

THE RESEARCH SCENE OF 1983/84

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The drought of the past two years strongly influenced the research programme. However, the Management Committee of SAAGA decided that research should get top priority. This is a wise decision because once a project has been started it can not be switched on and off.

If one looks through the seven Yearbooks that appeared, since 1977, there is no doubt that we have come a long way and have made excellent progress. In this volume there is ample evidence that we are beginning to get on top of the Phytophthora Root Rot problem. In fact, as far as chemical control is concerned we have made remarkable progress and this is recognized internationally. However, the Root Rot problem is not solved. We have learnt to live with it — at a cost. Research in this field must continue.

Results of research on tissue culture progressed well and in this field we are probably ahead of time. It is almost a case of a solution looking for a problem. With the introduction of the Avocado Improvement Scheme, tissue culture will play an important role. The Improvement Scheme is solidly backed by research.

In this year's programme great emphasis is placed on those factors that adversely influence fruit physiology, which result in pulp spot, grey pulp and vascular discolouration. These are extremely complex problems and call for team work and co-ordination. We will never solve these disorders as long as Fuerte is our most important export cultivar, but there are some extremely encouraging results as can be seen in this issue.

| Project | Description | Priority | Persons responsible | Comments |
|---------|---|----------|---|---|
| W 1 | Evaluation of spray programmes for the control of <i>Cercospora</i> spot, Stem-end rot and Post-harvest diseases. | A | JM Darvas | Only copper oxychloride is registered, but it leaves unsightly residues. It also has limitations in its spectrum. Evaluations of new materials essential. Recommend co-operation with chemical companies. |
| W 2 | Post-harvest diseases and their control. | A | JM Darvas | New fungicides, viz prochloraz, bitertanol, etaconazole etc to be screened. Methods of application, viz ULV, dipping etc to be evaluated. |
| W 3 | Chemical control of Root Rot. | A | JM Darvas | This work remains top priority. Alternative chemicals and methods to be evaluated. |
| W 4 | Ecological studies of Root Rot pathogens. | B | JM Darvas | This work should be continued in co-operation with the University of Pretoria. Work also involves rootstock susceptibility. |
| W 5 | Zinc nutrition of avocado trees. | B | Westfalia Staff | Soil, leaf and stem treatments with different Zn-carriers. Indications are that stem injections are effective. |
| W 6 | Calcium sprays and their effect on internal fruit quality. | A | Westfalia Staff & Prof Engelbrecht | Long term experiment. Recommend co-operation with Prof Engelbrecht. |
| W 7 | Effect of soil and leaf nutrition and nutrient status on internal fruit quality. | B | Westfalia Staff | Long term project that will continue for 5 years. |
| W 8 | Calcium applications and rootstock evaluation against Root Rot. | B | JM Darvas & M Slabbert | Rootstock evaluation is not carried out elsewhere. Ca ⁺⁺ has a suppressive effect on root rot. |
| W 9 | Rootstock evaluations Ditto W8. | — | — | At this stage the emphasis is on <i>Phytophthora</i> resistance. |
| W 10 | Leaf/fruit ratio and effect on internal fruit quality, fruit drop and ring neck. | A | M Slabbert | Chemical analysis of leaves and fruit to be undertaken. Information could be of great importance to fruit physiology. |
| W 11 | Effect of cooling on internal fruit quality. | A | M Slabbert | Work should be expanded, in co-operation with PPECB, Railways and other interested parties to apply research results. |
| W 12 | Controlled atmosphere and internal fruit quality. | A | Westfalia Staff | Promising results of previous years are to be introduced in practice. Pulp spot and grey pulp are both inhibited by CA. |
| P 1 | Pre-harvest sprays for control of fruit diseases. | B | JM Kotzé & N Labuschagne | This work continues in collaboration with Hall & Sons & chemical companies. |
| P 2 | Rooting and proliferation of budwood and rootstocks. | A | Mrs DD Nel & JM Kotzé | Project essential for future avocado improvement scheme. |
| P 6 | Bacterial Canker of avocados. | C | L Korsten & JM Kotzé | This project will be terminated in 1984. This is a new disease and potentially dangerous, especially on Hass. |
| P 7 | Solarisation of <i>Phytophthora</i> -infected soils. | B | FC Wehner & JM Kotzé | Very promising control obtained in other crops. This technique is evaluated in old avocado soils and in existing orchards. |
| N 1 | Sunblotch and virus diseases. | B | JV da Graca | Excellent progress in the past. Continued research very important. This is an important facet of the Avocado Improvement Scheme. |
| N 2 | Radio-immuno essay of plant hormones. | D | BN Wolstenholme & GW Witney | A basic scientific study which might have significant future applications. |
| N 3 | (a) Root studies and root/shoot growth ratio. (b) Fruit growth & maturity. | C C | BN Wolstenholme | This project is of a basic and practical nature and is the first of its kind. Fruit maturity is difficult to determine. A better yardstick than oil content has to be developed to determine maturity. |
| N 4 | Electromicroscopic study of resistance to <i>Phytophthora</i> . | C | F Rijkenberg | New project with long term objective that will continue for 5 years. However, developments on the international scene are closely watched. |
| L 1 | Temperature requirements for avocados in storage. | A | JHE Smith | This work should be carried out in conjunction with Westfalia. |
| L 2 | Evaluation of culling factors on export avocados. | C | JHE Smith | Continuation of a old project which reveals the status of disease disorders in the Tzaneen area. |
| L 3 | Oil determinations on fruit throughout the season. | C | JHE Smith | Maturity of fruit and readiness for picking and export are not sorted out and additional information is needed. |
| L 4 | Investigation into the use of bulk bins. | C | JHE Smith | The feasibility of using bulk bins for avocados will be evaluated. |
| R 1 | The role of calcium in the development of fruit disorders. | B | AHP Engelbrecht | This is a basic approach, but has already revealed useful information. Some of the calcium carriers are far more effective than others. |
| S 1 | Vegetative production of rootstocks. | D | AA Ernst | Mr Ernst is a farmer/student, hoping to complete his doctorate soon. |
| H 2 | Screening of fungicides against fruit diseases. | B | BJ Durand | Experiment to be conducted in collaboration with the University of Pretoria. |
| H 3 | Effect of different plastic materials for storage of avocados. | C | BJ Durand | Continuation of work done over previous two seasons. |
| U N | Liming of acid soils under avocado trees. | B | Prof P Fouche & Westfalia | Different levels of application using different Ca ⁺⁺ carriers and two different rootstocks. Experiment to be carried out at Westfalia. |
| SA 1 | Investigation on temperature effects in fruit physiology. | A | GG Burelli in co-operation with all big producers and export concerns | Many years of research work had been done by various interested parties. This project's objective is to screen available information for practical implementation. |
| SA 2 | Evaluation of the "Quick-ripe" avocado ripening unit. | B | GG Burelli in co-operation with Westfalia and CSFRI | A ripening unit will be imported from California with the objective of evaluating it in order to improve marketing strategy. |
| SA 3 | SAAGA trials | D | C Partridge | Two commercial trials on irrigation and fertilization are supervised by Colin Partridge. |