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SAAGA RESEARCH PROGRAMME FOR 1981-1982

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At the moment our biggest problem is to get suitable research workers for all the problems on which research is needed. We can therefore only concentrate on those most important. For this reason a priority rating of problems is carried out every year by the Research Committee. According to this rating, the top priority problems are as follows:

1. Anything that relates to fruit quality, eg post-harvest diseases, pulp spot, lead discolouration, cold damage, etc.
2. Maintaining the cold chain and shortening the time between picking and marketing. This also includes pallet design, box design, ventilation and studies on controlled atmosphere (CA).
3. Root rot control — from the nursery to the orchard which includes rootstock evaluation, orchard practices, chemical control, etc.
4. Improvement of vegetative material. This includes selection for higher productivity and disease free material. (This item had a much lower rating in the past.)

These are the top priorities, but we can not handle them all. A lot of information is already available, but years of hard work lie ahead.

We find it especially difficult to get proper research going in all the aspects mentioned under item 2, because it involves specialist work in the field of engineering and biology. The only way to get the work done is by careful co-ordination and teamwork.

The following projects are undertaken for 1982: (Research undertaken by Dept of Agrie and Fisheries is not listed)

Project No	Description	Persons responsible	Comments
W1	Spray programme for the control of Cercospora spot	JM Darvas and JM Kotzé	All this work is being carried out at Westfalia Estate by Darvas. He has already worked out the epidemiology and he is now trying to find the best spray programme. Cercospora spot is spreading and already appeared in Levubu and Nelspruit.
W2	Control of post-harvest diseases	JM Darvas and JM Kotzé	This involves the epidemiology and control of fungi that cause fruit-rot. Emphasis is on pre-harvest control measures, but post-harvest control measures are also considered.
W3	Chemical control of root rot	JM Darvas	Darvas pioneered the chemical control measures which are applied in the avocado industry. This work continues in order to find the best and cheapest methods and materials to control root rot.
W4	Ecological studies on root pathogens	JM Darvas	A number of potentially dangerous root pathogens have already been isolated. This work continues, but the pathogenicity tests are carried out by CP Snyman at the University of Pretoria.

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W5	Zinc nutrition of mature avocado trees	GH Veldman	Zinc deficiencies occur wide spread and are not easy to rectify. Gerhard Veldman carries out this research at Westfalia Estate.
W6	Effect of calcium foliar sprays for the control of pulp spot and lead discolouration	GH Veldman	There are indications that pulp spot and perhaps also other post-harvest disorders are correlated with calcium deficiency. Veldman applies calcium sprays at different times and concentrations in an effort to test this theory.
W7	Effect of soil applications of calcium carriers on post-harvest disorders	GH Veldman	W6 and W7 are carried out in close co-operation with Prof AHP Engelbrecht of RAU.
W8	Effect of calcium on root rot	GH Veldman	Calcium in the soil effects the severity of root rot (Snyman, 1982). These field experiments are undertaken in collaboration with Darvas and Snyman.
W9	Rootstock evaluation against Phytophthora root rot	MJ Slabbert	Tests to evaluate rootstocks against root rot is part of a broad approach to solve the root rot problem. The trials are conducted in old infected orchards.
W10	Cause of fruit drop and ring neck	MJ Slabbert	The pattern of fruit drop and the possible causes of this phenomenon is investigated by Slabbert at Westfalia Estate.
L1	Prevention of fruit rot by waxing	JHE Smith	The purpose of waxing is to improve the sales appeal of the fruit. Several waxes, however, may cause an extention of shelf life. This investigation is aimed at the control of diseases under extended shelf life conditions.
L2	Bulk handling of avocado fruit	JHE Smith	Bulk handling of avocado fruit is a future prospect. Mr Smith investigates this anticipated development to find out how it will effect fruit quality.
L3	Storage time and temperature of fruit after treatment with new waxes	JHE Smith	As certain waxes seem to affect the physiology of fruit, this experiment is undertaken to see how waxed (new waxes) fruit will react under different storage periods and temperatures.
L4	Cellophane and other wrappers for cosmetic purposes	JHE Smith	Wrapping is primarily a cosmetic treatment. This investigation may lead to a more attractive and cheaper wrapper without effecting fruit quality.
L5	Storing temperature requirements for mature fruit	JHE Smith	Different cultivars have different cold requirements. Fruit picked in March is more subject to chill injury than fruit picked in June. These aspects are investigated.
P1	Pre-harvest sprays against post-harvest diseases	JM Kotzé & AWG Rowell	This experiment is conducted at Hall & Sons, Nelspruit. The object is to find better materials and programmes for post-harvest diseases.
P2	Avocado tissue culturing	Dorothea Nel & JM Kotzé	Tissue cultures may be the cornerstone of a healthy future avocado industry. It is one way of solving the sun blotch disease. This work is undertaken to speed up the production of scarce propagation material and to produce disease-free plants. Avocado tissues were cultured successfully for the first time towards the end of 1981.
P3	Evaluation of fungicides against root rot	CP Snyman	New application techniques and new materials are evaluated in the greenhouse as well as field tests. Close co-operation with Joe Darvas is maintained.
P4	Pathogenicity of root pathogens	CP Snyman	The isolates of Darvas are screened and evaluated on different root stocks. Results indicate that some of these root pathogens are potentially very dangerous. Test plants are supplied by Westfalia Estate.
P5	Ca^{++} status of soil and root rot incidence	CP Snyman	Snyman (1982) showed that Ca^{++} may reduce the severity of root rot. This work is conducted in pots in Ca^{++} deficient and Ca^{++} enriched soils. Fungicides are also included in experiments. These studies are of great importance for root rot management.

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P6	*Bacterial canker of avocados*	*L Myburgh & JM Kotzé*	*Investigations showed that bacterial infections take place through wounds. The etiology and control measures are being studied.*
H1	A comparison of the effectiveness of various calcium carriers as soil applications in mature avocado orchards	AWG Rowell	This experiment was started 3 years ago in an established orchard. No further applications will be made this year but leaf analysis will be done. The slow movement of Ca^{++} in the soil prevents rapid progress.
H2	Fungicidal screening for the control of post-harvest diseases in the field	AWG Rowell & JM Kotzé	This experiment is conducted on a site of young trees at Mataffin. Hall & Sons is responsible for the application of the sprays and UP for the assessments and reporting.
N1	Avocado sunblotch disease	J v da Graca	The development of a rapid and reliable technique to test for sun blotch infection, is urgently needed. This work may be valuable in a future Avocado Improvement Scheme.
N2	Radio-immuno assay of plant hormones in etiolated avocado shoots	BN Wolstenholme	This is a new project that may explain the basic processes that determine root, shoot and fruit growth.
N3	(1) Root studies and root/shoot ratio (2) Fruit growth and maturity studies in various ecological regions in Natal	BN Wolstenholme	Avocado root development in relation to above ground parts have not been extensively studied. This work should bring new light on fruit growth and factors involved in fruit maturing. The studies on root growth is of special interest for root rot management.
R1	Histochemical investigations on the site of certain ensymes in avocados and the discolouration of avocado fruits	AHP Engelbrecht	This is a basic study of the physiological reactions that effects pulp spot and fruit quality.
R2	The effect of calcium sprays on the composition of avocado fruits	PJ van der Merwe AHP Engelbrecht & GH Veldman	This work is done in co-operation with Veldman & Toerien of Westfalia Estate. An in depth study is undertaken, employing electron microscopy on the effect of calcium on fruit quality.
R3	The effect of calcium sprays on the composition of avocado fruits	G Steyn AHP Engelbrecht & GH Veldman	Steyn and Van der Merwe work as a team under the guidance of professor Engelbrecht.
S1	Etiolation studies	AA Ernst	Mr Ernst has had a fair degree of success in his studies to develop techniques for vegetative propagation of avocados. The work is expanded.
EL1	Rooting of etiolated cuttings under non-greenhouse conditions	AA Ernst	This is an extention of Ernst's successes under nursery conditions.
A1	Evaluation of pre-harvest spray programmes against avocado fruit diseases	PH de Beer JH de Wet } Agricura	This experiment is an extention of the work by Darvas and Kotzé. It is vitally necessary for the registration of new materials and programmes. The experiment is conducted in Levubu.