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RESEARCH PROJECTS SPONSORED BY SAAGA FOR 1982-83

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After the very successful research conference at Nelspruit during the last week of October 1982, we reviewed the research programme. It was clear that post-harvest problems, especially lead-discolouration and pulp spot, should receive top priority. We were fortunate to obtain the co-operation of Prof Paul Fouché and Prof Chris Small in addition to the impressive list of scientists who are already active in this field. It may take a long time to solve all these physiological disorders but I am convinced that the best available manpower has become involved in this important problem.

It will be noted from the list below that fruit physiological disorders are not the only problems in the avocado industry and I am very pleased to present the projects which are already in progress.

Project Number	Description	Persons responsible	Comments
W1	Evaluation of spray programmes for the control of Cercospora Spot	JM Darvas	All this work is being conducted at Westfalia Estate. Cercospora Spot is spreading to new areas.
W2	Post-harvest diseases and their control.	JM Darvas	Pre-harvest and post-harvest treatments are investigated. New fungicides are evaluated as well as spray programmes.
W3	Chemical control of root rot.	JM Darvas	This work commenced in 1977. The best and cheapest methods of chemical control is being investigated.
W4	Ecological studies on root pathogens.	JM Darvas	Methods of determining inoculum potential have been devised. Isolates of new pathogens are being evaluated for pathogenicity in Pretoria.
W5	Zinc nutrition of mature avocado trees.	GH Veldman	Soil applications as well as aerial spraying and foliar ground spraying are evaluated. Various Zinc carriers are tried.
W6	Evaluation of calcium applications for the control of pulpspot and lead discolouration.	GH Veldman	$Ca(NO_3)_2$ as well as other forms of calcium is being tested. The timing of spraying is also being investigated.
W7	The effect of soil and foliar applications of Ca, Mg, B, N and K on post-harvest disorders.	GH Veldman	Large scale field experiments are being conducted at Westfalia Estate to investigate this important problem. These experiments will run for many years.
W8	The effect of calcium on root rot.	GH Veldman & JM Darvas	These investigations continue and form part of the pulp-spot programme.
W9	Rootstock evaluation against Phytophthora root rot.	MJ Slabbert & JM Darvas	This is a long term project and of great importance to the Industry.
W10	Effect of leaf/fruit ratio on internal fruit quality, fruit drop and ringneck.	MJ Slabbert	The relationship between leaf and fruit is not well understood. These studies should lead to a better understanding of physiological fruit disorders.
W11	Effect of cooling on fruit quality (pulpspot, lead discolouration) and post-harvest treatments (CA).	MJ Slabbert	Cooling and controlled atmosphere have to be fully evaluated. This work is vital for future sea exports.
W12	Evaluation of Controlled Atmosphere as a treatment for sea exported avocados.	GH Veldman	Controlled Atmosphere again gave very promising results. A very considerable amount of work is necessary to apply the results in practice.
L1	Temperature requirements of avocados at various stages of maturity.	JHE Smith	Cold damage and internal fruit problems are closely related to temperature and time as well as fruit maturity.
L2	Evaluation of post-harvest fungicides with and without waxing for the control of post-harvest diseases.	JHE Smith	Post-harvest treatments have not been entirely successful in controlling post-harvest diseases. New chemicals show promise.
P1	Pre-harvest sprays for the control of post-harvest diseases.	JM Kotzé	Considerable progress has been made but we need to replace the copper fungicides.
P2	Avocado tissue culture.	DD Nel, JM Kotzé & Z Cerva	Complete success achieved with wild avocado but only partial success with new rootstocks and scion.

P3	Evaluation of fungicides and application techniques for the control of root rot.	CP Snyman & JM Kotzé	Sponge band, stem paint and stem sprays show great promise. These techniques are evaluated under a variety of circumstances.
P4	Pathogenicity of root pathogens and susceptability of various rootstocks.	CP Snyman	JM Darvas has collected several root isolates which have to be evaluated away from commercial orchards.
P5	The effect of Ca on root development and root rot.	CP Snyman & JM Kotzé	This research has been running for several years and gets more significance if internal fruit quality is considered in addition.
P6	Bacterial Canker of avocados.	L Myburgh & JM Kotzé	The disease is so far unrecorded and is spreading to new areas. Basic information is urgently needed.
P7	Solarisation of Phytophthora infected soil in replant situations.	CP Snyman, FC Wehner & JM Kotzé	This work may eliminate the use of expensive fumigation and fungicides. 3 Temperature recorders (R600) are however, essential for this research.
H1	Evaluation of calcium carriers to improve Ca status in leaves and fruit.	AWG Rowell	This experiment was started 4 years ago in an established orchard. Leaf and fruit analysis will be done this year.
H2	Screening of fungicides for diseases of avocado fruit.	AWG Rowell	Fungicides are to be screened and combined in an effort to find effective spray programmes.
H3	Evaluation of effect of plastic materials for storage of avocados.	BJ Durand	Work done by Mr Durand in Israel showed that polyethylene coverings of fruit are worth evaluating.
N1	Sun blotch disease.	JV da Graca	This investigation involves the improvement of a rapid technique for indexing; yield studies and the possible use of S.B. for tree stunting.
N2	Radio-immuno assay of plant hormones.	BN Wolstenholme	Good progress has been made during the past year, but work is of basic nature and practical results will take time.
N3	(a) Root studies and root/shoot growth ratio. (b) Fruit growth and maturity in Natal region.	BN Wolstenholme	This work is of both basic and practical nature. Avocados ripen much later in Natal than in Transvaal which may influence our marketing pattern.
R1	The effect of calcium on pulp spot and lead discolouration.	AHP Engelbrecht	These investigations will be done in colaboration with Westfalia.
R2	The effect of calcium and other nutrients on internal quality of avocados.	E van Rensburg	This work will be carried out under the guidance of Prof Engelbrecht.
S1	Production of rootstocks negatively.	AA Ernst	Work has reached an advanced stage and will be written up as a doctoral thesis.
PP1	The relationship between internal fruit quality and respiration.	PJ Robbertse and JGC Small	Respiration and the function of mitochondria on pulpspot and lead discolouration will be investigated.