South African Avocado Growers' Association Yearbook 1987. 10:5-8
Proceedings of the First World Avocado Congress

Opening Address

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INTRODUCTION

Mr Chairman, distinguished delegates and accompanying persons, it is indeed a great privilege, honour and pleasure to make some opening remarks at this, the first World Avocado Congress. As President of the CSIR, I also wish to extend a special word of welcome to you here at the CSIR, in Pretoria and in South Africa. I hope that you will find your stay enlightening and fruitful. I studied your programme and noticed that every conceivable aspect of the research, production and marketing of avocados worldwide will be covered, with the objective of gathering specialists to pool their knowledge. Hence, in my opening address, I shall not even attempt to venture into the fields amply covered by the many experts present. My direct contact with the avocado industry stems from my association with the Hans Merensky Foundation and its successful ventures in avocado farming at Westfalia and with new vistas emerging at Everdon Estate, Natal.

South Africa presents a challenge to the keenest minds - in the sphere of politics, farming, industry and many others.

By way of introduction I wish to briefly analyse how these challenges and opportunities provided the stimulus for the development of the required scientific and technological knowledge.

During the preparations to arrange your visit to the southern tip of the African continent to attend this conference you may have seen one of those picturesque

posters with the subtitle 'South Africa - a world in one country'. I would like to elaborate on this statement.

A detailed study of South Africa's geological history by our geologists has provided us with a dramatic account of the past 200 million years. During this formative period of the earth's history, Africa became separated, from its neighbours, which together formed the once great Gondwanaland. Africa's separation from South America, Antarctica, India and Madagascar was accompanied by violent upheavals, earthquakes, volcanic eruptions, mountain building and subsidences. The land masses drifted and indeed today are still drifting apart slowly, moved by the forces released as a result of volcanic activity along the mid-Atlantic and other sub-oceanic ridges. The modern Southern African landmass reflects its volcanic history with the spectacular diamondiferous magma pipes, the basalts and the massive volume of magma in the Karoo intrusions. Following the cooling and before the separation of the land masses, many types of flora and fauna evolved and flourished. The southern hemisphere Gondwana flora, well represented in the South African fossil beds, were unusual in that the main tree species were deciduous. Over the years, the annual leaf fall of the Glossopteris gave rise to our massive coal deposits, putting us in the enviable position as a major exporter of coal to the rest of the world and of being able to generate 75 per cent of our energy requirements from coal.

Not all the trees were changed to coal and excellent examples of petrified trunks bear witness of times long past. Deductions are made about the plant and animal life, based on the study of fossilised remains of how extinct taxa reveal a saga of successes and failures with the emergence and decline of many varied forms of life.

The South Africa of today has a high inland plateau and a narrow coastal strip, with the warm Mozambique current flowing southwards along the east coast and the cold Benguela current from the Antarctic flowing northwards up the west coast. The latter has a rich and varied marine life.

South Africa is indeed a world in one country! In comparison to most other geographically small countries, which have a largely homogenous ecology, South Africa has widely differing regions each with their own climatic conditions, and although in 1977 more than half of South Africa was classified by the United Nations as potential desert area, widely different regions may be identified:

the oldest and driest desert in the world;
the vast low rainfall area, known as the Karoo, which is spreading rapidly as a result of over-exploitation;
the winter rainfall region in the Western Cape with its high mountain flora and unique 'fynbos' or natural scrub vegetation;
the grasslands which cover vast areas of the high plateau in the interior;
the frost-free areas with subtropical forests and a climate suitable for growing subtropical fruit;
the Bushveld region in which the famous Kruger National Park is situated;
rugged mountainous terrain;
evergreen forests.

The list is by no means complete, but all these ecosystems require expanded research efforts.

Scientific research was stimulated about 150 years ago by the problems encountered in organised agricultural activities. Previously uncultivated land was farmed and domestic animals were introduced into new environments and therefore sometimes exposed to toxic plants. Progress in farming methods was rapid, and with the discovery of diamonds in 1866 and gold in 1886, the stage was set for the emergence of South Africa as an important industrial nation, with a successful farming community, which in the recent spell of dry seasons experienced extensive hardships. What has been achieved was largely based on knowledge generated in Europe and North America, which enterprising individuals adapted and applied to the South African situation; above all, there was great scientific endeavour in those areas in which South Africa, owing to local requirements, had to pioneer new developments. This is still the basic pattern.

So 200 million years ago our close neighbours started to move away. Today we again experience a situation, where due to political events the South African scientific community is becoming increasingly estranged from their colleagues overseas. This is indeed alarming. Allow me to point out that Africa south of the Sahara is confronted by major issues, which can only be solved if science and technology fulfil their proper roles. Here one should make mention of the need to improve the standard of living, to reduce the birth rate, to accelerate development towards a brighter future and greater prosperity, to cope with enormous ecological problems such as deforestation, desert encroachment, and overgrazing; to realise Africa's enormous energy potential, to train the people of Africa for a more industrialised society, etc.

Allow me in this regard to make brief reference to the status of research and development (R&D) in Africa, particularly in view of the enormous challenges confronting this continent, frequently of an Africa-specific nature. First of all I should point out that South Africa's contribution to the world's R&D effort amounts to 0,32 per cent. However, according to the UNESCO Statistical Yearbook, the total R&D contribution from Africa amounts to 0,56 per cent. Hence, South Africa's contribution to Africa's R&D effort is roughly 60 per cent.

The long-term prospects for training scientists and engineers in sufficient numbers to cope with the demands of Africa, is discouraging. Over the years a great indebtedness arose to particularly Europe and the United States for the opportunities given to South African scientists to study abroad and gain information for application and innovative steps here in the RSA on their return, and for the guidance that we have received from world authorities who have visited us from time to time, some of whom are present here today.

Be that as it may, South Africa has a commitment to the future of Southern Africa, and for years to come the African continent will require assistance from the technical competence of the West.

This brings me to this international congress!

THE RUN-IN TO THIS CONGRESS

Historical investigations showed that the avocado was enjoyed by the Aztecs. Western countries were introduced to the avocado in 1519 when Cortez, as a soldier in

Mexico, became familiarised with this exceptional fruit. In 1526 the historian Oviedo described the avocado as follows: "In the centre of the fruit is a seed like a peeled chestnut. And between this and the rind is the part which is eaten, which is abundant, and is a paste similar to butter and of very good taste".

At the turn of this century California played a pivotal role in the development of the avocado industry and also provided a major stimulus to the industry in many countries, such as Israel, Australia, Spain, South Africa, and others. The required scientific and technological knowledge was established and in 1976 an International Avocado Congress was staged in Miami. At this congress the research leaders in this specific area of endeavour presented papers in their field of expertise, which provided a major stimulus to the upcoming generation. I can testify to the challenge extended by this conference to the relevant South African community to bring our own research and production effort on par with, for example, California and Israel.

Since this first congress, South African researchers made major strides in eliminating our backlog and attaining prominence in the avocado world of today: Major credit should go to the South African Avocado Growers' Association for fostering a co-ordinated research effort under the leadership of Professor JM Kotze of the University of Pretoria. Through this effort, universities, the Department of Agriculture and private enterprise all collaborated to solve the most urgent problems.

I therefore have no doubt as to the necessity for this World Avocado Congress after eleven years. We are justifiably proud that this important congress is hosted in South Africa. My Council's Conference Secretariat is deeply involved in the arrangements for many international conferences. It is our experience that a high level of national involvement in the area addressed by a particular conference is a prerequisite for its success. This criterion, I believe, is amply met with regard to this World Avocado Congress.

THE SOUTH AFRICAN AVOCADO INDUSTRY

For many years the South African fruit industry has been in the privileged position of being practically the sole supplier of fresh fruit to Europe in the off-season. Due to low production costs the South African fruit grower could supply fruit to these markets at very competitive prices, despite the long distances fruit had to be shipped.

During recent years, it has become increasingly apparent that profit margins are being eroded by increasing production costs, inflation, and increased competition from countries in the southern hemisphere. This provided a stimulus to the adoption of more efficient farming practices and the growing of cultivars capable of producing high yields of superior quality fruit (WP Burger, SA Avocado Growers' Association Yearbook, Vol 8, 17, 1985).

Avocados are produced successfully in a few localities in South Africa, viz Letaba/Tzaneen (51 per cent, 11 056 tonnes), Louis Trichardt (21 per cent; 4721 tonnes), Hazyview/Nelspruit (23 per cent; 5 127 tonnes), Natal (4 per cent; 762 tonnes) and other localities (1 per cent; 64 tonnes) (Figure 1).

Be that as it may, and despite seasonal fluctuations it is a growing industry with production levels for export (Figure 2) rising from 6112 tonnes in 1976 to an estimated 21 728 tonnes in 1987.

The avocado industry is small in comparison with other branches of agriculture. As an indication one could refer to the export figures in cubic metres. In this regard the figures for 1986 were 801 985 cubic metres for citrus, 801 445 cubic metres for deciduous fruit, 3 984 cubic metres for pineapples and 34 820 cubic metres for avocados (Figure 3). Although still small in comparison with other branches of agriculture, the avocado industry has every reason to be proud of what it has already achieved.

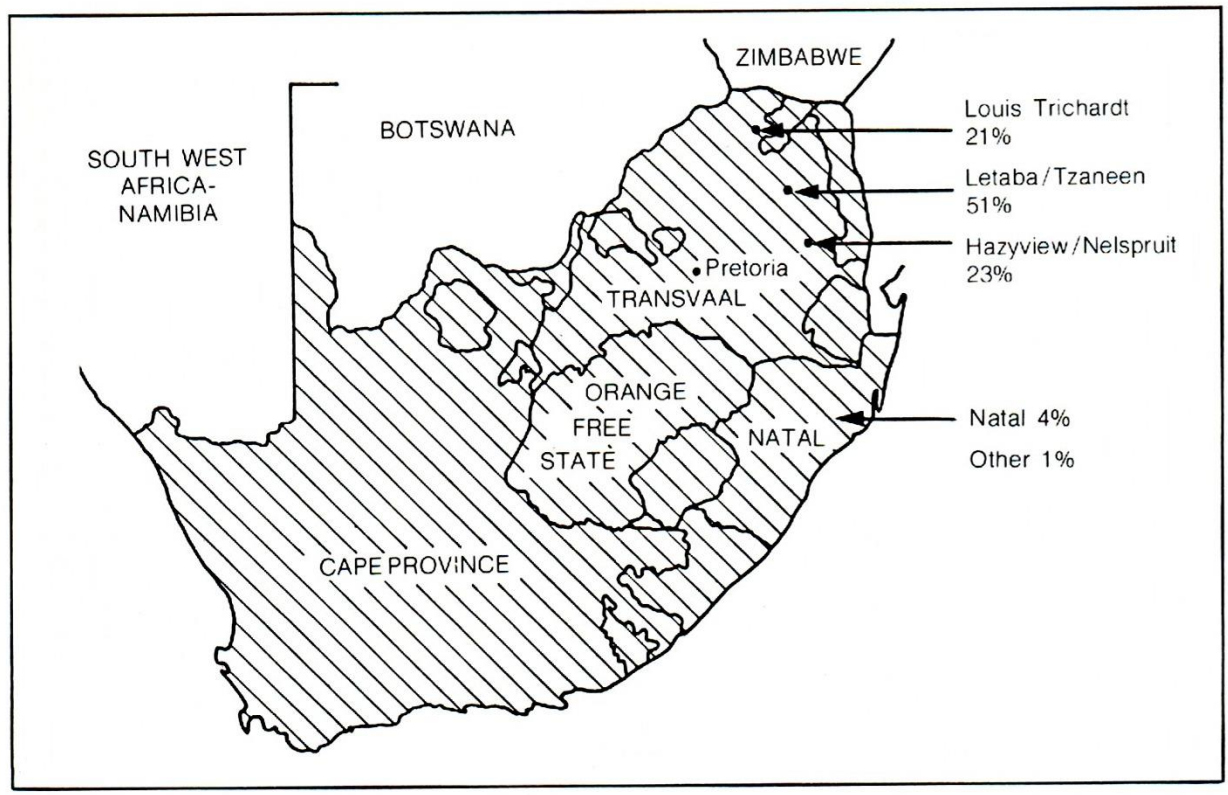

Fig 1 Avocado production areas 1986.

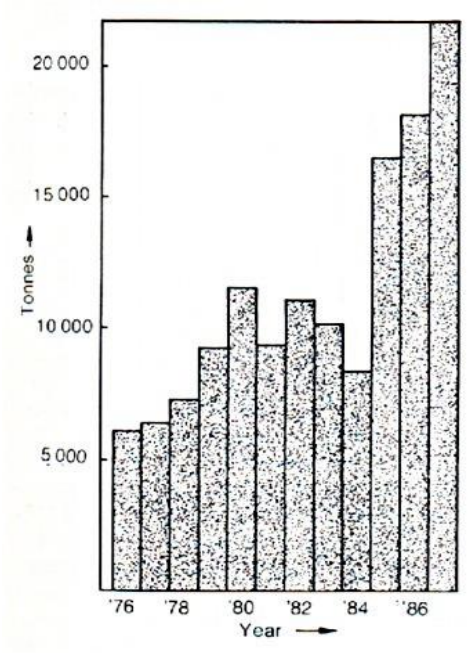

Figure 2. Avocado production as reflected by total exports.

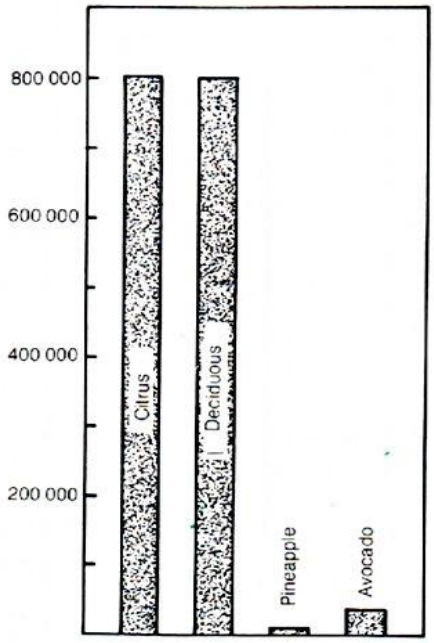

Figure 3. Fruit export figures in cubic metres 1986.

Over the past decade the avocado industry made greater progress than any other subtropical crop in the RSA, according to Dr AJ Heyns.

Ten years ago quick answers were needed for numerous problems in the export chain up to the point of marketing. At times the entire shipment arrived overseas in a soft condition with most of the fruit showing internal breakdown due to grey pulp and pulp spot. Fruit decay was rife at times and some of the fruit from South Africa on the overseas markets was no advertisement to the industry and hence damaging to all avocado producing countries. Many of the problems were specific to South Africa. We had to solve the problems. More than 80 problems of a technical nature were identified of which 22 per cent were related to Phytophthora and 32 per cent to post-harvest disorders. Phytophthora root rot was literally killing the industry, with over 80 per cent of the trees infected and dying.

Overseas authorities left little doubt that, in particular, with regard to avocado root rot, South Africa will have to solve its own problems. Two significant developments decided the fate of avocado root rot in South Africa. The first when Westfalia took the lead in establishing a Phytophthora-free nursery and secondly, when they appointed JM Darvas as plant pathologist. In 1978 JM Davas, JM Kotze and JC Toerien made known preliminary results on chemical control of root rot. Dr Darvas furthermore took the lead in developing an adapted stem injection method, which today is standard practice, resulting in remarkable recovery of infected trees. On Phytophthora control the best is yet to come and the future looks exciting (JM Kotze, SA Avocado Growers' Association Yearbook, Vol 9, 5, 1986).

Major strides have been made in the improvement of fruit quality on overseas markets. This is a multi-faceted problem requiring a multi-disciplinary approach and is a project of the highest priority. Many other problems remain to be solved in this dynamic

industry, of which selection and breeding should receive enhanced attention. Resistant rootstocks against root diseases are needed. To quote Professor JM Kotze:

"The average production of the industry is below five tonnes per hectare but the potential is over 30 tonnes. The rootstocks from overseas need to be carefully screened for disease resistance and horticultural characteristics under local conditions. We need a master plan and international co-operation and exchange of breeding materials."

This brings me back to this World Avocado Congress. It is my information that a very good spirit prevails as far as international co-operation is concerned, regarding such common problems as Phytophthora, increased yields and the cultivation of new cultivars and rootstocks. I sincerely hope that this congress, with representatives from thirteen countries, will strengthen existing ties, establish new ones and serve to generate new and exciting ideas for the future of the industry generally. This I regard as of major importance because without a solution to our root rot problem, avocado growing would have become uneconomical by now, the improvement, in quality of our fruit, sea exports would have presented a problem, and without the many other research contributions, we would not have had a healthy and prosperous avocado industry!

CONCLUDING REMARKS

The decision to hold this congress in South Africa was taken a considerable time ago. Since then international events created problems both for the organisers and the delegates. It goes without saying that politics has played its fair share in the difficulties that the organisers have experienced at a late stage.

To all delegates may I say that I hope you will enjoy this congress and find it of technical value. A full social programme has been arranged and will, I am sure, provide welcome breaks between the technical sessions. Finally, to our overseas visitors, I hope that it will not be a case of all work and no play, and that you will have the opportunity to enjoy some of the magnificent beauty South Africa has to offer. We thank you for your presence. We shall continually strive to build bridges to scientists all over the world. With these few words, ladies and gentlemen, it gives me great pleasure to declare this First World Avocado Congress open.