow and produce axillary shoots. Subcultures of the buds and shoots produced in this manner can be made to form additional shoots. In this way, many plants can be produced from any given individual, all having the same genetic make-up of the original plant.

The multiplication of plants by tissue culture is shown diagrammatically in Figure 2. As can be seen, there are 4 main stages to the tissue culture propagation of any species. The first three stages are done under sterile conditions in the tissue culture laboratory and involve the initiation, multiplication and root induction stages. The fourth, and final stage is the hardening-off of the tissue cultured plants in the nursery under special conditions of high humidity and shade.

Avocado tissue culture: Progress Report

We are currently receiving funding support from COD/HRDC (Horticultural Research Development Council) to develop tissue culture techniques suitable for a range of subtropical fruit crops, including avocado. Woody plants are notoriously difficult to propagate but, despite this, most of our progress has been made with avocado.

Preliminary experiments were centred on *Persea indica*. Cuttings from mature trees were established and multiplied on half strength Murashige and Skoog (MS) nutrient media supplement with the plant hormone, BAP (benzyl amino purine). Microcuttings multiplied well but formation of roots was difficult to achieve and inconsistent.

Consistent root induction was achieved in *P.indica* by subculturing elongated shoots for a short period onto media containing BAP and a root hormone, IBA (indole butyric acid), at low concentrations. These shoots were then placed on half-strength MS without the addition of hormones. The age of the material in culture also exerted an effect on reliability of root induction.

High sugar levels in earlier work suggested a beneficial effect for root formation and experiments were carried out using sucrose levels of 0-10% on elongated microcuttings. Good roots were produced on all treatments except 10%, but growth and vigour was reduced over 4%. The best treatments were at 1-2% sucrose. Further experiments on the effect of sucrose, and other sugars, on newly initiated cultures are being carried out.

The use of jars with 'breather caps' to

Method of Tree Injection

1. NUMBER OF INJECTIONS REQUIRED
The Chemjet® tree injector holds 20 ml of solution . To determine the correct number of injections to be given follow the instructions under DIRECTIONS FOR USE. If the tree being treated with **FOS-JECT 200** has a canopy of four metres diameter the injection quantity would be 4 x 15 ml = 60 ml or 3 x 20 ml using the Chemjet tree injector.

2. PREPARING THE HOLES
Using 5.6mm (7/32") drill, prepare the appropriate number of holes in the tree trunk. Drill the holes about 200mm from the ground and drill the number of holes required at equal spacings around the truck. Drill the required number of holes about 30 to 40mm into the trunk.

3. MAKING THE INJECTION
Draw chemical into injector from **FOS-JECT 200** in an open container, ensuring the screwed nipple is held under the surface. Lock the handle with an anticlock wise turn. Screw the filled injector into the prepared hole, ensuring a good seal between the screwed nipple and the tree wood is obtained.
Release the handle by turning clockwise.
When injection of the fluid into the tree is complete unscrew the injector and plug the hole with a plastic plug or wound sealing compound.

4. CARE AFTER USE
Wash thoroughly in clean water and leave injector barrels in unscrewed position to relieve spring tension. If necessary apply a slight smear of silicone grease to bottom of barrel.

allow greater gaseous exchange improved vigour and multiplication rate of avocado. The use of vermiculite and perlite as a substrate was examined. Vermiculite was the most suitable substance and allowed plants to be maintained for extended periods in culture as nutrients could be replenished from liquid stock solutions periodically. The plants maintained in this way provided sterile material for use in experiments.

Preliminary experiments have started on initiation of cultures from desirable rootstock material. Various combinations of treatments using solid media have been used with the best results coming from half-strength MS media, with or without BAP, however the shoots deteriorate with time. Media supplemented with IBA causes excessive callus development, browning and eventually death.

The use of liquid media on a roller drum (a device for incubating liquid cultures) improved vigour of the initiated rootstock buds and these have started to grow and remain green for extended periods. Unfortunately sustainable shoot growth and multiplication has not been readily achieved. Further work is being carried out in this area.

Rootstock lines 'G755A', 'G755C' and 'Velvick' appear most suited to micropropagation at this time. 'Duke 7' continues to decline before any other type. Mature trees from seed origin have been initiated, multiplied and form roots but a technique for the micropropagation of selected rootstocks needs to be further developed. Micropropagated plants of *P.indica* have been readily established in the glasshouse to determine their capacity to harden-off and the type of root system they produce.

Future Directions

As can be appreciated, much of the developmental work is 'trial and error' with several problem areas remaining. For instance, sustaining multiplication potential and the ability to form roots are key areas to study in cultures established from mature plants. The difficulty of initiating cultures from mature, as opposed to juvenile, wood is well known but little understood. Techniques for inducing juvenility need to be further explored.

These factors help to explain the lack of published techniques for avocado tissue culture and world-wide progress has been limited. A concerted effort is needed and at least one individual is needed at Maroochy to divert their whole attention to this area of study. The potential is there, what is required is the manpower and resources to resolve the problem areas and make micropropagation of avocado, from culture initiation to field establishment, a realistic alternative for producing uniform planting material.

Figure 1. **Potential Yield of Avocado Using Clonally Propagated Rootstocks**

Closed Bar. Average Yield of Avocado Grafted onto Seedling Rootstocks.
Open Bar. Potential Yield of Avocado Grafted onto Clonal Rootstock.

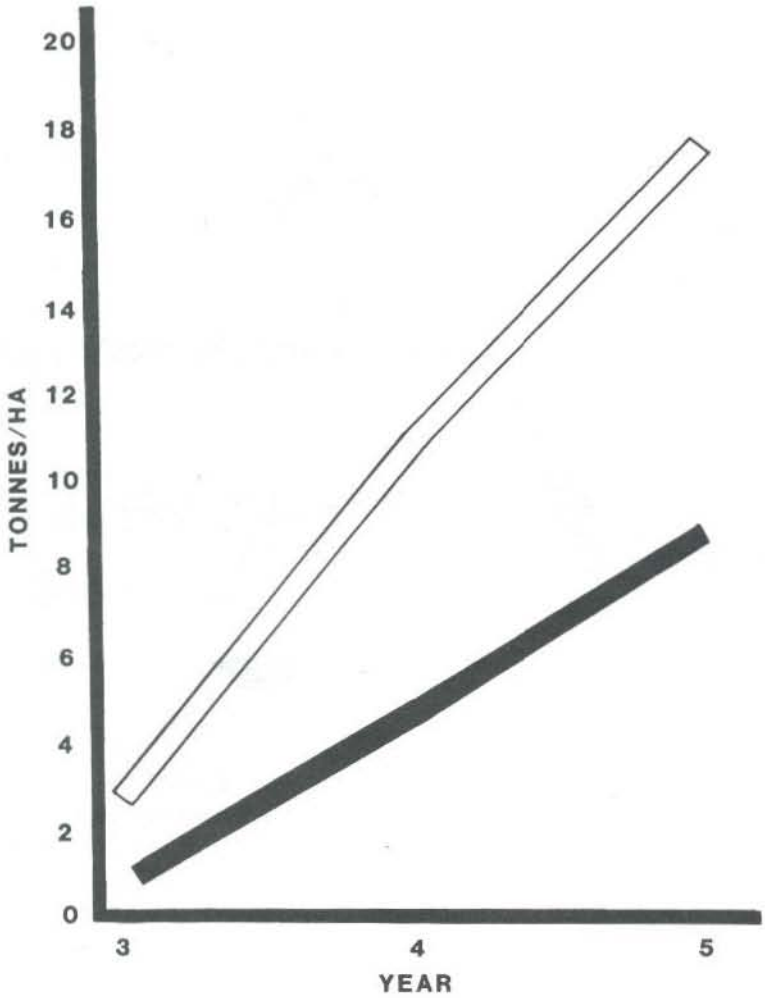
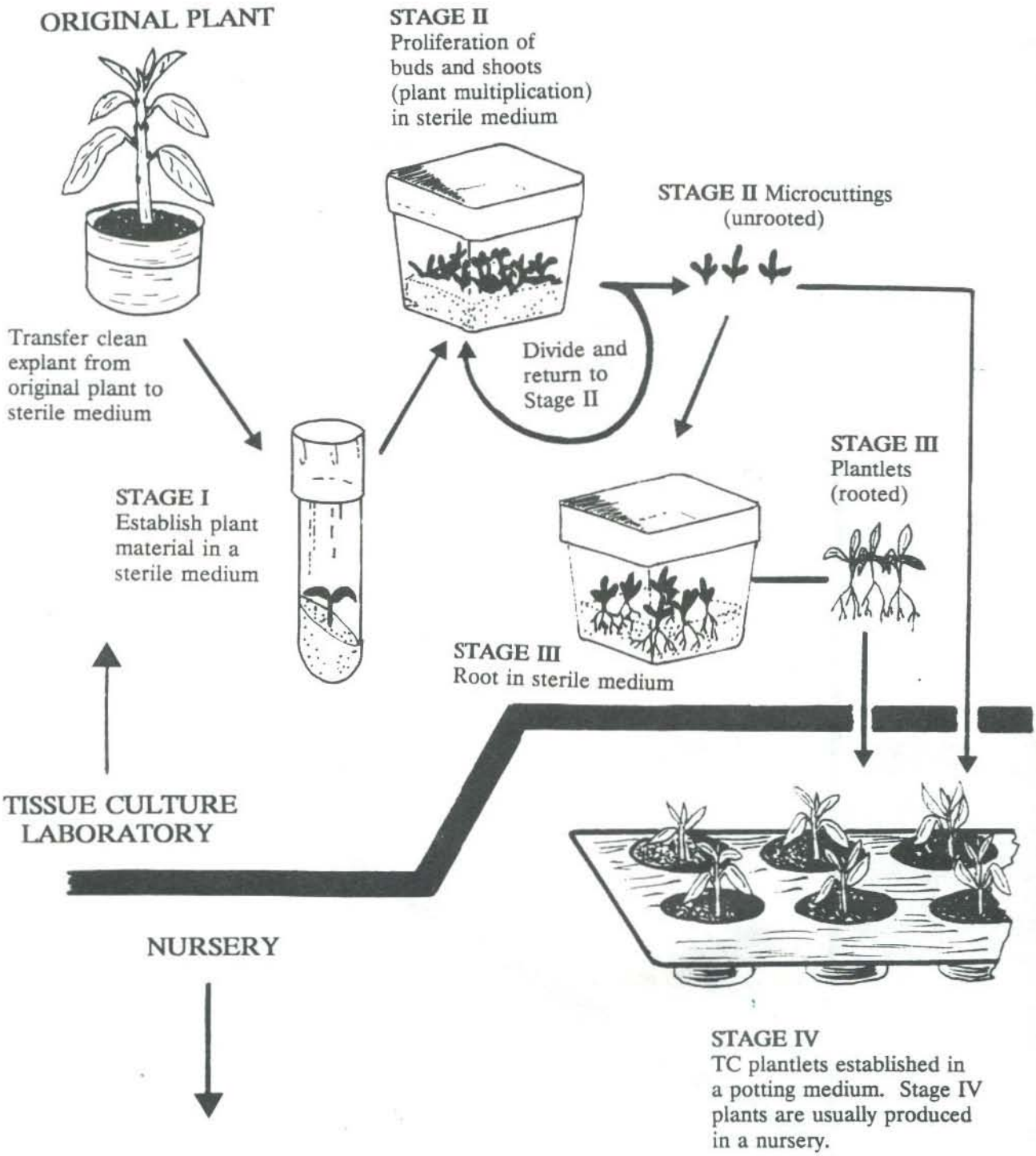


Figure 2. Stages in the Tissue Culture Propagation of Plants



Australian Avocado Growers' Federation Inc Annual General Meeting

The following is the list of Decisions of the Australian Avocado Growers' Federation Inc. meeting held in the Board Room of The Committee of Direction of Fruit Marketing, Sherwood Road, Rocklea on Tuesday and Wednesday, 17 and 18 November, 1990.

Constitutional Amendments
It was agreed, that the President prepare a paper on proposed amendments to the AAGF Constitution and that this paper be widely circularised for comment.

Avocado Grade Standards
That a letter be sent to the QDPI and New South Wales Department of Agriculture and the Ministers requesting the immediate implementation of the domestic avocado grade standards and highlight the industry's push for quality and further that they look after the consumer and the grower by enforcing these grade standards.

HRDC Levy Collection
That the matter of the HRDC levy collection be deferred until the 26 and 27 February AAGF meeting when Mr Mackay of DPIE will present the Federation with three viable options fully detailed with costs, income, net return and methods for collection in each state.

HRDC Levy Collection Report
It was agreed, that the Mackay report on proposed options for the HRDC levy collection be widely circulated for comment.

Frozen Avocado
It was agreed that Mr Capamagian investigate the matter of a frozen avocado process and report his findings to the President.

Chemical Senate Select Enquiry
That a letter be sent to the Australian Horticulture Growers Council and the Horticulture Policy Council requesting that current testing for chemical residue on imported fresh fruit and vegetables and packaged and processed products be expanded.

Avocado Research Workshop
It was agreed, that the National Avocado Research Workshop be held in South East Queensland on 16 and 17 July 1991 with invited industry representatives be approved.

Industry Goals and Priorities
It was agreed, that the paper on the avocado industry goals and priorities be further developed by Mr Lavers and widely circulated for comment and that the priorities be set at the February 1991 AAGF meeting.

Cholesterol Issue
It was agreed, that Ms Matthews approach the producers of the *Ray Martin Show* in an endeavour to gain further coverage for Dr Colquhoun's cholesterol research.

Cold Disinfestation
It was agreed that South Australia should forward to Mr Jessop a copy of its findings on cold disinfestation and that NSWAA would supply an update on the cold disinfestation research project at the February 1991 meeting.

Election of Office Bearers
Chairman
Mr Mosse nominated Mr Rankine. There being no further nominees, Mr Rankine was declared elected.

Vice President
Mr Meredith nominated Mr Richards. There being no further nominees, Mr Richards was declared elected.

Secretary/Treasurer
The meeting agreed that the Secretary/ Treasurer for 1991 be a COD employee and that if possible, the appointment of Mr R Boyle on a continuing basis.

Management Committee
The meeting agreed that the Management Committee of the AAGF for 1991 be the President, Vice-President and the Secretary/Treasurer.

Varieties Committee
It was agreed that the following delegates be appointed to the Varieties Committee for 1991: Mr D Lavers, Mr P Moleenar, Mr R Richards and Mr B Capamagian.

Varieties Committee - Technical Advisers
It was agreed that the following people be appointed technical advisers to the Varieties Committee for 1991: Mr J A Kidd, Mr G Anderson, Mr P Young, Mr T Whiley, Mr K Pegg and Mr F Chalker.

Research Sub-Committee
It was agreed that Messrs Lavers, Richards, Meredith and Ms Matthews be appointed to the Research Sub-Committee for 1991.

Marketing Sub-Committee
It was agreed that Messrs Richards, Johnson and Galatis be appointed to the Marketing Sub-Committee for 1991.

AHGC Delegates
It was agreed that Messrs Molenaar and Rankine be the AAGF delegates to the Australian Horticulture Growers Council for 1991.

Honorary Solicitor
It was agreed that the firm of Mr M Quinn Brisbane be appointed honorary solicitors to the Federation for 1991.

Honorary Auditor
It was agreed that Mr E Thompson of COD Brisbane be appointed honorary auditor to the Federation for 1991.

1991 AAGF Conference - Seed Money
That $5000 from Conference 90 profits be set aside and used as seed money for the 1992 Annual Avocado Conference and any outstanding accounts from Conference 90 be paid.

Conference 1992 - Venue
That the next National Avocado Conference be held in July 1992 in south east Queensland; the secretary investigate and prepare a short list of venues and further that agenda items and programme suggestions be sought from associations.

Imports and Free Trade
That the AAGF is committed to free, open and fair trade and opposes the importation of products in any form which receive subsidies or any other form of assistance which has the result of artificially reducing the purchase price. The AAGF opposes the importation of products which involve the use of labour which does not receive fair wages and decent conditions and it strongly recommends to the Australian Government that it introduce legislation to stop the importation of all products whose price is either not passed on in full, including actual cost of production and distribution, or is produced by labour whose wages and conditions are less than adequate in the country concerned.

HPC Decision
That a letter be sent to the Horticulture Policy Council recommending that it conduct a public relations campaign on its activities and that public exposure be given to its decisions.

AHC Membership
That the AAGF Inc agrees in principle to join the Australian Horticultural Corporation subject to the following:
1. That the AAGF has the sole right to determine within a maximum period of 2 years to elect to withdraw from the AHC and 2. That a memorandum of understanding be drawn up that is acceptable to both parties.

Mr Armstrong requested that it be recorded in the minutes that the Queensland delegation had voted as a block against this motion and requested that the fact that Queensland was the major production State be conveyed to the Minister.

HRDC Membership
That the AAGF take up membership of the Horticulture Research Development Corporation.

HRDC Memorandum of Understanding
That the memorandum of understanding for AAGF Membership of HRDC as listed below be approved:

It is hereby agreed that the following will constitute the principal agreements by which AAGF will join the HRDC. These principal arrangements are intended to remain within the requirements of the legislation governing the HRDC, together with the policies of the Boards of the HRDC and the AAGF Inc.

The principal arrangements are:-
1. That an initial compulsory levy of four (4) cents per six (6) kg tray or the equivalent thereof, shall be collected through the Commonwealth DPI & E. The rate of the levy may vary from time to time following consultation between HRDC and the AAGF Inc.
2. The Minister is to be approached to promulgate through orders, the AAGF Inc is an eligible industry body under the HRDC Act 1987.
3. That an informal consultative body consisting of members of the HRDC and the AAGF Inc shall be formed, and will meet no less than twice per year. This body shall be called the National Avocado Research Liaison Committee (NARLC). This body will prepare and oversee the National Avocado Research Programme and recommend priorities, and within an appropriate budget, to the HRDC Board.
4. That the HRDC shall report once each year to a meeting of the AAGF Inc to maintain effective communication and consultation and thereby also enhance the transfer of technology.
5. That the HRDC will convene a National Avocado Research Workshop no less than once every five years, to review prior research and to formulate a long range research and development plan for the future.
6. That the HRDC shall send a representative or representatives to the National Avocado Conference of the AAGF Inc, held every two years, to report to the industry on research operations of the HRDC on behalf of the avocado industry, and will invite relevant researchers to report on their progress to that Conference.

HRDC Levy
It was agreed that a final decision on the amount of levy to be paid to the HRDC be made at the February 1991 AAGF meeting.

Financial Statement - AAGF
That the AAGF Inc. financial report from 1 April 1990 to 31 October 1990 (Ref AF124/90) be received.

AAGF 1991 Subscription
That the state subscription to AAGF be increased by 5%.

AHGC Membership
That the AAGF take out associate membership of AHGC for 1990/91 at a cost of $1500.

Newsletter
That the National Avocado Newsletter *Talking Avocados* be continued for a further 12 months.

Newsletter Financial Statement
That the Avocado Newsletter financial statement as at 31 October 1990 (Ref. AF123/90) be received.

Newsletter Seed Money
That the Federation commence repayment of the newsletter *Talking Avocados* seed money as soon as practicable.

Target 90
That the AAGF calls on the Horticultural Policy Council to conduct a full investigation of Target 90 with special reference to:
1. Detailed analysis of money spent.
2. Results of actual marketing achievements on both export and domestic markets.
3. Reasons for non-participation by or abandonment of the scheme by several major growers and pack houses.
4. Performance of the Australian International Business Centre and its consultants and the suitability of their programme.
5. A statement of the current position and further prospects of the projects.

and that this report be presented to the Federation.

New Zealand Growers Tour
It was agreed that the topic of an Australian Growers Tour to New Zealand as proposed by Sunraysia Association be discussed at the February 1991 AAGF meeting.

Soil Additives - Time to Trial

It has long been recognised that soil organic matter levels help to inhibit the activity of phytophthora root rot in avocado orchards. In trees that are severely affected by root rot part of the strategy in returning them to commercial productivity involves the use of materials which increase soil organic matter levels as well as protecting the root system against stresses such as drying out. Such materials include fibrous grass mulches and organic fertilizers like fowl manure and mill mud. Unfortunately even with these approaches it can take several seasons before trees are bearing commercial crops again.

Some new products have become available to orchardists which have the potential to speed up the process of bringing trees back into production as well as assisting in the battle against root rot. These products generally come under the heading of "organic soil additives". A number of growers have started using them and their results have come to the attention of QDPI officers at Nambour.

Avocado crop specialist at Nambour, Alex Banks reports that these products seem to be assisting in the recovery of trees which were severely affected by root rot following the last couple of wet seasons. Unfortunately the growers using the products did not include any control trees with which to compare the effect or otherwise of the products. However Alex was sufficiently impressed that he has commenced a small trial on an orchard at Maleny to see if these products have potential for use in the Queensland avocado industry.

The trial was commenced in October with two products being assessed. The first is Humilac Compost which contains humic acid in combination with organic catalysts. It is marketed by Broadacre Organics (Phil Ubergang) of Kingaroy. The second product is Symbex which contains a mixture of bacteria growing on a whey base. It is marketed by Spray Tech Aust P/L (Geoff Modra) at Labrador on the Gold Coast.

The treatments to be assessed are:-

1. Control	No treatment for root rot.
2. QDPI	Trees mulched with hay/fowl manure placed on top of mulch injected with FOS-JECT 200 in spring.
3. Humilac	Applied to root system on own.
4. Symbex	Applied to root system on own.
5. Humilac + QDPI	Combination of treatments 2 and 3.
6. Symbex + QDPI	Combination of treatments 2 and 4.

Trees were rated for severity of decline due to root rot using the Ciba-Geigy 0-10 scale. Further assessments will be made at regular intervals. The trial is replicated and results will be analyzed statistically. All trees will receive normal fertilizing and pest and disease sprays. Trees will be monitored for at least one full season before conclusions are made.

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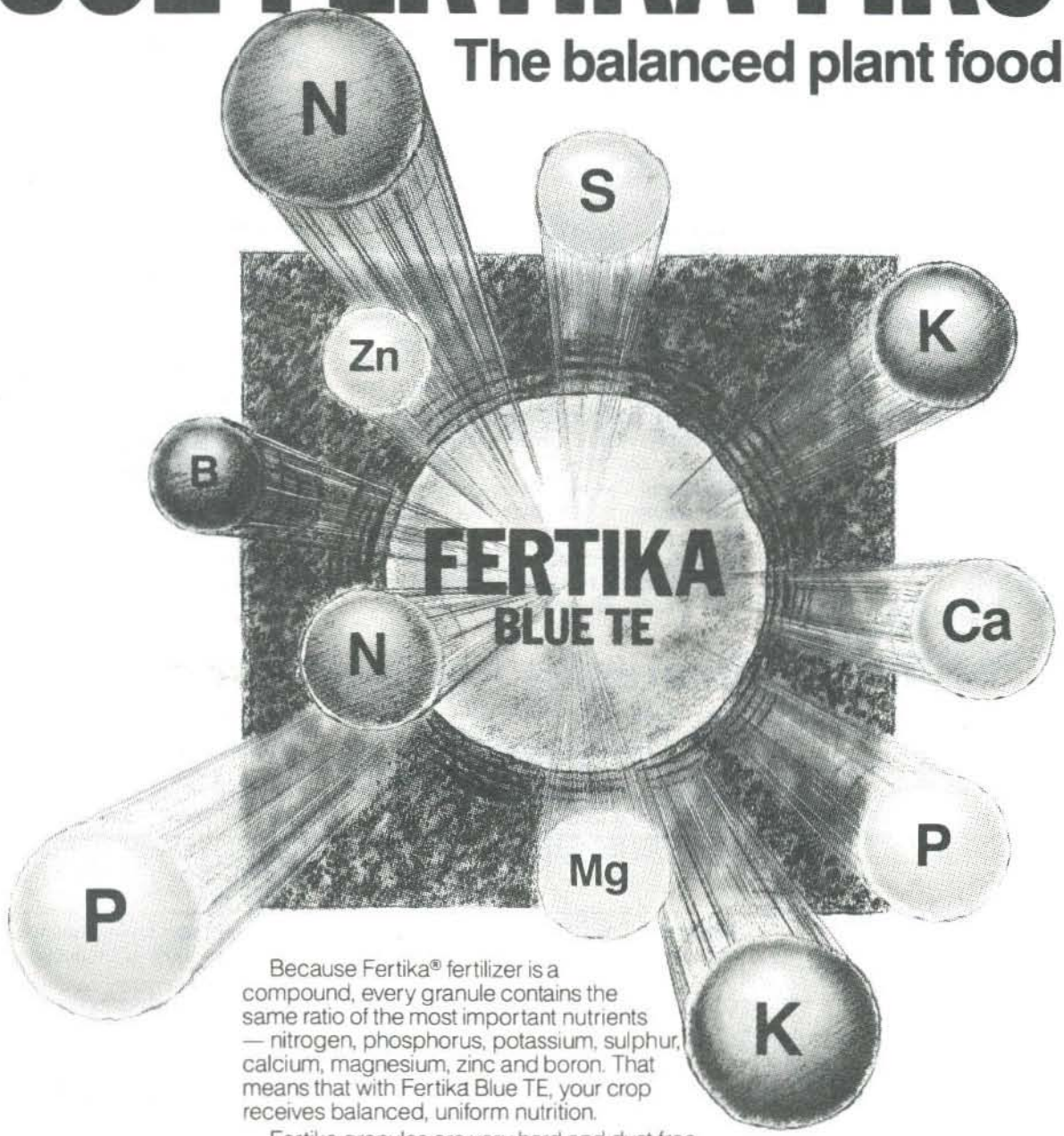

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Marketing Avocados: Deregulation Sparks New Co-ope

by Jim Manwaring, Special Marketing Development Officer, NSW Agriculture and Fisheries

Recent deregulation of domestic wheat and egg marketing demonstrates that agricultural marketing is entering a phase of increased challenges, and increased opportunities. The formation of new co-operatives will be a major response to these opportunities.

Evidence of this includes the NSW Egg Producers Co-operative - formed in August 1989, and feasibility studies underway into new co-operatives in grain legumes in the Central West, oysters on the South Coast and the marketing of goat meat on the Far South Coast.

But how successful will these new ventures be? A few of our farmer co-operatives are outstanding commercial ventures, but many have failed. What then can we expect from this latest batch of farmer controlled groups?

The short answer is, if the farmers involved learns from previous successes and failures in co-operative marketing, then we may enter an exciting era in agricultural marketing with a new breed of co-operatives showing the way. The first step in doing this is to clearly grasp the lessons gleaned from the past.

The table (below) compares some traditional ways of starting and operating co-operatives, with more effective ways that are essential to co-operative marketing success in the 1990s.

The first essential - point number one in the table - is to have a thorough feasibility study carried out by a person experienced in agricultural marketing and co-operatives, who should work closely with a steering committee of producers. Dollar for dollar grants are available from the New South Wales Department of Business and Consumer Affairs to help pay for feasibility studies.

Secondly, producers need to invest a significant sum of money in their co-operative. In the past, their initial investment was sometimes as low as $20, and usually not more than $500. This is far too low. It is difficult to generalise on the sum required because industries differ and producers' financial circumstances vary greatly. However, the initial investment should, in most case lease $1500, and often much m point 2 in the accompanying tab

A large investment at the start i for two reasons. Firstly, the co- will need equity capital to fund operations, and secondly, when invests a meaningful amount of his co-operative, he will usually of his commodity to that co-ope

This leads me to the third imper (point No. 3 in the table) the req that each member deliver 100% production to his co-operative.

This is one of the cornerstones operative marketing, and failure upon its application has been a reason for the patchy record of operatives in Australia. Withou committment of production, thr consequences follow for the co- management are uncertain as to commodity they will have to su customers of the co-operative; s members tend to deliver only th quality product to the co-operati

Success Strategies For New Co-ops

	Traditional Way	"Essentials" For
1. Research	Little research done before the Co-operative was formed	A thorough feasibility study int aspects of forming a new co-op
2. Capital Investment	Low capital investment	High equity investment by mem achieved, in part, by innovative mechanisms
3. Commitment	Vague and loose ties between co-operative members	Strong producer committment t and deliver 100% of production operative
4. Producer Discipline	Very little	Strict disciplines imposed throu contract: to invest money: deliv production to co-operative: and to quality assurance scheme
5. Board of Directors	Weak on business management skills	Very strong on business manag skills. Non-producers directors special know-how in marketing finance.
6. General Manager	Lacking in skills and personal assertiveness	Highly skilled, self-confident, r orientated.
7. Marketing	Guiding philosophy: disposal of a raw material	Satisfaction of defined custome and achievement of competitiv advantage.
8. Communciations	The key-stone place of communication in a co-operative not understood	Good communications, produce involvement and education see mortar which holds the co-oper together.
9. Strategic	Crop by crop mentality, total concentration on current operations.	Monitors major issues 3, 5 ,7 y future. Examines co-operative' weaknesses, opportunities, thre

members fail to give their co-operative the dedicated and strong support that it must have, if it is to succeed.

The insistence that members supply all of their production to their co-operative cannot be emphasized too strongly. The moment a co-operative breaches this principle, it sets in motion a process of erosion that will destroy the co-operative.

In the past, many co-operatives have been reluctant to impose disciplines on their members and this has contributed to their problems. The fourth imperative is the need for strict disciplines. Now, more than ever before, tight disciplines are essential to success. These disciplines must be applied in three main areas: investing money in the co-operative; delivering production to the co-operative; and adherence to the quality assurance standards set by the co-operative.

The fifth imperative for co-operative marketing in the 1990s is to elect a board of directors skilled in business management and dedicated to the success of the co-operative, however, one place should be reserved for a non-producer with marketing expertise, and another for a non-producer with financial expertise.

It follows that the co-operative must secure a competent general manager. Such a person should have broad managerial skills, but must have strong marketing orientation. The key here is to list the managerial skills required, ascertain what price will have to be paid to secure such a person and then go out and find a someone with those skills. This is the sixth imperative for co-operative marketing.

In the past, some co-operatives have seen their roles as 'disposing' of what farmers produce. This type of thinking is destined for disaster. In fact, quite the opposite is required. That is, the focus of the co-operative must be to satisfy the needs of their customers, better than their competitors. The co-operative must recognize that competitive advantage is the key to co-operative business success. This genuine marketing orientation is the seventh imperative.

Good communications - eight - is to a co-operative what mortar is to a brick house. Without mortar the house will collapse; and without good communications a co-operative will collapse.

The ninth imperative is on-going strategic planning. Operating on a crop by crop basis is not good enough. Developing new products and new markets are essential in the marketing strategy of a co-operative. This involves looking ahead three, five or even seven years.

An important part of strategic planning is to conduct an analysis that examines the strengths and the weaknesses of the co-operative, and looks at the opportunities and threats that confront it.

Facts on Irrigation Scheduling

(taken from Avocado &Citrus Notes, Co-operative Extension, Uni of Calif.)

Irrigation scheduling is probably the most important grove operation. Computer timeclocks are certainly useful tools, but they are not capable of deciding how much water your trees are using. We can help you plan your irrigation by telling you how much water a mature avocado tree is using on a daily basis. This information is based on evapotranspiration (ET) data generated by CIMIS stations in Rancho California, Escondido, Oceanside and San Diego.

Water usage changes daily, as influenced by solar radiation, wind speed and wind run duration, relative humidity, temperature and growth stage of the plant. CIMIS stations measure these factors and calculate ET (in inches per day) of a large field of 4 to 7 inch tall, cool season grass that is not water stressed. This is known as Reference Evapotranspiration or ETo. and is available on a daily basis from the weather stations.

How do we get ET for avocados from ETo? This is the key - we multiply ETo by a correction factor, called the Crop Coefficient of Kc. The Kc's are being developed from an irrigation plot at Corona run by Cooperative Extension specialist Jewell Meyer and Mary Lu Arpaia.

Tress in sandy soil theoretically use the same amount of water in a day as trees in clay soil. The difference as far as scheduling is concerned, is storage sandy soil needs to be irrigated more often than clay soil. Tensiometers are important tools for deciding when to irrigate. We generally recommend an avocado irrigation at 25 cb and citrus irrigation at 40 cb (12" depth). We admittedly need more research to figure out the optimum depth to place tensiometers in avocados.

THE FEDERATION

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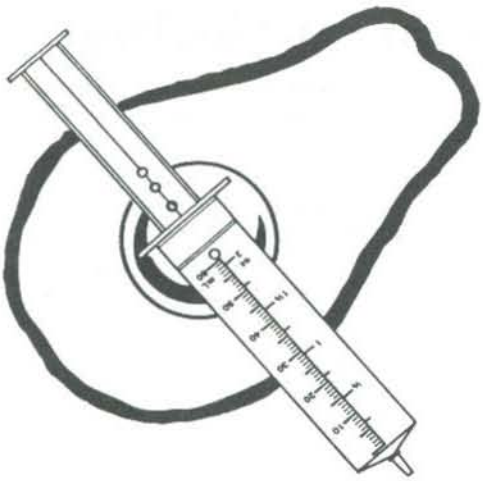

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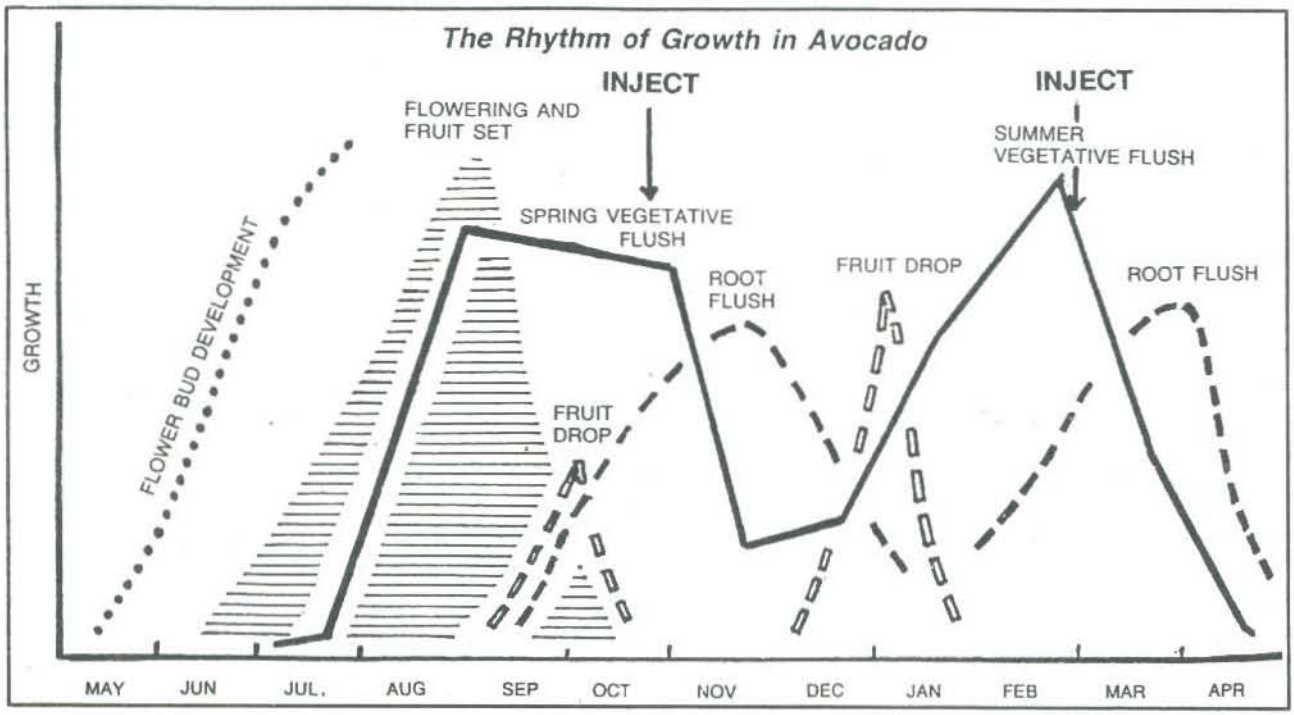

FOS-JECT 200 – DIRECTIONS FOR USE:

CROP	DISEASE	STATE	METHOD OF APPLICATION	RATE	CRITICAL COMMENTS
Avocado	Phytophthora Root Rot *Phytophthora cinnamomi*	QLD. N.S.W. VIC. S.A. W.A.	Trunk injection	**CURATIVE TREATMENT** Skeletal trees 1st Year 15 ml undiluted product per metre of canopy diameter. **PREVENTIVE TREATMENT** 7.5 ml product diluted with 7.5 ml water per metre of canopy diameter.	Inject trees when the spring and summer vegetative flushes have greened and hardened. See below for methods of injection. **WITHOLDING PERIOD** NIL DAYS.

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