



Know-how for Horticulture™

**Potato Industry
Workshop and study
tour to South Africa**

John Rich
Tasmanian Farmers and
Graziers Association

Project Number: PT02008

PT02008

This report is published by Horticulture Australia Ltd to pass on information concerning horticultural research and development undertaken for the potato industry.

The research contained in this report was funded by Horticulture Australia Ltd with the financial support of AgTour Australia Pty Ltd.

All expressions of opinion are not to be regarded as expressing the opinion of Horticulture Australia Ltd or any authority of the Australian Government.

The Company and the Australian Government accept no responsibility for any of the opinions or the accuracy of the information contained in this report and readers should rely upon their own enquiries in making decisions concerning their own interests.

ISBN 0 7341 0564 9

Published and distributed by:
Horticultural Australia Ltd
Level 1
50 Carrington Street
Sydney NSW 2000
Telephone: (02) 8295 2300
Fax: (02) 8295 2399
E-Mail: horticulture@horticulture.com.au

© Copyright 2003



**FINAL REPORT ON THE FIRST POTATO INDUSTRY
WORKSHOP AND PRE-TOUR TO SOUTH AFRICA
(PT02008)**

12-27 SEPTEMBER, 2002

John Rich –November 2002

**[Includes: Final Report (PT02005) at the end on “First
Southern Hemisphere Potato Workshop, South Africa,
study tour and paper” – by Dr Chris Williams].**

**HAL PROJECTS:
PT02008
AND
PT02005**



TABLE OF CONTENTS

Introduction	3
Media Summary	4
Tour Participants	5
Potatoes South Africa – A Producer Organisation.....	6
The South African Potato Industry.....	10
South Africa Potatoes – Varieties Grown	13
South African Seed Potato Industry	14
The Potato Processing Industry in South Africa	17
Seed Potato Certification Scheme in South Africa	19
Potato Seed Production Pty Ltd, Lydenburg.....	21
Variety Development and Commercialisation in South Africa.....	22
Potato Laboratory Services, Pretoria.....	24
Research Management in South Africa.....	25
AL3 Boerdery, Dendron.....	27
Agriden(Pty) Ltd	29
Freshmark, Pretoria	30
Johannesburg Fresh Produce Market	31
Pretoria Fresh Produce Market.....	34
Prokon	35
Emerging Farmers	36
McCain Foods (SA) (Pty) Ltd, Delmas.....	38
Germplasm	40
Inflation	41
The Brazilian Potato Industry.....	42
Conference Considerations – For The Future	44
Outcomes/Recommendations.....	45
Program	47
Itinerary	49
Acknowledgements	50
South Africa Contacts	51
Final Report for PT02005 – Dr Chris Williams.....	56

INTRODUCTION

PT 02008

John Rich
Tasmanian Farmers & Graziers Association
P.O. Box 193, Launceston, Tasmania, 7250.
Telephone: (03) 6331 6377
Facsimile: (03) 6331 4344
Email: john_rich@bigpond.com

PT 02005

Dr. Chris Williams
South Australian Research and Development Institute (SARDI)
GPO Box 397, Adelaide, South Australia, 5001.
Telephone:(08) 8303 9567
Facsimile:(08) 8303 9424
Email:williams.chrism@saugov.sa.gov.au

Purpose of the report:

The project PT02008 supports the attendance of 8 growers, 1 consultant, plus John Rich, (tour leader) and project PT02005 supports Dr Williams (Australian Researcher) to the first Southern Hemisphere Potato Workshop held in South Africa in September, 2002 and a pre-tour of potato growing areas in South Africa that were in production at that time. Visits were also made to research establishments, seed producing facilities, processing factory and fresh markets. Mr Brian Denney, Mr John Rich and Dr Chris Williams were invited speakers at the Workshop. Mr John Marshall, New Zealand Researcher also joined the tour and was an invited speaker.

Sources of funds:

We acknowledge with thanks, the financial support from Horticulture Australia Ltd and AgTour Australia Pty Ltd. The authors would like to thank the Tasmanian Farmers & Graziers Association and the South Australian Research and Development Institute for funding the respective author's salaries during the study tour.

Date of report:

November, 2002.

Disclaimer:

Any recommendations contained in this publication do not necessarily represent current Horticulture Australia Limited policy. No person should act on the basis of the contents of this publication, whether as to matters of fact or opinion or other content, without first obtaining specific, independent professional advice in respect of the matters set out in this publication.

MEDIA SUMMARY:

PROJECT PT02008

The project supported the attendance of ten participants, (eight growers, one agribusiness consultant and John Rich as Tour Leader) to attend the first Southern Hemisphere Potato Workshop and Study Tour of South Africa from the 12th to the 27th September, 2002.

The workshop held in Lambert's Bay, from the 23rd to 25th September, 2002, brought together potato growers, potato growers organisation representatives, processors, marketers and researchers from countries which included, Australia, New Zealand, Brazil, Argentina, Uruguay and South Africa.

This was considered to be an important event, intended to establish communication linkages and facilitate on-going exchange of information of mutual interest between representatives from the participating countries.

Prior to the workshop the group toured potato growing areas, visiting farms in the area north of Pretoria. Visits were made to the Pretoria Fresh Produce Market, to a major distributor of fresh produce, Freshmark, near Pretoria, to McCain foods at Delmas and to the South African Foundation Seed production unit near Lydenburg.

Visits were also made to Potato Laboratory Services and to the South African research and breeding facility at ARC-Roodeplaat.

As far as is known, nothing of this type of Conference and Tour has ever been attempted in the past. The conference and tour were both deemed to have been successful and it is planned for similar events to be conducted in the future.

The group gained an insight into the South African potato industry. This is an industry which is a little larger in tonnage production than Australia, but with many and different problems and challenges. The report has attempted to highlight some of those challenges and at the same time, provide information about the production of potatoes and management of the South African industry.

It is expected that industry representatives will build on the contacts made and a communication network amongst the Southern Hemisphere potato industry will be developed.

There may be opportunities for Southern Hemisphere potato researchers and breeders to work co-operatively in the future.

This Media Summary and the Report has been prepared by John Rich, with input and support from all of the tour participants. Special appreciation is given to Chris Williams and John Marshall for their written contributions to the report.

SOUTH AFRICA TOUR PARTICIPANTS

Gavin and Suzanne Clark
Brian and Valda Denney
Ted and Anne Forsyth
Lyle and Valmai Grayson
Aaron and Liz Haby
Andrew Hayton
Gary and Zelda Jamieson
John Marshall
Anthony and Judith Patterson
John and Margaret Rich
David and Bev Tyson
Chris Williams

Deloraine, Tasmania
Glenaire, Victoria
Ringarooma, Tasmania
Warwick, Queensland
Mannum, South Australia
Murray Bridge, South Australia
Gatton, Queensland
Christchurch, New Zealand
Leongatha, Victoria
Launceston, Tasmania
Grantham, Queensland
Adelaide, South Australia

POTATOES SOUTH AFRICA – A PRODUCER ORGANISATION

Presented by: Dr. D J (Niel) Theron

In 1993, potato producers arranged for the Government to revoke the Statutory Potato Scheme and thereby disband the Potato Board. An umbrella organisation called the Potato Producer's Organisation was formed to serve the South African Potato Industry.

This organisation set out to provide an all-encompassing service to the industry with the formation of the following companies:

Potato Certification Services to operate the South African Seed Potato Certification Scheme,

Four potato laboratories (private companies) established in the seed potato production areas primarily responsible for the determination of the disease status of and variety authenticity of seed potatoes,

Prokon to render a quality assurance service for potatoes being sold on fresh produce markets,

Potato Seed Production (Pty) Ltd to produce virus free early generation nucleus seed potatoes,

Naspal Ltd to provide the potato industry with pallets for the transport of pockets between the farms and fresh produce markets.

In 1997, the constitution was changed to accommodate all interest groups and the name of the organisation was altered to **Potatoes South Africa** to reflect its new status. Potatoes South Africa represents the interests of ware, seed and processing potato producers.

The organisation has three core businesses:

- Management of research, including the breeding program.
- Management of a program for market development and product promotion.
- Management of an industry information system as an integral part of industry services.

RESEARCH

The research sector aims to prioritise and determine the industry's requirements. It initiates and evaluates research projects. It also has a role of co-ordination of technology transfer of research results.

Plant protection and agronomic research form an integral part of the research program. Cultivar evaluation of locally developed and imported cultivars is an important aspect of the research strategy. Potatoes South Africa also ensures that the regional needs of the industry also receive attention.

In determining the success of the national research program the following elements are considered:

- The correct identification of research requirements.
- Participation of producers at farm level in the process of identification, prioritising and funding of the program.
- Organisational structure at the producer level to enable producers to participate in the decision making process.
- A strategy for technology transfer.
- Regional working groups to co-ordinate information transfer and to initiate and manage regional programs.
- An administration able to manage the total program at the national level.

The organisation has decided that the management of the South African Potato Breeding program is a core business of Potatoes South Africa and therefore must form part of its research function. The breeding program is currently funded from a levy, but this will be phased out over a period of time through the commercialisation of the program, collecting royalties on the locally bred cultivars.

Potatoes South Africa does not conduct research itself. Projects are contracted to research institutions such as: Agricultural Research Council (ARC), Universities (U), Provincial Departments of Agriculture (PDA), Potato Regional Working groups (WG).

The following programs are currently underway:

- Cultivar breeding and evaluation (ARC)
- Crop and potato quality management (ARC, WG)
- Disease management (ARC, U, WG)
- Integrated pest management (ARC, U, PDA, WG)
- Emerging small scale potato farmer development (ARC, PDA, WG)
- Technology transfer and communication (Potatoes SA, ARC, U, PDA, WG)

MARKET DEVELOPMENT AND PRODUCT PROMOTION

Market development activity has regard for product and packing, place of marketing, price of product plus promotion and advertising.

Potatoes South Africa believes that the fierce competition from opposition products in the market places requires a generic promotion program.

Market development activity has regard to:

- Consumer needs in the industry's pursuit of market related production.
- Continuously identifying and addressing changing consumer needs, consumer patterns and any other factors which impact on the potato producer's marketing scene.
- The existence of a comprehensive marketing plan.
- An administration which can manage the development and execution of the strategy/program for promoting demand and market development.

INDUSTRY INFORMATION SYSTEM

The industry information system of Potatoes South Africa supports and strategically directs the potato industry in its pursuit of market related and sustained production. This system allows producers to align production and marketing arrangements. It has mechanisms which enable the gathering and timely release of production and marketing information necessary for proper decision making.

The elements which determine the success of industry services to the potato producer are:

- The existence of an industry information system
- The existence of a strategy for market related production
- The existence of an organisational structure at producer level, whereby producers can individually or jointly participate in the decision making pertaining to market related strategies and structures.

ORGANISATION FUNDING

A voluntary levy of 12.4 cents (approx. 2.25 Australian cents) per 10 kg pocket of potatoes is collected on potatoes sold through the fresh produce markets and in some instances, on potatoes sold directly to the processing industry.

This levy is comprised of, Research 2.4 cents, Industry Information System 5 cents and Market Development and Product Promotion 5 cents.

Potatoes South Africa has had to address the declining volume of potatoes being sold through the fresh produce markets in recent years and the resultant decline in income for the organisation. This is because of produce being sold direct to major buyers.

In order to correct this situation, Potatoes South Africa proposed the implementation of a statutory levy. The results of a referendum gave an overwhelming support for the continuation of the organisation and the funding by way of a statutory levy. An application is presently before the Government for a statutory levy of 10 cents per 10 kg pocket (approx. 1.82 Aust. cents), or 10 rand (A\$1.82) per tonne. The levy would be collected by the potato pocket manufacturers and potato processors.

Retail buyers and processors, when direct purchasing product in bulk, would be required to collect the levy. Certified seed would also be levied.

The Government will not allow the statutory levy funds to be used for promotion and market development. Alternative funding resources will need to be found if this is to continue as a core business of the organisation.

If the application for a statutory levy is successful, then the funds from derived income will be split as follows:

- basic as well as applied research, including cultivar development and evaluation, plus the dissemination of all relevant technical information (3.75 cents per 10kg pocket) (approx. .68 of one Aust. cent); and

- the gathering, processing, analysing and packaging of industry related information, including market statistics, and the dissemination thereof. Creating market access for small and medium scale emerging farmers, including development projects, and the development of markets within Africa for South African potatoes (6.25 cents per 10 kg pocket) (approx. 1.14 Aust. cents).

At the time of preparing this report (October 2002) the outcome of the application to Government for a statutory levy was not known.

ORGANISATIONAL STRUCTURE OF POTATOES SOUTH AFRICA

The National Congress comprises a maximum of 100 delegates and meets on a bi-annual basis. An executive of 18 is elected at the bi-annual meeting of the Congress and is the highest authority when Congress is not in session. The 18 members comprise the Chairs of the 15 production areas, one seed grower from the Seed Potato Grower's Forum, one processor representative from the Processor's Forum and the Chairperson elected by the Congress.

The Executive meets twice each year. Between meetings of the Executive, the affairs of the organisation are controlled by a Management Committee appointed from the members of the Executive. This group comprises 6 members representing 6 groupings of the 15 production regions. Each of the 6 regional groupings are serviced by a salaried Regional Manager.

Potatoes South Africa would appear to be a highly professional organisation, with dedicated staff, representing the best interests of potato producers. It is to be hoped that the organisation can satisfactorily resolve the current funding difficulties and continue to pay an important role for South Africa's potato growers.

EMERGING SMALL SCALE FARMERS

The reference in this report, to emerging small scale black farmers, is an important component of the development and progress of the "new" South Africa. There is a firm desire, and need, to encourage previously disadvantaged sectors of the community to become involved in and be trained to become producers of fruit and vegetables.

Potatoes South Africa has embraced this plan and is actively working to assist emerging small scale farmers through research programs.

Some extracts from a Landbank/ARC publication, designed to inform emerging farmers have been included in this report, for information.

THE SOUTH AFRICAN POTATO INDUSTRY:

Presented by: Dr. D J (Niel) Theron]

Against the world average rainfall of 860 mm, South Africa has an average of 450 mm. The country is characterised by the occurrence of regular and severe droughts, while at other times the country can experience dramatic flooding. Despite these unfavourable conditions, South Africa can satisfactorily produce a range of agricultural crops.

Potatoes are produced throughout the year utilising 16 production regions. There are many differences in soil, rainfall, temperatures, pests and diseases and the farming community has learned to cope with and adapt to these adverse conditions. During 2001, 54,000 hectares were planted for potato production.

The potato industry is labour intensive with approximately 65,000 farm workers being engaged. The rapid urbanisation of South Africa may have a negative effect on the availability of farm labour in the future, however, the expected alteration to the eating habits of urban dwellers may result in higher consumption of potatoes.

The potato processing industry provides employment for approximately 3,500 people. This industry has doubled in size over the past decade.

The fresh produce markets potato sectors employ over 1,000 people. The potato share, in value of sales in the fresh produce markets, is around 26% making it the biggest single commodity sold through the markets.

South Africa is stated to rank about 31st in the world's potato producing countries, producing about 0.5%. Countries such as China (15%), Poland (9%), India 8% and the USA (8%), collectively produce around half of the world potato crop.

It is interesting to note that the African continent, produces approximately 11.5 million tonnes of potatoes from an annual planting of around one million hectares. South Africa plants 5% of the hectares, but produces 14% of the total crop.

In recent years there has been a decline in the number of commercial farms and the number of hectares planted. This has been offset by an overall increase in yields. In 1991 the average yield is quoted to have been 21.18 tonnes per hectare. The average yield in 2001 is stated to have been 29.78 tonnes per hectare. Potatoes have a four year rotation with maize and wheat.

One of the reasons for the increase in yields has been the shift from dry land production to the adoption and practice of irrigation farming. Dryland farming now accounts for only 26% of the area under cultivation.

The use of better quality seed, 82% is certified, particularly since 1995, has been named as another reason for the improvement in crop yield.

The third improvement element is the availability and release of new cultivars that are more disease resistant and better suited to the end use, e.g. processing.

Apart from the potato breeding the South African industry has a strong focus on research and the adoption of the outcomes. For instance, work on crop protection and crop management projects has enabled producers to overcome devastating potato diseases and pests.

As with many other parts of the world, the South African crop can be divided into three segments: table/ware, seed and processing (french fries/crisps). There is also a relatively small export component covering table and seed potatoes.

In 2001 the table/ware production was 63.5%, just over 1 million tonnes, seed potatoes were 13%, 208,000 tonnes, processed potatoes were 16.9% 270,00 tonnes. Exports of table and seed totalled 6.6%, 106,000 tonnes.

Total potato production in South Africa for 2001 was 1,602,035 tonnes.

Almost two thirds of the total table/ware potato crop is sold through the 19 fresh produce markets. Between 35% and 40% of those potatoes are purchased by the informal trade sector. Most of the purchases by the informal trade buyers are further sold to vendors in the city centres and towns, giving a major multiplying effect for the trade in potatoes.

The remaining one third of production is utilised either on farm, direct trade, processing or export as detailed below:-

- Direct from farm to the trade = 47.9%
- Direct from the farm for processing = 36.3%
- Direct from the farm for export = 11.8%
- Held on farm for own use or cattle feed = 4.0%

The estimated per capita consumption of potatoes was reported to be around 33.4 kgs in 2001. The per capita consumption in Europe is quoted to be 93.6 kgs and in the USA it is 65.3 kgs. As the demographic trends, population movements (urbanisation) and the economics of the country and it's people alter, it can be expected there will be the potential to significantly lift potato consumption in South Africa.

Fresh produce markets are seen to be a most important element in the supply chain for potatoes. Price determination is one of the main factors because this then sets the levels for transactions outside the fresh produce market system.

Packaging, sizing and grading for fresh potatoes is regulated by the Agricultural Produce Act of 1990. Most potatoes are packed in 10 kg paper pockets. Permission was recently given to trial 7 kg pockets, until the end of 2002. The retail trade packs potatoes in plastic bags and plastic netting.

Potatoes are marketed according to the following sizes:

Large	>200 grams
Medium	>100g to <250g
Small	>50g to <100g
Baby	>5g to <50g

Medium can also be divided into:

Medium	>100g to <170g
Large Medium	>170g to >250g

The grading regulations allow potatoes to be marketed as Class 1, 2 or 3 plus a lower class, depending on the level of defects. The inspection covers the following range of defects:

greening	sprouting	malformations
growth cracks	mechanical damage	abrasions
broken and cut tubers	soiled	insect damage
eelworm damage	rhizoctonia black scurf	common scab
stem end rot/dry rot	internal brown fleck	enlarged lenticels
hollow heart	vascular browning	

It has been noted earlier in this section that the informal trade sector purchases up to 40% of all potatoes sold through the fresh produce markets. The importance of sales through the informal traders has been recognised and determined efforts are being made to bring about effective liaison between this group and the fresh produce market system. Market managements are using monthly meetings with the informal traders to convey information about storage, uses and other potato characteristics to this sector.

It is claimed that the potato industry leads the field with Quality Assurance. A company, Product Control for Agriculture (Prokon), continuously monitors potatoes when they enter the fresh produce markets.

A sample from every consignment of potatoes sold through the fresh produce markets is inspected by Prokon every day. Old stock, unsold from the previous day and new consignments are inspected. Product found to not comply with the industry standards, as prescribed by Government regulation is reclassified.

Funding for this service is derived from a compulsory levy of 3 cents (approx. 005 Aust cents) per 10 kg pocket.

Prokon is now expanding the inspection service to other producer organisations. Products such as onions, tomatoes and garlic will be included in the future. Prokon also tests for specific gravity. This information is provided to processors wanting to purchase from the market.

A little over 100,000 tonnes of table and seed potatoes are exported from South Africa. Whilst the volume is considered to be low, this trade did earn around 177 million rand (A\$32m) during 2001 and is therefore important.

Sales are made to countries such as Namibia, Botswana, Mozambique, Zimbabwe, Lesotho, Swaziland, Angola, Zambia, Mauritius and to the islands in the Indian Ocean.

SOUTH AFRICA POTATOES – VARIETIES GROWN

Source: Presentation by Dr. D J (Niel) Theron

Variety (2001/02)	% of total production of 1.6 million tonnes	
BP-1	39.81	(637,000 tonnes)
Up-to-date	15.96	(255,000 tonnes)
Mondial	10.72	(172,000 tonnes)
Buffelspoort	5.07	(81,000 tonnes)
Vanderplank	3.88	(62,000 tonnes)
Lady Rosetta	3.03	(48,000 tonnes)
Hertha	3.98	(64,000 tonnes)
Fiana	2.24	(36,000 tonnes)
Liseta	1.19	(19,000 tonnes)
Mnandi	0.37	(6,000 tonnes)
Pentland Dell	1.92	(31,000 tonnes)
Darius	2.79	(45,000 tonnes)
Hermes	1.30	(21,000 tonnes)
Ropedi	0.60	(10,000 tonnes)
Other	7.15	(114,000 tonnes)

SOUTH AFRICAN SEED POTATO INDUSTRY

Presented By: Dr Pierre Nortje

South Africa totally depended on imported seed potatoes prior to the Second World War. Most of the seed came from the United Kingdom. Seed potato quality deteriorated due to virus and nematode infections.

A foundation seed farm was established in the mountains near Lydenburg in the early seventies in order to ensure the standard of local seed material was maintained.

During 1984, Elisa kit testing for viruses began. This meant that virus free foundation seed was able to be released to industry by the Potato Board. The multiplication of *in vitro* material (test tube plants) also commenced that year and multiplied in greenhouses. The greenhouse tubers were multiplied three times before being supplied to foundation seed growers who multiplied the material before selling the seed to other seed growers and commercial potato growers.

These decisions and actions formed the basis of the South African Seed Potato Industry and made the country independent of seed imports and avoided the phytosanitary risks involved with imports.

Seed potato certification was controlled by various grower groups until the Potato Producers Organisation (now Potatoes South Africa) was formed in 1993. Seed growers established a company in 1995, called Potato Certification Service (PCS). This company is supported by Government legislation, operates independently of Potatoes South Africa and is managed by a board of directors.

PCS has five regional offices and has a data management system to record and act accordingly when any build up of disease is detected. There are four testing laboratories in the seed production regions. These laboratories test for virus and bacterial diseases.

Problems occurred in 1995 as a result of the build up of seed borne diseases and a new seed program and certification scheme was developed and introduced. The new scheme was promulgated in May 1998 with appropriate legislation. This embraced a strict limited generation concept implying the phasing out of seed potatoes within a prescribed number of generations. This concept requires the compulsory progress of the seed to the next generation after each multiplication. The certification scheme also contains different quality classes within each generation regarding skin diseases. These classes are, Elite, Class 1 and Standard. Only seed confirming to Elite and Class 1 may be utilised for registered seed potato production.

All certified seed potatoes in South Africa originate from pathogen tested *in vitro* plants which are planted in accredited greenhouses where minitubers (GO) are certified. The first field multiplication is certified as G1 with successive generations classified from G1 to G8.

There are currently four *in vitro* facilities and seven greenhouse facilities involved in minituber production. This means there is a greater availability of early generation material and this has led to an increase in the quality of seed potatoes.

Production of GO seed potatoes has increased from 92,000 in 1993 to 3.555 million in 2001/2002, thus providing a secure base to supply the South African industry with early generation seed.

Commercial seed production is carried out in 6 main areas within South Africa. The area planted varies from 7,500 to 10,000 hectares per year. This produces a certified yield between 105,000 and 130,000 tonnes. It is reported that about 15% of potato plantings in South Africa are registered for seed production.

Over 80% of commercial potato plantings are done with certified seed. This indicates the realisation by farmers of the value of certified seed and points to the success of the new scheme and the limited generation concept.

The bulk of certified seed is now comprised of G4 and G5 material, compared to G7, G8 and older material in the past. It is stated that better quality seed has played a part in the increase in yield reported over the past few years.

The local breeding program still provides the bulk of varieties grown. Seed producer initiatives have resulted in the successful introduction of new local and imported varieties to the South African industry. The growth of the french fry industry has also led to additional varieties being introduced. The marketing and promotion of exclusive varieties has provided seed companies with a competitive edge in the market place.

Prior to 1940, varieties such as Up-to-Date, Majestic, King George, Flourball and Arran Chief dominated the market. The outbreak of the Second World War led to extreme shortages of seed and this created a need to develop a local seed breeding program. In 1957, BP1 was released and soon after was followed by several other varieties.

Local varieties which were dominant include, BP1, Buffelspoort and Vanderplank. Whilst these are still important, they are losing ground to local and foreign varieties which are more disease resistant and are suitable for specific marketing objectives.

Established varieties for seed production include the following: Astrid, BP1, Buffelspoort, Hertha, Mnandi, Mondial, Up-to-Date and Vanderplank.

New varieties on the South African market are listed as follows, uses and percentage of seed crop for 2001/2002 is shown in brackets; Aviva (crisps 0.4%), Caren (table 0.4%), Columbus (f/fry 1.5%), Darius (f/fry 2.6%), Fianna (table 2.3%), Hermes (crisps 1.2%), Liseta (table 1.4%), Pentland Dell (f/fry 1.8%), Ronn (table 0.5%), Ropedi (table 0.6%). The total percentage of the seed crop represented by these varieties, amounts to 12.7%.

Seed potatoes are marketed either by the seed growers themselves or by seed potato merchants, co-operatives or agents. Some farming enterprises have formed associations for seed production planning and marketing.

The recommended price of seed potatoes is usually agreed upon by growers of a region before the marketing season for that region commences. In recent years, the price has varied from R33 to R55 per 25 kg unit. This equates to around A\$240/tonne to A\$400/tonne.

It was reported that the present high price of maize has resulted in reduced potato plantings and a subsequent market shortage of table potatoes. Now seed potatoes will be expected to be short because some seed has been diverted to the lucrative table market. The current retail price for table potatoes was reported to be in the range of R35 to R50 per 10 kg pocket. This equates to around A\$640/tonne to A\$910/tonne.

Some seed potato prices are quoted to have soared to R70 or more per 25 kg unit. (Approx. A\$510/tonne)

The industry comment is that prices for table and seed potatoes have been overdue for price increases for some time. It is noted that total seed production (input) costs have risen to R55,000 per hectare (approx. A\$10,000/ha) in several areas.

Growers have been concerned about the lack of organised marketing of seed potatoes and the National Seed Potato Committee of Potatoes South Africa has consulted with industry and encouraged the formation of the Seed Potato Merchants Forum. This Forum has now compiled a Code of Conduct for Merchants. It is now necessary for all Merchants to become accredited. The Forum's objective is to establish a marketing channel and provide an improved marketing service and improved communications within the industry.

THE POTATO PROCESSING INDUSTRY IN SOUTH AFRICA

Presented By: Mr Lefras Olivier

The crisping industry began in 1956 when Simba crisps began production. Frito-Lay took over Simba in 1995 and now dominates the market. Another brand Willards is owned by National Brands. There are several smaller operators.

Frozen french fry production began in 1972 with Table Top and I & J as the major processors. Lamberts Bay foods began production in 1995 and Heinz Frozen Foods started up in 1996. In 2000 McCain Foods purchased I & J and in 2001 they took over the Heinz operation. There are only two major processors at this time, McCain and Lamberts Bay Foods.

Frozen French fry production is stated to be around 120,000 tonnes and crisping production is around 100,000 tonnes. Both sectors have shown steady growth since 1990.

The processing industry notes that the entry of Frito-Lay and McCain in their respective processing fields has led to a major shift towards quality of the end product. Specialised cultivars have been introduced to achieve the higher quality requirements.

It is stated that McCain are producing four times the volume of Lamberts Bay Foods and Frito-Lay has increased the market dominance of Simba. Both McCain and Frito-Lay have set out to successfully “grow the market” for their products.

The grower price, as with most of the other potato processing areas in the world, is of significant interest to growers. There is considerable pressure being placed on the processors in respect to competition from alternative cropping regimes and competition in price from the fresh market.

In more than 80% of the areas in which potatoes are grown, growers have the option of producing maize or wheat. The prices being paid for maize and wheat have almost doubled in the last twelve months. There is an additional benefit in that the risk associated with growing maize and wheat can be hedged with the commodity futures exchange. In addition to this, the fresh market price for potatoes is almost three times the price being paid by processors.

There is very limited, if any, competition from imports of frozen French fries or crisps.

South Africa is a significant exporter of crisps to neighbouring African countries and is virtually the only supplier of French fries.

The major South African cultivars, BP1, Up to Date and van der Plank were the dominant varieties for many years. In recent times, particularly in the crisping industry there has been a move towards specialised cultivars.

The standard cultivar for crisping is Lady Rosetta. Other varieties being grown include, Hertha, Hermes and Fianna.

In the french fry sector, the standard South African varieties like BP1 are being used successfully. There is a strong push by the industry towards cultivars such as Pentland Dell, Shepody and Santana. Multi-purpose cultivars like Hertha and Fianna also have a position. It would seem that most of the processing supply comes from fixed price contracts arranged between the processors and growers. Purchases are made from the fresh market in times of shortage of supply. When this occurs, Prokon provides test results to establish that the potatoes are suitable for processor use. It is suggested that some thought is being given to the possibility of contracting cultivars, volumes and delivery times but linking the actual price to a market index.

Because the fresh market price for potatoes in South Africa is currently so strong, it is predicted that there will need to be a major correction to the price being paid for processing potatoes, both crisps and french fries. This may mean that the growth curve may flatten in the medium term for the processing industry. Further growth will then be determined by the general economic conditions in South Africa and the Southern African region.

SEED POTATO CERTIFICATION SCHEME IN SOUTH AFRICA:

[Observations by Dr Chris Williams, SARDI and Andrew Hayton, Wesfarmers Landmark]

1. The mechanical aspects of the seed potato certification scheme in South Africa are described elsewhere in this report in the section by Dr Pierre Nortje titled: “South African Seed Potato Industry.”
2. Additional observations by Dr C. Williams are listed below:
 - (a) The aim of certification is to certify seed potatoes of which the phytosanitary status, in terms of diseases and pests falls within pre-determined norms and which is true to type.
 - (b) In South Africa within each generation provision is made for 3 classes, which represent the quality of the seed potatoes in terms of tuber disease tolerance levels. These classes are known as Elite, Class 1 and Standard Grade.

Seed potatoes which are certified as Elite and Class 1 of specific generation may be used for seed potato production again and specifically for the production of certain generations (G2). Seed potatoes, which are certified Class 1, may qualify for the Elite class of the following generation.

The second phasing-out is implemented if a presentation is certified as Standard grade. This implies that Standard grade seed potatoes cannot be registered for the production of seed potatoes again. Quality classes are identified by means of stickers of different colours, namely red for Elite and green for Class 1.

The certification process.

The following consecutive processes precede certification:

1. Timely registration of the unit after establishment.
2. Two field inspections to evaluate the occurrence of diseases and variety purity.
3. Sampling with a view to test for viruses and bacterial wilt at laboratories.
4. Tuber inspections for the determination of the phytosanitary status in respect of tuber-borne diseases.
5. Certification of seed potatoes, which is confirmed by means of self-sealing labels.
6. Post-control samples are drawn at the time of tuber inspections for the confirmation of the virus content and variety purity.

Imported material

South Africa only permits the import of mini-tubers from approved countries. The South African Department of Agriculture has the right to remove any plants to quarantine – if they suspect diseases, etc. Approved facilities must be used to grow imported mini-tubers and plant tops may be sampled to test for any pathogen (quarantine services reserve this right).

Certification scheme costs and classes

A computer system is used to store and track all certified seed crops. A registered number is not valid until a unit number/variety plus GPS co-ordinates have been keyed in.

Costs to have certified seed crops inspected are 1,600 Rand/ha (A\$291/ha) for the service. There are moves in progress to sell the certification service to free enterprise. This is expected to occur within 12 months.

Staff from Potatoes South Africa inspected major seed schemes around the world then consulted with local industry leaders to revise and implement the current scheme in 1998. The scheme operates under the Plant Improvement Act (53:1973) with revisions in 1998 (see Anon 1998 in references). Maximum % of different pathogen infected seed potatoes permissible for different generations and seed classes are specified in the 1998 legislation (Anon, 1998). For example, Black Dot (*Colletotrichum coccodes*) and Silver Scurf (*Helminthosporium solani*) have maximum permissible levels for elite, class 1 and standard seed of 0.5, 2.0 and 30.0 % , respectively, for generation (G) G1 to G3 seed and 5, 15 and 30 %, respectively for G4 to G6. Such diseases are assessed by visual inspections of tubers during the post harvest period before self sealing labels are applied. Optional laboratory tests can be conducted for such diseases on a fee for service basis.

POTATO SEED PRODUCTION PTY LTD, LYDENBURG:

Host: Mr Willie Roeloffze, Manager.

(This section prepared by Dr Chris Williams)

This farm was the first farm to produce generation zero (G0) and early generations (to G3) for the South African seed potato scheme. The area of the farm is 400 hectares located some 1,800 metres above sea level, (the highest altitude for a farm producing tubers for the certified seed scheme in South Africa). *A unique advantage for this seed farm is that people are not allowed by law to grow potatoes within 8 km of this farm. They supply locals with all waste material (that is virus free) for eating (free).*

They sow approximately 65 hectares of seed tubers each year after a 6 year rotation with pasture. All potato crops are rain fed with some 800 to 1,600 mm of rain per year. Average seed tuber yields of 30 to 35 t/ha. Current shareholders are Potatoes South Africa, but the farm is currently being sold on tender to free enterprise – provided the buyer signs an undertaking to continue producing Foundation seed at current levels or more.

This farm also produces under contract exclusive varieties as well as open varieties (with no plant breeders rights).

Marie Anne Roeloffze runs the tissue culture unit on the farm. In-vitro plantlets (which have previously been tested for 6 viruses, Erwinias (soft rots) and Bacterial wilt at Roodeplaat Research Institute) are grown in glass bottles on agar and nutrients. Thereafter they are cut between each node in a sterile lamina flow cabinet and multiplied. They produce 240,000 plantlets per year from the laboratory and these are sown in greenhouses to produce 850,000 mini-tubers per year. Three plantings per greenhouse per year are conducted. Harvest of 3.5 mini-tubers per plant (at present the highest multiplication rate in South Africa). They aim for 6 tubers per plantlet in future. *One useful preliminary observation is that when the growth medium pH is reduced from 5.5 to 4.5 at tuber initiation this increased tubers per plant from 4 to 14 in one trial (W. Roeloffze). More research will be conducted on this practice.*

Sawdust sterilised with steam is used as the growth medium. A fertiliser (4:2:4 in NPK) is applied at 16 grams per plot before planting. Plantlets are watered up to 4 times a day (for 1 and 2 minutes) for the first few days after sowing. Then more fertiliser and trace elements are fertigated in with up to 150 mm of water. They try to keep the growing temperature around 24°C by the use of either fan heaters or evaporative coolers in daylight hours.

A unique, simple wire trellis grid system was used to keep the plants upright and well ventilated. Different generations of seed tubers are stored in separate rooms – to minimise contamination of soil borne diseases such as black dot (Collectotrichum sp.) between seed lines.

Industrial vacuum cleaners are used to remove dust (sweeping not used as this tends to spread dust and not remove all visible dust), in the seed storage rooms.

They sow 15 September to 15 October each year for best results in terms of seed crop yield and quality. The soils are Alpine loams of pH 4 (in Calcium chloride) over granite and quartz rock. Eptam (for weed control) and Dursban (to control potato moth) are disced in before sowing seed crops.

VARIETY DEVELOPMENT AND COMMERCIALISATION IN SOUTH AFRICA

Presented by: Mr Chris Kleingeld

During the early years of potato growing, up to the Second World War and just after, potatoes were mainly produced from seed imported from Scotland. This seed was multiplied two or three times and called “first from imports” and “second from imports”, etc.

The quality of seed potatoes deteriorated rapidly from virus infections, particularly leaf roll virus and PVY.

Necessity required the South African industry to develop varieties suited to local conditions. Dr Van der Plank was responsible for the release of BP1, Elsa, Vanderplank, and Buffelspoort.

The diverse climatic conditions in the growing regions make it important to have varieties able to cope with heat and water stress in some areas and unfavourable night temperatures in the cooler production areas.

Potatoes are produced on approximately 54,000 hectares, with an average yield of just under 30 tonnes per hectare. Almost 75% of the crops are grown under irrigation.

BP1, Buffelspoort, Up-to-Date and Vanderplank constitute around 65% of the seed production market. The market share of these cultivars has declined in the last ten years mainly due to BP1’s susceptibility to common scab, reported to be an important disease hampering production in South Africa.

The Dutch variety, Mondial has increased its market share due to high yield and resistance to common scab. Five varieties, Aviva, Caren, Darius, Ropedi and Ronn have been released by ARC-Roodeplaat with exclusive rights have also gained market share.

Locally developed varieties still account for approximately 70% of the potato crop. Potato breeding is conducted by Universities and ARC-Roodeplaat.

The present goal of the ARC-Roodeplaat potato breeding program is to identify and develop improved processing and fresh market varieties adapted to South African growing conditions. In order of importance the objectives of the program are:

1. improvement of yield under short day length conditions
2. improved tolerance of heat and water stress
3. improved tuber quality and keeping quality
4. improved tolerance or resistance to economically important diseases

The commercial variety development program is conducted in three phases:

Phase one is seed multiplication and selection over three years. Clonal selection is based on foliage and tuber characteristics only.

In the second phase the disease and quality characteristics of selected clones are evaluated for three years in replicated trials at three locations, each with different climatic conditions.

The third (Elite) phase of the breeding program, the agronomic, disease and quality characteristics of selected clones are evaluated for three years in replicated trials at 15 different locations covering the various growing regions and the range of climatic conditions in South Africa.

During the second and third phases, in the six years of field evaluation, routine assessment of heat tolerance, drought tolerance, late blight resistance, common scab resistance, dormancy and keeping quality of selected clones, is carried out at Roodeplaat.

Since 1992, nineteen new varieties have been released. The industry was hesitant to take up the new varieties and the Cultivar Committee was formed in 1996 to ensure that the industry had access to new varieties with grower decisions able to be made on non-biased information.

After development of a new variety, the results of the Elite trials are presented to the Cultivar Committee and decisions are made on which varieties should be released to industry. Hesitancy from industry to take up new varieties resulted in a decision to market the varieties exclusively.

The newly released variety is extensively advertised and interested persons are invited to apply for exclusive rights in the form of a sub-licence. If more than one application is received, the variety is auctioned to the highest bidder. The sub-licence holder is granted the exclusive rights to the variety for a period of twenty years, from the date of registration of Plant Breeders Rights.

Royalties are collected through the potato certification scheme on certified seed. The royalties are paid to ARC-Roodeplaat to supplement the funding of the potato breeding program.

It was stated that the scale of potato production in South Africa makes it more and more difficult to have a sustainable potato breeding program. The industry would like to see variety development joint ventures operating in the Southern Hemisphere.

POTATO LABORATORY SERVICES, PRETORIA:

Host: Mr Nico Mienie

The purpose of Potato Laboratory Services is to:

- Test all planting material presented for certification to establish whether it complies with the disease tolerances prescribed by Potato Certification Service (ELISA procedures); [including compulsory tests for 6 viruses and bacterial wilt in each lot of certified seed];
- Determine whether planting material presented for certification is true to type; and
- Provide diagnostic services.

The Laboratory carries out tests on 1,800 samples each month. One sample equals 40 tubers. It is compulsory for seed presented for Certification to be laboratory tested.

Potato Laboratory Services is a private Company, owned and controlled by growers. The Board members are democratically elected from potato growers in South Africa. The Company is required to operate on a full cost recovery basis.

The focal points of the laboratory are:

- Virus testing (PVY, PVX, PVA, PVM, PVS and PLRV);
- Bacterial wilt testing (*Ralstonia solanacearum*);
- Erwinia testing;
- True to type testing; and
- Diagnostic services on request.

There are four testing laboratories located in South Africa. This Pretoria laboratory acts as the controlling laboratory.

Bacterial wilt and virus tests are conducted on samples collected after tops have died or been killed off. Samples can be collected from storage. Virus tests are conducted using sprouted tuber slices. 400 tubers per 2.5 hectares are used for G1 and G2. 200 tubers per 5 hectares are used for G5 and G8.

Bacterial wilt tests are conducted on 4605 tubers in 100 tuber lots.

The group was given a comprehensive tour and explanation of the testing activity at this laboratory.

RESEARCH MANAGEMENT IN SOUTH AFRICA

Presented by: Dr Pierre Nortje

Up to the early nineties, research funding and activity was initiated by the South African Department of Agriculture. During the nineties the Agricultural Research Council (ARC) was formed to manage agricultural research. Potato research was co-ordinated by a team located at Roodeplaats, near Pretoria.

Also during the nineties, Government funding for agricultural research was decreasing. Industries were being required to make an increasing contribution to research funding.

The Industry accepted responsibility for the technological progress of potatoes to enable commercial and emerging farmers to produce competitively. A National Research Plan was prepared following consultation with growers, researchers and agriculturists.

The Plan includes:

- establishing Potato Workgroups in production regions
- practical applied research in regions by Workgroups
- co-ordinated technology transfer by Workgroups
- basic research on National projects by ARC and Universities
- dissemination of research results by means of short courses, field days and publications

A Potato Research Committee consisting of seed and commercial producers plus representatives from processing companies is appointed by Potatoes South Africa. This committee is responsible for:

- ❖ Initiating and evaluating research projects
- ❖ Consideration of budgets and funding of projects

Regional research committees are encouraged to be active in identifying, prioritising and initiating projects in local areas.

The Potato Work (Discussion) Groups in the production areas are deemed to have an important role to play. The main objectives are:

- stimulation of discussion of potato technology amongst producers in the region
- co-ordination of potato technology transfer
- applied research in the production regions
- improve farmer involvement
- organise field days

The regional managers of Potatoes South Africa assist with administration of Work Group activity.

The potato industry is currently expected to contribute at least 50% towards the cost of research projects. A voluntary levy on table potatoes is partially used to generate funds for research. This money is derived from the Potatoes South Africa levy of 12.4 cents (approx. 2.25 Aust cents) per 10 kg pocket and is collected only on table potatoes. The share of the levy used for research funding is 2.4 cents (approx. point 4 of one Aust. cent) per 10 kg pocket.

The current application by Potatoes South Africa for approval to implement a statutory levy, if successful, will have the capacity to double research funding and expand the research effort.

It is noted that statutory levies will require at least 10% to be allocated to emerging farmers research projects.

South African research institutions and especially the ARC, are experiencing a serious exodus of personnel due primarily to lack of funding and future job opportunities. Many researchers are leaving agriculture or are opting to seek employment with foreign institutions. The number of agricultural students at Universities is another major concern.

Potatoes South Africa has revised the research strategy to shift the focus for the medium term from basic research to applied research at farm and work group level. There will be an increased effort to communicate current technical knowledge to farmers. Whilst considered not to be the best plan it is deemed to be an appropriate short term option.

High level discussions are currently being held with Government officials and bureaucrats on the future of research funding and activity.

The South African industry is committed to the principle that research is essential for the survival of the potato industry and for the farmers to be able to have a competitive edge.

AL3 BOERDERY, DENDRON (Fresh Market Grower and Packer)

Host: Mr Jaco Pretorius, Manager.

This farm was stated to be the largest producer of potatoes for the fresh market in South Africa. Crops grown in a four year rotation included potatoes, pumpkins, onions and one year fallow. The main variety grown was BP1.

All crops required irrigation from bore water, using centre pivot irrigation systems, generally about three spans. It was stated that five bores were drilled to get four useful bores. The water table had dropped from 30 metres to around 80 metres over the last twenty years. This Company had two full time bore service crews. Bores can produce around 10,000 gallons per hour.

One of the noticeable things about South Africa, when compared to Australian potato production areas, is the almost total lack of major river systems. Bore water is therefore essential to successful farming in this dry country.

Potatoes are grown in a wide variety of soil types, including sandy loam. Fertiliser is applied in accordance with soil and plant testing results. Gypsum is added as required. There are concerns about the incidence of common scab. A mix of 2-3-2 fertiliser is applied at a rate of 500 to 800 kgs per hectare. Side dressings of nitrogen are applied during the growing period. Petiole testing is done at 8 weeks.

Rainfall is generally around 600 millimetres per year, however, last year the rainfall only amounted to 400 millimetres. This farm was located about 1500 metres above sea level.

It was understood that the company produced around 200,000 tonnes of potatoes for the fresh market each year. This is 20 million 10 kg pockets (paper bags). The company packs around 50,000 pockets each eight hour shift, with two shifts often being worked.

The main disease problems were stated to be: Common Scab, American Leaf Miner, Tomato Leaf Miner, sometimes Late Blight and Tuber Moth.

The main planting times were June/July for October to December harvest. A second crop was sown in January/February for harvest during the months of July to September.

The break even point for cost of production recovery was stated to be 4,000 pockets per hectare, at a market price of 15 rand per 10 kg pocket. 15 rand is about A\$2.73 for 10 kgs. or A\$273.00 per tonne for a yield of 40 tonnes per hectare.

The potatoes are left in the ground to fully mature. The harvest consists of mechanically lifting the crop and then around 200 pickers (in the paddock visited) place the potatoes into small sacks and then into 1 tonne bins or bags. The bins or bags were lifted on to trailers for transport to the pack house. Each picker was responsible for ten metres of row. When the metres was completed the picker could sit and wait until the two row digger made the next pass. The paddock viewed had six diggers operating. It was noted that the area was quite stony and would have been most difficult to harvest by machine.

On arrival at the pack house, the bins and bags were unloaded from the trailers, with three lines operating, into a barrel wash, then through squeegee dryers, followed by a forced air dryer at 40°C. The potatoes then proceeded over size grading rollers.

One of the most notable things about the pack house was the high labour content being used for quality selection into grades 1, 2, 3, 4 and the reject line. This pack house employed between 160 and 180 workers for each shift.

For interest, the following information was obtained in respect to the pay and conditions for the pack house workers. Each worker receives 12 rand (approx. A\$2.18) per 8 to 9 hour day. Two meals are provided along with transport to and from the premises. The workers are paid every four weeks, or thirteen pays per year. A bonus scheme operates, relative to the days worked during the year. Overtime is paid, but no details of the rate were made available. Each worker is issued with a magnetic ID which is used to clock on and off.

At the head of each gang's work station was a small round clock like device. This was a penalty recorder. If a gang was not doing a satisfactory job the pack house foreman would move the needle 10, 20 or 30 etc. cents per hour penalty to be deducted from the pay of that gang until the production was back to satisfactory level. It was understood that this was a good dis-incentive to control any less than acceptable performance.

The automatic weighing/bagging system packed 36 bags per minute. It appeared that bag sewing technology had not been included in the planning for this pack house and a laborious and clumsy process was being used.

The company delivered to the fresh market four days each week, with the pockets being directed the markets which indicated the most likely best returns. Access to market information service price data was readily available, simply by making a call on the mobile telephone to the Potatoes South Africa Market Intelligence Service .

The 10 kg paper pockets cost about 1 rand each. This is about 18 Australian cents. The comment was made that it is likely for the 10 kg pockets to be reduced to 7 kg. with the market price for the lesser weight expected to be the same as for the current 10 kg size.

AGRIDEN (PTY) LTD (Crisping Grower)

Host: Mr Pieter Van Der Merwe

Agriden (Pty) Ltd was one of thirteen crisping potato suppliers to Frito-Lay/Simba in South Africa. The number of suppliers has been reduced over recent years from previously 53. Current suppliers are generally larger scale operators. Agriden supplies around 5,000 tonnes per year, under contract.

The main variety being grown was stated to be Lady Rosetta. This was a red skin yellow fleshed variety of Dutch origin.

Two crops were sown each year in February/March and in June/July. All potatoes in the area were grown under small 20 hectare centre pivot irrigation systems. The reason for the small pivots was related to the low flow rate from the bores. The water is pumped to a central dam, then to the pivots.

The crop, when harvested, was washed, graded and loaded into 28 tonne containers. A feature of the loading system was the modern extending elevator which moved into the end of the container and was retrieved as the load was built up.

The distance to the factory was around three and a half hours by road.

The average yield was stated to be around 55 tonnes per hectare for the Lady Rosetta variety and this was about 20% below the average yield for BP1's.

Frito Lay have very rigid size parameters, with the length to be in the range of 45 millimetres to 95 millimetres. It was noted the Agriden size to 50 millimetres to ensure nothing under 40 mm. is in the load. Small potatoes taken from this grading are used for seed. Potatoes above 95 mm. are sent to McCain. Any other potatoes graded out were sent to the market in 10 kg pockets. It appeared that very few of the potatoes harvested on this farm were considered to be waste.

Mr Van Der Merwe demonstrated the laboratory testing system required to be followed by all Frito-Lay suppliers. The test equipment is supplied, on loan, from Frito-Lay. Three by ten kg samples per load are randomly extracted.

External defects to be identified by the grower include: growth cracks, greening, bruising, wet rot, dry rot and second growth. Internal defects include: hollow heart, bruising, and disease. Other quality issues include: soil adhesion, tuber temperature, solids, tuber count, greening and size range. The test results are sent with the load to the factory where further samples are taken for check testing. The growers also conducts specific gravity tests on every load and fry colour cooking tests on selected loads. Specific gravity must be over 1.075; bonus for 1.085 to 1.092.

Frito-Lay organise annual grower days to discuss crop management methods and improvement suggestions.

FRESHMARK, PRETORIA (Fresh Fruit and Vegetable Wholesaler)

Host: Mr Gawie Du Toit, General Manager

Freshmark is a large fruit and vegetable wholesaler, part of the ShopRite-Checkers group of supermarkets.

This company supplies 150 supermarkets and 450 stores with a complete range of fruit and vegetables from possibly one of the most modern warehousing facilities in the world. This packing and distribution warehouse had only been open for about 6 months. It was fully computerised but also had a large labour force on the packhouse floor.

Freshmark have a high regard for quality and the aim was for constant quality to be maintained. The company had very efficient ripening and cool rooms to ensure a consistent and high standard of supply.

It was stated that Freshmark supplies 45% of the National fruit and vegetable turnover from these premises. Another figure given was that company buys 85% of the produce direct from farmers, the remaining 15% is purchased from the fresh markets. It was indicated that the prices paid to farmers for direct supply were mostly based on the current fresh market levels at the time of delivery.

Freshmark works closely with growers on supply arrangements. Some growers are contracted but this generally applies to a limited range of specialty fruit and vegetable lines.

JOHANNESBURG FRESH PRODUCE MARKET

Presented by Mr Willie Botes

The Johannesburg Fresh Produce Market is located on 63 hectares of land. It has three produce sales halls with 66,000 square metres of sales floors. There are 40 cold rooms and 31 ripening rooms.

Other tenants at the market include three banks, butchers, fishmongers, soft drink and confectionary wholesalers, fuel supplies and suppliers of packaging fertiliser and seed.

The buyers at the market cover the range of wholesalers, retailers, informal traders and the public.

Delivery and sale of produce.

Fresh produce arrives at the market. The producer's delivery note receives a unique inwards gate stamp from Security. The produce is received by the designated market agent who checks the produce as to quality and quantity. The produce is unloaded onto the Agent's sales floor.

The Market Agent generates a Goods Received Note on the electronic Sales Processing System. This records the commodity, container, variety, class, size, count, colour, etc.

When the produce is sold, the Market Agent, through the Sales Processing System, generates two Market Sales Notes (MSN), plus a Removal Note. The Market Agent retains one MSN, the other is retained by the buyer. The Removal Note is handed by the buyer to the Market Agent's security staff as authority for the buyer to remove the produce from the sales floor.

Purchase of produce and payment to producers.

The buyer is required to deposit money to a Smartcard at a cashier. When purchasing produce, the buyer pays the Market Agents with the Smartcard. The buyer withdraws any unspent money from the Smartcard through the cashier and balances are reconciled. The funds spent are at that stage, held by the Market Authority.

The next day, money is electronically transferred by the Market to the Market Agents to cover the purchases made by the buyer with the various Agents. This payment is less the Market's 5% commission.

Government legislation requires Market Agents to pay the producers within 15 days of the sale of the produce. It is understood that payments, or part thereof, depending on the commodity are normally made within 24 hours of the Market Agent receiving the money from the Market Authority. The payment made to the producer is less 7.5%, being the Market Agent's commission.

There are twelve Fresh Produce Markets currently operating in South Africa. These are located in Johannesburg, Pretoria, Cape Town, Durban, Springs, Klerksdorp, Pietermaritzberg, Port Elizabeth, East London, Bloenfontein, Welkom, Vereenpiging.

The value of potatoes sold through four of the main markets, Johannesburg, Pretoria, Cape Town and Durban, has shown significant increases in 2002 compared to 2001. The sales value has almost doubled in the this period. At the same time, the tonnage of potatoes delivered to the four markets has decreased by between 10% and 20%.

There is reason to be concerned about the future of the Fresh Market System in South Africa. Statistics for the last twelve months show that all but two markets had negative growth relative to the throughput of the mass of produce. It was stated that the Markets are looking to apply value adding to the system by working with sellers and buyers.

How is it planned to stimulate business (value adding) to the Market?

The first element of value adding which is being implemented is that of training. This involves a trainee manager's program, employee skills development, employee mentoring and stakeholder training.

The trainee manager's program is over a 2 year period. This has been developed by training professionals and customised to the needs of the fresh produce industry.

The employee skills development, at this time, would seem to be quite basic and covers literacy Phase 1 and Literacy Phase 2. It is reported that 33 people have completed the Phase 1 courses and 15 are currently working through Phase 2.

A "custodian" oversees the mentoring programs. Mentoring also forms a key aspect of the trainee manager's program. Mentoring is a structured activity with a follow-up system and reporting of outcomes.

Stakeholder training takes the Market into another area of produce marketing which is possibly indicative of the New South Africa and the way business and relationships will be developed in the future. Business Skills Courses are offered to informal traders. Our understanding of "informal traders" is that these are previously disadvantaged black South Africans in the business of selling fruit and vegetables outside the supermarket system, e.g street stalls, roadside vendors, etc. Certificates for successfully completing the course in 2001 were received by 47 informal traders.

The Mandela Peoples Market was organised to be place for the sale of produce to the public. The Johannesburg Fresh Produce Market has been heavily involved in the establishment of this market. The market has enabled 71 informal traders to become established.

Food Vendors.

The Market has 21 food vendors now operating. It was stated that there are approximately 35,000 people visiting the Johannesburg Market each day. These include the Market Employees, Produce Delivery people, Buyers, Transport Operators, Informal Traders and the Public. A Food Court is being constructed in the Market, as one of the value adding operations.

Platform Trading.

At the present time there are 7 platform wholesale trading sites operating in the Market. Of the 7 sites, 6 are Indian operated and one is Black. It is planned to extend this to 25 operators, 9 Indian and 9 Black, to expand the area and increase overall sales. Sales from these locations are generally to the informal traders.

Loading Area.

Attention is being given to improving the loading area at the new platform wholesalers trading site. Small canopied utilities or vans collect the produce from the wholesalers and the new area is designed to make collection of produce and movement of many vehicles much easier.

The Johannesburg Fresh Produce Market expects the value adding activity to have a number of positive outcomes. These include market growth through mass of produce, increased turnover and more Rand per tonne. They expect to provide a vibrant trading site generating excellent returns for the participants and giving a morale boost to staff.

PRETORIA FRESH PRODUCE MARKET

Hosts: Mr Francois Knowles and Mr Tinus Dodds

The Vision of the Pretoria Fresh Produce Market is to be a world leader in the marketing of agricultural products..

The Mission is to provide unique trade centres where price forming in the trading of agricultural products takes place to the mutual benefit of suppliers, buyers and consumers by providing efficient and cost-effective infrastructure and services that comply with international standards.

The very modern, large, clean, and orderly fruit, vegetables and flower market in Pretoria is testament to the Vision and Mission of the Fresh produce Market. This is the second largest market for turnover in South Africa.

The role players in the fresh market system have been identified to be as follows: Farmers, Market Management, Market Agents, Buyers, Prepackers, Retailers, Agricultural Organisations, Department of Agriculture and the , National Agricultural Marketing Council.

The wholly computerised commission sales system which operates in the Pretoria Market has been described in the section of this report headed, Johannesburg Fresh Produce Market.

Special attention is given by Market Management to the provision of service and encouragement to the Small Scale Farmer to become involved. It was stated that market entry is available to all levels of farming, no matter how large or how small.

As with the Johannesburg Market the Pretoria Market also provides service and attention to Informal Traders. Outside stalls are being built and other Fresh Produce Sales outlets are being established under the guidance of the Market Management.

All potato lots entering this market are graded by Prokon This operation is described in detail in another section of this report under the heading of Prokon. The quality and market trading information which was readily available to farmers was seen to be of importance.

Emphasis was given to the importance of farmers to the market, big or small. The statement was made that there is a focus on farmers because, no farmers = no market.

PROKON (Fresh Potato Quality Control)

Host: Mr Rene Styrdom

The operation of PROKON was demonstrated and discussed during the visit to the Fresh Produce Market at Pretoria.

Prior to 1985 the Government operated an inspection service at fresh produce markets aimed to assist in the provision of uniform quality standards for their purposes of buying and selling.

The system ceased in 1985 when Government decided that inspection services were not a priority.

Potato growers determined that grading and quality assurance were essential elements in the marketing of the produce. They assumed responsibility for the evaluation, grading, packing, marking and quality assurance of potatoes through the market system.

Prokon stands for, Product Control of Agriculture, a company charged with establishing and maintaining product quality controls for the benefit of all, from the farmer through to the consumer of fresh produce. Prokon is a private non-profit company, established by the grower organisation Potatoes South Africa. It employs 50 staff, Nationwide.

A representative sample of all potatoes delivered to the fresh produce markets are inspected by Prokon every day, before selling starts. Old stock from the previous day and new consignments are inspected. Product found to be not complying with the industry standard as prescribed in Government regulations is reclassified and bags re-branded. Potato sales in the fresh markets account for around one third of the total volume sold.

Funding for the inspection service is provided by a compulsory levy of 3 cents (around half one Aust. cent) on every 10 kg pocket entering the produce markets. This is collected by each of the Market Authorities. The inspection is carried out on the selling floor.

One observation which was made was that the grading system ensures there can be no distortion of quality by the sellers and this also provides buyer confidence in the product.

The markets have three grades for assessment by Prokon; Class 1, 2 or 3. Any product graded below Class three is destroyed by burying. Grading and quality information is provided from Prokon to growers by telephone, fax or mobile SMS. It was stated that growers were pleased to receive their QA information.

It is interesting to note that potatoes sold on the South African Market have three grades. Class I product would command the best price and be sold through the supermarket outlets. Class two is able to be sold in the smaller stores at a lower price and generally in the black areas. Class three product is sold at a relevant price on the street stalls or markets.

Unlike the Australian market, South African potatoes would have very little wastage because the three classes of potato are able to be identified, marked and sold to distinctly different market segments. This is seen to be a major market advantage.

EMERGING FARMERS:

Visitors to South Africa now hear terms such as “The New South Africa” and “Emerging Farmers”.

The term, “New South Africa”, of course, refers to the abandonment of the previous Apartheid system and the subsequent leadership of Mr Nelson Mandela, which set the direction for this country. It would seem that whilst the country appears to have many serious social and economic problems, there is a desire to bring the black and white populations closer together.

“Emerging Farmers” is another new term and is clearly part of the desire to improve the position of the black population. Research, education and demonstration activity which is supported by Government Policy, is aimed to provide emerging black farmers with knowledge and motivation to become involved in small scale farming.

The following excerpts have been extracted from a rural newspaper titled, “Nufarmer and African Entrepreneur” to provide information about some of the Emerging Farmer work being done.

R900M Sugar Beet Project

Emerging farmers have been given the opportunity to take up supply contracts to grow sugar beet for a new sugar beet project being proposed for the Eastern Cape. The new factory is scheduled to be operating by mid 2004.

Results for Dibeng Project

Women farmers are slowly and surely climbing the agricultural success ladder and at the same time playing a pivotal role in job creation and poverty alleviation in the country, with financial assistance from the Department of Welfare and Social Development.

This group of 27 women, located at Dibeng, near Polokwane, produce chickens, vegetables and maize. The aim is to minimise poverty, joblessness and hunger in the village. The project has been operating for two years.

Small Farmer Success

The Eyethu Small Farmers Association has been formed in this Eastern Cape district to serve the interests of emerging farmers and to assist one another in the drive to become commercial farmers. Some members have been able to access loans through the Land Bank, however, lack of sufficient land is preventing the majority of members from realising their potential. Only 29 of the 80 members are actually farming.

Land Bank

The Land Bank advertisement states, “If you have a farm or dream of being a farmer, come and talk to Land Bank. If you’re 21 years or older, a South African citizen with a valid ID and have access to land you could qualify for a loan, no matter how big or small your dreams.”

AGRILINK 11 Project

Development experts say that one of the most important ingredients for successful farming is the identification of markets for the product. One of the objectives of the AGRILINK II Project is to identify competitive markets for emerging farmers and then help the farmers organise forward contracts for agricultural crops with leading agribusinesses in the industry.

The Project has identified 22,358 markets for 32 different agricultural commodities and inputs between commencement in October 2001 through to July 2002.

Some of the crops currently within the system (or being considered) include, lucerne, maize, red speckled sugar beans, sorghum, soy beans, chillies, paprika, millet, avocado, citrus and vegetables.

Seirapise Vegetable Project Provides Jobs

This project has 11 participants 5 female and 6 male and farms 6 hectares. Crops grown include carrots, onions, cabbages, spinach, beetroot and lettuce. The Manager of the project attended a vegetables production course to learn about crop management.

The project has a good market for the produce in the local and surrounding areas.

Encouragement is given to local youths to become involved in agriculture. Acknowledgement is given to the technical assistance and advice obtained from the area Agricultural Office.

McCain Foods (SA) (PTY) LTD, Delmas (French fry processor)

Hosts: John Allan, Plant Manager Flip Steyn, Potato Research

The Delmas potato processing factory was built in 1993 by I & J and purchased in 2000 by McCain Foods. McCain has spent around 60 million rand (approx A\$11 million) on upgrading the plant with new equipment during the past two years. Some areas of the factory still need more renovation and improvement.

It is considered that the equipment in this plant makes it one of the most modern in the world. Production in the plant has increased by 60%, due to mechanisation and reduced processing time. The factory operates 24 hours each day, six days per week. The current raw material intake is estimated to be around 100,000 tonnes.

At this time potatoes are received in the plant from the farms in bags or wooden bulk bins. There are plans for all potatoes, in the near future, to be delivered in 20 tonne bulk containers to reduce costs. A grading system will also be installed to reduce costs further and improve quality.

Frozen potato products from the Delmas factory include french fries, crinkle cut chips, wedges and other value added items. Product is supplied to a number of buyers each with different specifications.

While McCain supports genetic engineering technology, recognising its potential for the future, it has strict policy of not using any genetically modified raw materials in its products until such time as the customers are ready to accept it. Thus, none of McCain's products are genetically modified.

A number of varieties are being used. These include Pentland Dell, Fiana, Darius, BP1 and some Shepody. The company is moving away from BP1. It would seem that potatoes grown for processing in South Africa are different from most other places because of low sugars. This results in chips which are pale in colour.

There are plans to encourage consumers to accept the darker/dry centre American style fries in the future. A darker coloured french fry is produced for McDonalds.

A statement was made that Russet Burbank had previously been trialled in South Africa with poor results. Peanut sized tubers tended to be produced due to day length and temperature issues. Shepody did not appear to be much favoured for the same reason. Several North American and European varieties were trialled.

The factory has current storage for 10,000 tonnes and it is planned to double this in the year ahead.

McCain has three farms in South Africa, totalling 1600 hectares, growing potatoes and vegetables. The Company believes that operating these farms helps McCain to understand supplier's issues, experiences and challenges.

McCain employs five agronomists in South Africa, who spend their time investigating the best potato and vegetable varieties, where they should be grown, which pesticides and fertilisers should be used and how the crops should be planted and harvested.

They also employ a team of field officers with technical and commercial skills who work closely with farmers to test crops, and schedule produce into the factory.

Supply matters were discussed and it would seem that McCain is currently having difficulty obtaining sufficient tonnage to meet the factory requirements. The company aims to contract 45% more potatoes.

The Tour Group's view is that the current, very high, fresh market price of around 3,500 rand (approx. A\$636) per tonne would be far more attractive to growers than the present processor price which is believed to be about two thirds less. Sources away from McCain indicated that the processor price was in the vicinity of 1,200 rand (approx. A\$218) per tonne. There was an opinion expressed that the processor contract price would have to increase in the coming season, for McCain to secure consistent supply.

It was interesting to note that in order to maintain the desired production levels, McCain have had to buy from the fresh produce market and this required purchasing potatoes in 10 kg pockets.

Another issue which has bearing on the price being paid to growers is that of the maize price. If the maize price remains good then growers may opt to grow maize instead of potatoes.

An additional pricing pressure is likely to come from the crisping side of the business. A comment made to the group suggested that the price to crisping growers may increase from around 1,300 rand (approx A\$236) per tonne to around 2,000 rand (approx A\$364) per tonne. The figure shown as a possible increase may be speculation only and should not be taken as firm.

There is no doubt that there is considerable pressure on the frozen and crisping processors to increase the grower contract price in the year ahead.

GERMPLASM:

Comment from John Marshall, Crop and Food, New Zealand

During the Conference, South African representatives raised the matter of identification of areas suitable for collaborative work between countries in the Southern Hemisphere.

Mr Marshall stated that he thought there would be general support for the idea of collaboration, however wide spread activity may be limited because of quarantine and exchange rate barriers. He suggested that the exchange of germplasm and interpersonal discussion may be a suitable focus for the potato industries in Southern Hemisphere countries.

Further discussion followed, on the concept of developing a model for assisted breeding and germplasm exchange. Mr Marshall suggests that this could be possible if all countries adopted a single focus, perhaps common scab resistance. A controlled crossing with the best germplasm provided by all participants could be carried out and the resultant true seed could be transferred amongst the group. Individual lines could then be selected for local traits and conditions.

Upon the selection of Elite lines, this material could be commercialised in the country of development and royalty revenue from this venture could be returned to the original breeder of the true seed.

It is further suggested, although likely to be more difficult, that the advanced selected material could be sent back for inclusion in the breeding program and the cycle repeated.

Mr Marshall has indicated his willingness to develop this concept further if Countries in the Southern Hemisphere are interested to adopt such a project

INFLATION

Source: SA Business Report 18 Sept. 2002

The following information has been extracted from the Business Report of the 18th September 2002.

Inflation barometers show the cost of living is on the increase and this holds bad news for consumers.

Apart from eating into household's disposable incomes, price increases are putting pressure on the Reserve Bank to raise interest rates again in November.

Overall inflation as measured by the Consumer Price Index, rose 11.6% in the 12 months to August 2002. This is a percentages point higher than the 10.6% recorded to July.

Inflation is being driven largely by high fuel and food prices. (Note: Another part of the newspaper report stated that the main reasons for the increase were, housing, food, transport, medical care and health expenses.)

The inflation measure targeted by the Reserve Bank, CPIX (which excludes mortgages), rose 10.8% in the period. SA's inflation targets are based on a CPIX increase of less than 6%, this year and next.

The Reserve Bank raises interest rates when it sees inflation is going to miss these targets. It has done so four times this year, pushing the prime lending rate up to 17% from 13% at the beginning of the year.

THE BRAZILIAN POTATO INDUSTRY

Presented by Mr Marcelo Balerini de Carvallio, President Potato Association of Brazil

The Brazilian potato industry is stated to be worth 1.21 billion reals, approx. A\$587 million. It is ranked 17th out of twenty horticultural categories of agriculture in that country, with a total value of 98.11 billion reals, approx. A\$47.6 billion.

Potato production amounts to around 2.7 million tonnes from 151,000 hectares with an average yield of around 16.7 tonnes per hectare. Yields vary across the production areas of the country, from a low average of 9.4 t/ha to a top average of 22.2 tonnes per hectare.

Over the last seven years, yields have shown a steady increase, production area has decreased and the overall tonnage produced has increased.

The principal varieties being grown are Agata, Asterix, Baronessa, Bintje, Monalisa, Mondial and Atlantic.

Imported seed has, to a large extent, now been replaced by mini-tuber production. The import replacement was largely because of the fear of the introduction of exotic pests and disease. The Government has strong legislation to ensure that seed quality remains high.

Seed which is imported comes from Holland, Canada, Sweden and Chile.

The Brazilian consumer wants to be able to buy potatoes, fresh every day. Potatoes are graded to Class 1 and Class 2 and are sent to the market in 50 kg bags. Supermarkets then present and sell potatoes in the loose form.

The consumption of potatoes in Brazil is around 15 kgs per person per year and this is considered to be low for a country with a population of 170 million people.

Frito-Lay is the major producer of crisps with about 50% of the production. Potatoes produced for the crisping industry amount to 250,000 tonnes. The main variety is Atlantic.

Brazil is not a major producer of potatoes for the french fry industry. About 100,000 tonnes of French fries are imported each year from Argentina, North America and Europe. The consumption of French fries is about 600 grams per person per year. This is not high and is most likely a reflection of the fact that the Brazilian economy is currently not good.

It would seem that the potato producers for the fresh market are generally at the mercy of a relatively few large corporate buyers. Growers have little say in what happens with prices and have to wait from 60 to 70 days for payment.

Over 50% of fresh market potatoes are sold through supermarkets, about 30% are sold on the open market. The consumers place great importance on visual appearance. Yellow skin varieties are the most sought after followed by the red skinned varieties. Almost 80% of potatoes are washed with 15% brushed.

Around 80% of potatoes sold on the fresh market are Bintje. Monalisa is the next most important variety.

Brazilian Consumers are reported to eat potatoes as part of their desire to maintain a healthy diet.

The Potato Association of Brazil represents the interest of potato growers. It brings together 50 regional grower associations, 29 industry partnership/suppliers and 20 researchers and technicians.

Some of the Companies involved with the Association as industry partnership/suppliers include, Syngenta, Dupont, Shell, BASF, Mitsui, Improcrop, FMC and Dow AgroSciences.

Other crops of importance in Brazil include Maize, Soy Beans and Beans.

The platform of the Brazilian Potato Association is for it to be:

Informative, Professional, Adopt Technology, Encourage Education and Research, Lobby Politically, Have Marketing Involvement, Develop Trade and Become Associated With Other Potato Grower Groups Around the World.

Mr Carvallio concluded with the statement that the *“Brazilian Potato Industry wanted to exchange experiences with other grower organisations; it wanted to improve production and look for trade opportunities. There was much to learn from each other.”*

CONFERENCE CONSIDERATIONS - FOR THE FUTURE:

Mr Niel Theron, General Manager of Potatoes South Africa posed a number of questions at the end of the Conference.

It was agreed that the questions would require further discussion amongst Southern Hemisphere Potato Industry representatives. In this regard, it was proposed for a meeting of Southern Hemisphere delegates to be convened at the World Potato Congress in China in April 2003. The matters raised by Mr Theron would be intended to form the basis of an agenda for that meeting.

It was also suggested that Australian potato grower delegates would wish to refer the list to their national grower organisation.

Mr Rich agreed to contact the President of the World Potato Congress to ascertain the availability of a suitable room and the time to be allocated for the proposed meeting.

The questions to be considered are:

1. Is there a need for Southern Hemisphere Potato Industry Representatives to meet (every three years, mid-way between World Potato Congresses) to discuss issues of mutual interest and exchange relevant information?
2. Is it possible to collaborate on Marketing Strategies?
3. Is it possible to collaborate on Research activity and Phytosanitary requirements?
4. Is there trade potential between Southern Hemisphere Countries?
5. Is it possible to collaborate on Variety Development and Evaluation?
6. Can export agreements be implemented?

Note:

In respect to item number 1, Brazil has indicated interest in running a Southern Hemisphere Conference in 2004. Acceptance of Brazil's offer would seem to be one of the decisions to be made at the Kunming meeting in April, 2003.

OUTCOMES/RECOMMENDATIONS

The project set out to obtain an improved level of understanding of the South African Potato Industry. The entire program consisting of the study tour and attendance at the 1st Southern Hemisphere Workshop clearly achieved that objective. Each of the project participants joined regular de-briefing sessions to discuss and record aspects of what had been seen and discussed.

It became apparent that the South African Potato Industry, whilst of a similar tonnage size to the Australian Industry, has a different mix of production, dominated by potatoes for the fresh market. The ability of South African growers to be able to sell all classes of produce was seen to be a benefit however, this is specific to the different levels of income in South Africa's structure.

The Group was impressed with the fresh market payment system, which guaranteed that the growers would be paid within 15 days. There may be some worth in considering whether or not the South African electronic market recording and payment system has anything to offer the Australian Fresh Market Suppliers.

The report has endeavoured to provide as much information as possible about all aspects of the South African Potato Industry. Many of the issues being addresses by the South African industry are similar to those experienced in Australia. The constant search for improved, disease and pest resistant varieties is relevant to both countries. It is recommended that Australian and South African researchers be encouraged to share information and wherever practical, to engage in joint research activity.

During the Workshop it was suggested that the exchange of germplasm and interpersonal discussion may be a suitable focus for the potato industries in Southern Hemisphere countries. It is recommended that further consideration be given to this subject.

The visit to South Africa will enhance and expand on work previously being done, to encourage the development of communication linkages between potato producer groups. This work will continue. It is recommended that consideration be given to the prospects of the Research Community establishing communication linkages with appropriate bodies in South Africa.

Recommendations contained in Dr Chris Williams PT02005 Report, pages 71-72 should also be read in conjunction with this outcomes section of the report covering Project PT02008.

The report has listed a summary of the Brazilian Potato Industry. The Brazilians also wish to participate in a communications network with grower organisations. Attention is being given to this aim. The Brazilian delegates also expressed the desire to have delegation visit Australia in the future. It is recommended that the usual Australian hospitality and welcome be extended to a Brazilian potato grower delegation.

A number of questions were raised at the Workshop, recommended for consideration at a special meeting of Southern Hemisphere representatives attending the World Potato Congress in China, in April, 2003. These are:

1. Is there a need for Southern Hemisphere Potato Industry Representatives to meet (every three years, mid way between World Potato Congresses) to discuss issues of mutual interest and exchange relevant information?

The Group fully supported this proposal and recommends that the Australian Industry sectors also agree to support any plans to hold the 2nd Southern Hemisphere Conference in 2004.

2. Is it possible to collaborate on Marketing Strategies?
3. Is it possible to collaborate on Research activity and Phytosanitary requirements?
4. Is there trade potential between Southern Hemisphere countries?
5. Is it possible to collaborate on Variety Development and Evaluation?
6. Can export agreements be implemented?

It is recommended that industry sectors consider these questions and prepare responses for delivery to the meeting planned for China in April 2003.

SOUTHERN HEMISPHERE POTATO WORKSHOP – PROGRAM

Location: Lambert's Bay, Sandveld Area, South Africa
Countries represented: South Africa, New Zealand, Australia, Uruguay, Argentina, and Brazil

23rd September 2002

Registration formalities and welcome function, Potatoes South Africa.

24th September 2002

1. Official Opening and Welcome

2. Overview of the Potato Industries in:

South Africa: presented by Dr. Niel Theron, General Manager Potatoes South Africa.

Australia: presented by Mr John Rich, Executive Officer Tasmanian Farmers and Graziers Association.

Brazil: presented by Marcelo Balerini de Carvallio, President Potato Association of Brazil.

3. Marketing of Fresh Potatoes:

Mr Willie Botes, Johannesburg Fresh Produce Market

4. The Potato Processing Industry of South Africa:

Mr Lefras Olivier, Managing Director, First Potato Dynamics

5. Marketing of Seed Potatoes:

Mr Brian Denney, Australian Seed Potato Producer

6. Panel Discussions:

- ❖ Producer Organisations:, Chairman Mr Guillaume Cloete, Potatoes South Africa
- ❖ Markets: Chairman Mr Willie Botes, South Africa
- ❖ Advertising and Promotion: Chairman Mr Guillaume Cloete, South Africa.
- ❖ Processing Contracts: Chairman Mr John Rich Australia.
- ❖ Export Opportunities: Chairman Mr Marcello Balerini de Carvallio, Brazil

25th SEPTEMBER 2002

- 7. Review of the South African Seed Potato Industry:**
Dr Pierre Nortje, Potato Certification Service
- 8. Variety Development and Commercialisation in:**

South Africa: Presented by Chris Kleingeld, Manager Potato Laboratory Services
Australia: Presented by Dr Chris Williams Senior Research Scientist, SARDI, Australia
- 9. Management Strategies for PCN in New Zealand:**

Dr John Marshall, Senior Scientist, Crop and Food Research, New Zealand.
- 10. Research Management in South Africa:**

Dr Pierre Nortje, Potato Certification Service, South Africa
- 11. The GMO Controversy:**

Dr Jocelyn Webster, Executive Director, AfricaBio, South Africa
- 12. Panel Discussions:**
 - ❖ Management and Funding of Potato Research, Chairman Christo Kok, ARC Roodeplaat.
 - ❖ Research and Variety Commercialisation, Chairman Dr Pierre Nortje, South Africa.
 - ❖ The GMO Controversy, Dr Dave Keetch, AfricaBio
 - ❖ The Need for a Southern Hemisphere Potato Initiative, Chairman Dr Niel Theron, Potatoes South Africa.
- 13. Visit to a leading seed potato grower** in the Sandveld, Wes-Kaap Saad of Messrs Jan and Pieter Laubscher.
- 14. Workshop Conclusion:** Braai (BBQ) at the property of Jan and Pieter Laubscher.

SOUTHERN HEMISPHERE POTATO WORKSHOP ITINERARY

Thursday, 12 th September,	Depart Australia for Johannesburg.
Friday, 13 th September,	Visit Pretoria Fresh Produce Market followed by briefing at the office of Potatoes South Africa. Travel to Madikwe Game Reserve.
Saturday, 14 th September,	Madikwe Game Reserve.
Sunday, 15 th September,	Travel to Polokwane.
Monday, 16 th September,	Farm visits in Polokwane area, A13 Boerdery, Agriden and Anton Bothma.
Tuesday, 17 th September,	Travel from Polokwane to Pilgrim's Rest.
Wednesday, 18 th September,	Visit Seed Production Unit at Lydenburg, travel to Pretoria.
Thursday, 19 th September,	Visit Potato Laboratory Services, Pretoria and Agricultural Research Council (ARC), Roodeplaat.
Friday, 20 th September,	Visit McCain Factory at Delmas and Freshmark, Pretoria.
Saturday, 21 st September,	Travel to Johannesburg, fly to Capetown.
Sunday, 22 nd September,	Visit Cape of Good Hope
Monday, 23 rd September,	Travel to Lamberts Bay, attend welcome function for delegates to the 1st Southern Hemisphere Potato Conference.
Tuesday, 24 th September,	Attend 1st Southern Hemisphere Potato Conference, Lamberts Bay.
Wednesday, 25 th September,	Attend 1st Southern Hemisphere Potato Conference, Lamberts Bay, visit seed producers J and P Laubscher. Conclusion of Conference.
Thursday, 26 th September,	Travel to Capetown for flight to Johannesburg, then to Australia.
Friday, 27 th September,	Arrive Australia

ACKNOWLEDGEMENTS:

The participants in the project PT02008, 1st Southern Hemisphere Potato Workshop and Study Tour acknowledge and thank the following:

- Horticulture Australia Limited (HAL) for accepting the project and recognising the benefits to be gained from an Australian Potato Industry visit to South Africa.
- Dr Niel Theron and his staff at Potatoes South Africa for having the idea for putting on an interesting and informative Workshop.
- Mr Colin Beckett from Agtour Australia and his colleagues in South Africa, Clive Trent and Hestie Crous from Agricultural Tours Worldwide, for putting together a tour itinerary which allowed the group to observe the South African potato Industry and to see a number of the splendid wonders of that fascinating Country.
- Dr Pierre Nortje, from Potatoes South Africa, for the week spent with the tour group and afterwards at the workshop. The knowledge passed on by Dr Nortje about the potato industry and South Africa in general, was absorbed by the group.
- We thank all of the people who took the time and effort to host our group. The South African hospitality was much appreciated.

In my role as Tour Leader, I wish to thank the twenty members of the tour group I was required to be responsible for. Their co-operation, punctuality, their interest in all things potato and the general spirit of togetherness was most satisfying. I thank them for their friendship. I specially thank them for their attendance and contribution to the information to be included in the report which was provided at the de-briefing sessions, generally held at the end of long and tiring days.

I thank Chris Williams, John Marshall and Andrew Hayton for their assistance with the report. I also thank the other members of the tour group for their suggestions and corrections to the report, as it has been written.

I thank my employer, the Tasmanian Farmers and Graziers Association's Vegetable and Potato Councils for allowing me to participate in the 1st Southern Hemisphere Potato Workshop and Study Tour.

I am indebted to my assistant Kaye Preece, for the advice, guidance and assistance provided in the presentation and printing of the final report.

SOUTH AFRICA CONTACTS

AL3 Boerdery
Mr Jaco Pretorius
Posbus 63, Dendron 0715 South Africa
Ph: 015 5010063
Cell: 083 232 6314
Email: al3@mweb.co.za

Agriden (Pty) Ltd
Mr Pieter Van Der Merwe
Email: agriden@mweb.co.za

Mr Anton Bothma
Buiksloot
PO Box 74
VIVO 0924 South Africa
Tel/Fax 015 593 0067

Fresh Produce Market
Mr Francois Knowles - *Operational Manager*
P O Box 266, Pretoria,0001 South Africa
Ph: 012 326 0972
Fax: 012 323 2855
Cell: 082 468 3412
Email: Knowles.Francois@pretoria.voc.za

Fresh Produce Market
Mr Tinus Dodds - *Marketing Manager*
P O Box 226, Pretoria 0001 South Africa
Ph: 012 326 0972
Fax: 012 323 2855
Cell: 082 820 1394
Email: Dodds.Tinus@tshwane.gov.co.za

Potatoes South Africa
Dr DJ (Niel) Theron - *General Manager*
Private Bag X135 Pretoria 001 South Africa
Ph: 012 323 1696
Fax: 012 321 1354
Cell: 082 388 0515
Email: ntheron@agric.co.za

Potatoes South Africa
Mr Guillaume Croete
Private Bag X135 Pretoria 001 South Africa
Ph: 012 323 1696
Fax: 012 321 1354

Potato Certification Service
Mr Pierre Nortje - *Executive Officer*
Potatoes South Africa, Private Bag X135, Pretoria 0001 South Africa
Ph: 012 323 1696
Fax: 082 388 4036
Cell: 012 323 9529
Email: pnortje@agric.co.za

Potato Seed Production (Pty)Ltd
Willie & Anne Marie Roeloffze
P O Box 295, Lydenburg 1120 South Africa
Ph: 013 235 3891
Fax: 013 235 1107

Potatonet South Africa CC
Mr Gert van Staden
Posbus 1837 Bethal 2310 South Africa
Ph: 017 647 1367
Fax: 017 647 6877
Cell: 082 555 4834

Potato Laboratory Services
Mr Nico Mienie
P O Box 15587 Lynn East 0039, Pretoria, South Africa
Email: nico@cbseedtest.co.za

ARC – Roodeplaat - Vegetable & Ornamental Plant Institute
Ms Estia Joubert - *Public Relations*
Private Bag X293, Pretoria 001 South Africa
Ph: 012 841 9611
Fax: 012 808 0844
Cell: 082 467 1806
Email: estia@vopi.agric.za

ARC -Roodeplaat
Mr Joe van Zijl
Private Bag X293, Pretoria 001 South Africa
Ph: 012 841 9611
Fax: 012 808 0844

ARC -Roodeplaat
Mz Sanette Thiart
Private Bag X293, Pretoria 001 South Africa
Ph: 012 841 9611
Fax: 012 808 0844

ARC -Roodeplaat
Dr James Alleman
Private Bag X293, Pretoria 001 South Africa
Ph: 012 841 9611
Fax: 012 808 0844

ARC -Roodenplaat
Mr Arno Visser
Private Bag X293, Pretoria 001 South Africa
Ph: 012 841 9611
Fax: 012 808 0844

Potatoes South Africa
Mr Hennie Coetser - *Regional Manager – Limpopo Province*
PO Box 160
DENDRON 0715 South Africa
Ph: 015 501 0158
Fax: 015 501 0162
Cell: 082 388 0516
Email: m.britzO@freemail.absa.co.za

McCain Foods (SA) (Pty) Ltd
Mr John Allan - *Plant Manager*
P O Box 1023 Delmas 2210 Mpumalanga South Africa
Ph: 013 665 1690
Fax: 013 665 1275
Cell: 082 652 0847
Email: jallan@mccain.co.za

McCain Foods (SA) (Pty) Ltd
Mr Flip Steyn - *Potato Research*
P O Box 1023, Delmas 2210, Mpumalanga, South Africa
Ph: 013 665 1690
Fax: 013 665 1275
Cell: 082 825 7354
Email: fsteyn@mccain.co.za

Freshmark (Pty) Ltd
Mr Gawie Du Toit - *General Manager*
Private Bag X202, Halfway House 1685, South Africa
Ph: 012 621 0321
Fax: 012 621 0299
Cell: 082 450 0636
Email: gdutoit.freshmark@shoprite.co.za

Potatoes South Africa
Mr Etienne Booyens - *Marketing Manager*
Private Bag X135, Pretoria 0001, South Africa
Ph: 012 323 1696
Fax: 012 321 1354
Cell: 082 388 0514
Email: ebooyens@agric.co.za

Potatoes South Africa
Mr Frank Lawrence - *Chairman*
P O Box 180, Douglas 8730, South Africa
Ph: 053 298 1130
Fax: 053 298 2653
Cell: 082 568 4615
Email: idstone@wol.co.za

Potato Association of Brazil
Associação Brasileira da Batata

Mr Marcelo Balerini De Carvallio - *President*
Rua Virgilio De Rezende, 705 CEP 18201-030, 1 Tapetininga/SP, Brazil
Ph: 55 (15) 272 4988
Fax: 55(15)2724988
Email: abbabatata@vol.com.br

Esfatrade
Mr Eduardo Santos Faccennini - *Director General*
Argentine Potato Organisation Representative
Dr. Eduardo J. Couture 666, 11500 – Carrasco, Montevideo, Uruguay
Ph: (598-2) 606 0263
Fax: (598-2)601 8623
Cell: (598-94)441940
Email: efaccennini@esfatrade.com

Improcrop

Mr Geoff Frank - *Managing Director*

3031 Camphile Park, Nicholasville, Kentucky 40356. USA

Ph: (859)885 9613

Fax: (859)887 0904

Cell: (859)3331010

Email: gfrank@alltech-bio.com

Improcrop

Mr Roberto Bosco - *National Sales Manager - Agronomist Engineer*

Rua Said Mohamad El Khatib, 280 Cic-Curitiba, Parana, Brazil

Ph: 55(41)347 9291

Fax: 55(41) 347 9894

Cell: 55(19) 9768 4021

Email: robsco@alltech.com

Sappi Kraft (Pty) Ltd

Mr Pravesh Dheda - *Business Manager – Sack & Bag*

P O Box 414, Durban 4000 South Africa

Ph: 031 304 9231

Fax: 031 304 4575

Cell: 083 645 9029

Email: pravesh@za.sappi.com

First Potato Dynamics Group

Mr Lefras Olivier - *Managing Director*

HTG Building, P O Box 2956, Durbanville 7551, South Africa

Ph: 021 975 0110

Fax: 021 975 0115

Cell: 082 491 5457

Email: Lefras@fpd.co.za

Western Cape Seed Potatoes (Pty) Ltd

Mr Pieter Laubscher Mr Jan Laubscher

P O Box 10, Sanberg 8121, South Africa

Ph: 027 422 2442

Fax: 027 422 1182

Cell: Peter 083 4146972 Jan 083 414 6973

Email: hlaub@mweb.co.za

Africa Bio

Dr Jocelyn R Webster *Executive Director*

Ph: (012) 667 2689

Fax: (012) 667 1920

Email: africabio@mweb.co.za

**FINAL REPORT (PT02005) CHAPTER ON “FIRST
SOUTHERN HEMISPHERE POTATO WORKSHOP,
SOUTH AFRICA, STUDY TOUR AND PAPER”**

Dr. Chris Williams – November, 2002

**HORTICULTURE AUSTRALIA LIMITED
PROJECT PT 02005**

TABLE OF CONTENTS

Introduction	58
Media Summary	59
The Structure of Potatoes South Africa.....	60
Commercialisation of New Varieties	62
Agricultural Research Council (ARC, Roodeplaat), Vegetable and Ornamental Plant Institute.....	63
First Southern Hemisphere Potato Workshop	65
Trends/Issues the Australian Potato Industry Should be Aware of.....	66
How the Information Gathered will be Disseminated.....	69
Recommendations/Outcomes to benefit the Australian Potato Industry.....	70
Acknowledgements	72
References	73

INTRODUCTION

The purpose of this chapter is to report (for PT 02005) from a technical viewpoint (via Dr Williams, an experienced Australian potato research agronomist), observations, issues and recommendations to benefit the Potato Industry in Australia from the study tour to South Africa. This included attendance at the First Southern Hemisphere Potato Workshop in Lambert's Bay, South Africa, Sept 23-25, 2002.

Dr Williams also travelled with the other 10 Australian participants who were part funded by HAL on the same pre-workshop study tour, incl. John Rich (PT 02008).

Included in this chapter is a description of the commercialisation of new varieties in South Africa and the visit to the ARC Roodeplaat Vegetable and Ornamental Plant Institute. Information trends/issues that the Australian Potato Industry should be aware of, how the information gathered will be disseminated and recommendations/outcomes to benefit the Australian Potato Industry are also presented.

MEDIA SUMMARY

This project PT 02005 supported the travel of Dr. C. Williams to attend and present a paper at the first Southern Hemisphere Potato Workshop held in South Africa during September 2002 and a Pre-Workshop study tour. He travelled with the ten participants of project PT 02008 on the bus tour to potato enterprises in South Africa. Views presented herein were influenced by discussions during the tour, with these fellow study tour delegates. However, the views presented are essentially those of Dr Williams presenting information from a technical viewpoint.

Issues/recommendations for the Australian Potato Industry included:-

1. More human health information should be placed on fresh potato pack-outs, such as “ Eat fruit and vegetables, 5-A-DAY, for better health”, to increase repeat sales.
2. Additional information on cooking end uses of tubers in pack-outs would be useful.
3. South Africa and South America have the same fresh (“white pearls”) and processing market demands as Australia and similar climatic zones. We need to foster a formal co-operative Potato Industry and Research Committee for the Southern Hemisphere (SH), attend SH workshops and foster co-operative research projects.
4. Foster development of a formal Southern Hemisphere co-operative potato breeding and variety evaluation program. One major aim of such a program would be to increase the exchange of genetic material and testing of new varieties and lines across similar climatic zones in the Southern Hemisphere, eg. Mediterranean (SA, WA, NSW, Vic).
5. The South African system of commercialisation of new potato varieties is a basic model to possibly modify and adopt here
6. Hermes, a crisp variety (from the firm Stet Holland) has good resistance to Common and Powdery scab and leaf-roll virus when grown on acid, sandy soils at the Western Cape. It would be a good variety to be introduced into Australia through quarantine by the Australian Potato Improvement Program.
7. Australian scientists and industry should consider introduction of *Aspalathus linearis* or “Red Bush,” the miracle tea (grows on sandy soils in Mediterranean climate of Western Cape of South Africa) into Australia. It is imported as “Rooibos” tea bags.
8. Australian scientists, growers and agribusiness should be supported to attend international meetings such as the biennial Southern Hemisphere potato workshops in order to exchange information, foster integrated research programs and assess new technology for possible modification and use in Australia.

THE STRUCTURE OF POTATOES SOUTH AFRICA

Potatoes South Africa is an industry related organisation which supports the potato industry in South Africa to perform at its optimum. Its structure is shown in Figure 1.

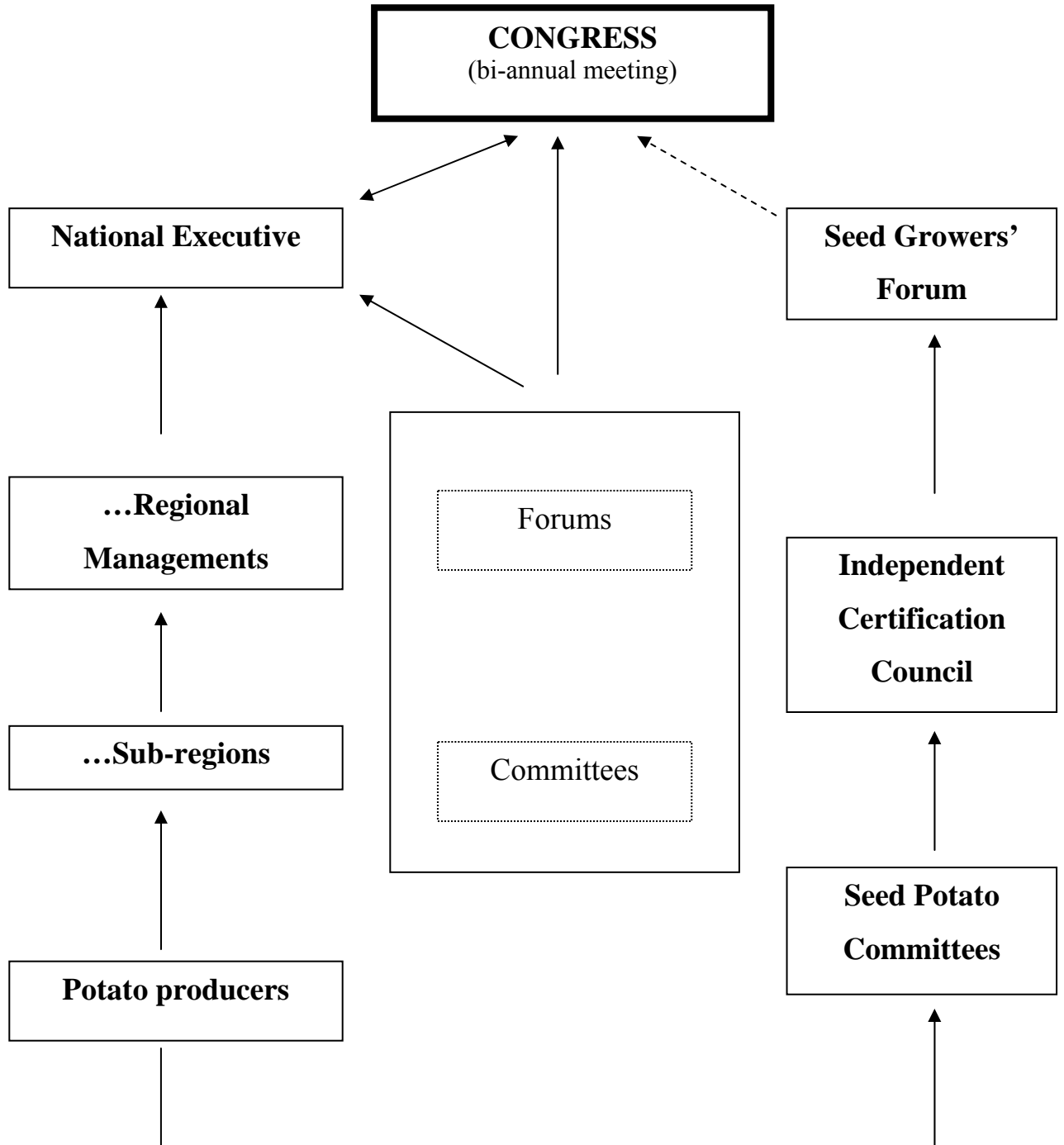


Figure 1: The structure of Potatoes South Africa (from Anon., 1999).

This structure seems to work reasonably well and maybe a model that could be adapted for use in Australia. To function efficiently, the industry needs a structure which supports its activities and needs. Producers in each production area therefore appoint a Regional Management. According to the Constitution these Managements nominate representatives to attend the congress, the highest authority in the industry. The members of the National Executive, which is the highest authority when the Congress is not in session, is appointed at Congress. The number of delegates that a given region can nominate and enter on the National Executive is based on the region's percent of the national production.. For example a region with 10% of production tonnage gets 10% of the members allocation for growers on the National Executive. In this structure Seed Potato Committees in the seed potato production areas deal with matters related to seed potato growers (Anon., 1999).

It is important that all the interest groups in an industry be involved in the commodity organisation. At the last Congress Potatoes South Africa amended the Constitution so that all the interested parties may now have representatives with the right to vote at Congress and on the National Executive (Anon., 1999).

If Potatoes South Africa's application for statutory levies are approved, the derived income to fund their activities will be 75 cents Aust./tonne for research and development and \$1.25 Aust./tonne for packaging industry-related information, including market statistics, dissemination thereof, and development of foreign markets (Anon., 1999).

The future of the South African potato industry is implicit in its slogan; "together we do better".

COMMERCIALISATION OF NEW VARIETIES

[Compiled from discussion with Dr P. Nortje and a paper at the workshop by C. Kleingeld et al 2002]

Phase 3 – Elite phase

- 24 trials/year (at 15 locations around Africa). Conducted by ARC with 50% funding by Potatoes South Africa (PSA). Such trials cover a range of seasons, planting times, irrigated and dryland situations.
- Interested parties are invited to inspect tubers at trial harvests (seed, crisp firms, etc.).
- Genetic material transfer agreement with rights to test a given variety for 2 years.
- After 2 years, the holder of the interim 2 year agreement must decide yes-to continue or not.
- The variety and trial results are extensively advertised; the variety is sold at an auction on tender to the highest bidder, who becomes the sub-licence holder. Also 2,000 in-vitro PT tested plantlets/variety are provided.
- In order to tender – a bidder must:-
 1. Pay a deposit of R5,000 (A\$909), if they are unsuccessful they get the R5,000 back.
 2. Each bidder must submit a business plan.
 3. They need to assure nucleus material is maintained.
 4. ARC and PSA handle all agreements and own the licence.
- Granting of a sub-licence gives the holder exclusive rights to multiply a variety for 20 years from the date of registration of PBR.
- Once the tender agreement is signed PSA issues a sub-licence for each specific variety. However, ARC the owner (with PBR) and PSA is the licence holder and the bidder (often a seed firm) is the sub-licence holder.
- Royalty of R40/tonne or A\$7.25/t are collected on certified seed. 70% paid to ARC and 30% to PSA.
- If it were desirable to commercialise an Australian bred variety, eg. Ruby Lou in South Africa a suggested procedure is:-
 - Arrange a genetic material transfer agreement for 2 years with a South African firm – provided there is PBR on that variety.
 - Australian partner would need to supply in-vitro plantlets (PT tested).
 - Must show that you apply for placement of the new variety on the South African national variety list.

**AGRICULTURAL RESEARCH COUNCIL (ARC, ROODEPLAAT),
VEGETABLE AND ORNAMENTAL PLANT INSTITUTE**

ARC – Roodeplaat has played a major role in breeding, selection and evaluation of cultivars of 20 different horticultural crops. Many of these form the back bone of various industries. The institute at present has to raise 50% of the budget from sources outside the parliamentary grant. There are six research divisions: crop science, cultivar development, plant protection, biotechnology, sustainable rural livelihood and the Western Cape Division.

Mrs Sanette Thiart spoke to the group about the national potato cultivar collection and gene bank. Her group is responsible for supplying disease free mother material to the industry. New material is obtained by selecting 20 plants from the seed unit at Lydenburg with senior inspectors of Potatoes South Africa and the sub-licence holder. Sprouts are taken from the best tubers, pathogen tested and grown in tissue culture to produce generation zero (G0) material to start a variety in the seed scheme cycle.

Field descriptions of all cultivars are kept on a computer database. A client may ask for 500 tubers of a new variety to be multiplied under contract. This is done on a strict order and a progressive payment system.

Dr James Allemann spoke on the use of indigenous plants in commerce. The aim of this work was to develop native plants that were high in vitamins and minerals and that were productive in the non-irrigated subsistence farming systems. Such crops included Amaranth, Pigeon Pea, African Cabbage, Cassava, Hasa Potato and Livingston Potato. Information is produced on how to grow these plants, pathogens are removed to develop foundation planting material and experiments devised to improve agronomy methods of growing these plants.

Dr Arno Visser spoke on the South African Potato Breeding Program. Potato production in South Africa today is characterised by a number of features, which to a major extent determine aims of potato cultivar development:

- (i) need for adapted cultivars tolerant to high temperatures and water stress;
- (ii) production areas with widely divergent environmental conditions;
- (iii) changes in the priority of specific diseases due to new races arising or to pesticide resistance;
- (iv) increase in occurrence of soilborne diseases, such as common scab (*Streptomyces scabies*) and bacterial wilt (*Ralstonia solanacearum*), due to the constant movement of seed potatoes, resulting from the production of seed potatoes in nearly all major production areas at different times of the year;
- (v) rise in the economic importance of diseases such as black dot (*Collectotrichum coccodes*), silver scurf (*Helminthosporium solani*) and fusarium-dry rot, (*Fusarium spp.*) due to storage of potatoes in the soil after foliage die-back and consumer demand for washed potatoes;
- (vi) demands of a steadily growing potato processing industry for potatoes that meet their requirements regarding tuber quality and storage life.

Cultivar development is a long-term project as disease resistance must be introduced from related wild potato species and the adaptability of new clones have to be evaluated in climatically different production areas. By using a specific diploid program and an Elite evaluation scheme, the ARC-Roodeplaat potato-breeding program has been able to register 20 new potato cultivars during the past 25 years.

The effective release and marketing of the new potato cultivars proved to be a formidable task. Several different approaches such as semi-commercial plantings in the most important production regions and the active involvement of seed producers in the multiplication and marketing of potential cultivars were tried without significant success. However, over the last

four years an effective system has been developed in collaboration with Potatoes South Africa, who are responsible for marketing and collection of royalties. Exclusive rights to the propagation of a new cultivar are sold by tender to interested parties. Six cultivars bred by Mr A. F. Visser of ARC-Roodeplaat have already been sold. The interest shown in these cultivars has proved not only the need for new potato cultivars, but also that these cultivars certainly meet a range of requirements of producers.

FIRST SOUTHERN HEMISPHERE POTATO WORKSHOP

Representatives from South Africa, Australia (20), New Zealand (1), Brazil (35), Uruguay (1), Argentina (1) met in Lambert's Bay, South Africa.

General overviews of the potato industries in Australia, South Africa and Brazil were given to the workshop. Presentations were given on variety development and commercialisation, seed potato production and marketing, research management and potato marketing. Other topics where common interests existed covered GMO's, management and funding of research, potato cyst nematode control. Topics for panel discussion included producers organisations, processing contracts, advertising and promotion, exporting potatoes. The conference ended with a discussion regarding future co-operation and further workshops (Potatoes South Africa, 2002). The next is likely to be held in Brazil or Argentina in 2004 or 2005.

There was general agreement from most industry leaders and delegates at the workshop to develop, foster and expand more co-operative projects-such as variety trading, exchange of genetic material, joint R & D projects and exchange of results (on major issues eg research on common scab, plant nutrition, new varieties).

Further information on findings from the Workshop are presented in the trends and recommendations sections.

TRENDS/ISSUES THE AUSTRALIAN POTATO INDUSTRY SHOULD BE AWARE OF

- **There is a good industry structure for information flow in South Africa**

Potatoes South Africa has a good structure for a largely producers organisation. The Potatoes South Africa staff in the eight regional offices visit producers regularly. Representatives of the National Executive, the different committees, forums and boards of directors ensure that communication flows from the highest level to the regions and vice versa.

- **Potatoes South Africa provides daily market data**

In South Africa relevant market information is available daily (inc. GPS and SMS services) and assists commercial producers to plan their marketing. A 12 month moving strategic estimate is maintained and made available every 2 weeks. This assists the producers in planning their planting.

- **Orderly marketing is facilitated by a daily market information service**

Moderate orderly marketing with Potatoes South Africa advising growers in growing regions a sequence of delivery to markets. Growers can be advised daily if their region is sending potatoes to fresh produce markets. Growers use this information to either speed up or slow down the volume they deliver to markets to manage crop disposal.

- **Hot air drying tubers after washing is useful to reduce soft rot**

The largest potato washing plant in South Africa (AL3 Boerdery business run by Mr Karel van der Merve) used a diesel powered burner to produce heated air to dry wet tubers (an air blast device with a large hood over the conveyor belt was used) before tubers were packed into paper bags. This supports work by Morgan (2002) who showed that air drying potatoes for more than a minute with heated air at 45 to 55°C reduced soft rot (*Erwinia sp.*). Washing plants in Australia which have problems with *Erwinia* soft rot should consider using hot air drying devices.

- **The South African system of packing washed potatoes in paper bags, with daily inspections for QA**

Most potatoes are packed in 10 or 7 kg paper pockets or bags in South Africa. It is claimed that the South African potato industry leads the field in Quality Assurance. A company, Product Control for Agriculture (Prokon), monitors potato pockets, daily (from a random sample of bags from each lot for sale) from when the lots enter fresh produce markets. Old stock, unsold from the previous day and new consignments are inspected daily (random samples are drawn). Product found not to comply with the industry standards, as prescribed by government regulation is reclassified (downgraded to one of 4 classes). This service is funded from a compulsory levy of SA 3 cents (approx. 0.6 Aust. cents) per 10 kg pocket (or A\$6/tonne). This system generates consumer confidence for a product that is unseen inside paper bags. However, some in the retail trade re-pack potatoes in plastic bags and plastic netting in 2, 3, 4, 5 kg packs to sell smaller quantities.

- **South African washed potato standards compared to Australia**

South African washed potatoes Class 1, were in general equal to our Australian “Specials” or Class 2 washed. We saw no washed potatoes to match our premium South Australian washed Coliban (or Class 1 potatoes). A major advantage of the 4 classes of washed potatoes in South Africa is that they met different market sector needs (from affluent to low income

consumers) and sellers are usually able to clear all products at a reasonable price. In Australia, we only have Premium washed grade that commands a reasonable price at times, and the specials (Class 2) which are often a non profit line.

- **Fresh market sector aims for 48 hours from harvest to sale to consumer**

Also the speed in the process from harvest of fresh potatoes to washing, packing and sale to the consumer is often within 48 hours is desirable as refrigeration is often not used. The quality assurance system of Prokon helps increase sales throughput, since a reliable QA system exists so that the buyer knows the quality standard of the purchase.

- **Compulsory laboratory tests for certain diseases in certified tuber seed and maximum permissible standards for pathogens**

Standards of seed health in certified seed is maintained by regular inspection and compulsory laboratory testing of certified seed lots for major disease problems (4 viruses and bacterial wilt), with the seed grower paying the costs of testing. Maximum % of pathogen infected seed potatoes for different generations and classes of seed tubers are specified in legislation.

- **Controversy over the possible presence of Potato Cyst Nematode in South Africa**

In discussions it was stated by South African sources that Potato Cyst Nematode (PCN) which had been detected in a crop from an imported seedlot several years ago had been eradicated. However, Dr. John Marshall, an acknowledged PCN world expert (a member of this bus tour), suggested that since the suspect field had not yet been tested for 18 years with zero PCN egg findings that the court is still out (it could be present).

This highlights the possible benefits for the Australian Potato Industry to contract an independent PCN expert, such as Dr Marshall to review the Australian situation for PCN and desirable control regimes and protocols for long term testing of former PCN sites.

- **Tomato spotted wilt virus, TSW**

Most occurrences in South Africa of TSW have been traced from plants coming in from another region planted in or near potatoes, eg. one outbreak came in on green peppers and wiped out 3 potato pivots. Crops and host species were monitored by ARC to curb the problem. They still find some TSW virus in some seed tubers - it is seed as well as insect transmitted. If inspectors see visual symptoms the seedlot must have a lab test for TSW virus. This virus is very common in tomato crops and in pepper plants. Growers in the region of Northern Cape - a former highest incidence area decided to have all their seed crops tested, now TSW virus is down to 0.1% incidence and very seasonal, they do not know where it comes in from!

- **Use of industrial vacuum cleaners in seed storage rooms/shed**

Industrial vacuum cleaners should be used regularly as a common practice to remove soil and dust from seed storage sheds/rooms and access floor tracks to the seed – in both seed farms and ware farms. This helps reduce the spread of soil borne diseases from contaminated soil, dust and plant debris floating around seed stores.

- **Usage of soil and plant tests for nutrient management**

Widespread use of soil tests (mainly conducted by three fertiliser companies) and plant tests occur, to devise and revise nutrient applications.

- **Plans to expand the frozen French fry market sales**

Innovations in the food industry is the key to growth. McCain has set out to grow the frozen chip market generally in South Africa. The total retail frozen vegetable market has grown 8% in volume in South Africa since McCain's brand launch in March 2001 and the frozen chip market 13% (Anon, 2002, South African Food Review, see references).

- **Periodic releases of new frozen vegetable products is likely to increase sales**

In addition to a range of standard frozen vegetable items, McCain's and other firms come up with new ideas and products all the time. McCain's new Saucy Serve range has just been launched in South Africa and is reported to be well received (Anon, 2002, South African Food Review). The Saucy Serve range was developed in Australia where the market and climate is similar to South Africa, but the advertising and produce in Africa is very much "home grown" and modified for the local market.

- **On farm crisp tests**

Crisp growers are expected to use cooking test equipment supplied on lease by the crisp firm to conduct crisp colour and specific gravity tests on each truckload or field sector-on farm-before trucking tubers to the factory. Similar procedures are being implemented in Australia at present. The standards are the same as for Australia but are implemented at different levels for bonus / penalty payment purposes.

- **Six South African bred varieties first time introduction to Australia**

Exclusive rights for the first time for 6 South African bred varieties have been obtained by Southern Choice. These 6 varieties have been introduced into Australia and Plant Breeder's Rights descriptions for Australia are currently being carried out in Victoria. Thereafter this material will be evaluated in trials for yield, quality and disease resistance when grown under Australian conditions.

HOW THE INFORMATION GATHERED WILL BE DISSEMINATED

Dr Williams will extend information obtained from the study tour and workshop in South Africa to the potato industry through: workshops at industry meetings (see flier below), articles in; the Grower (Nov 2002), Eyes on Potatoes and Potato Australia. It is suggested that HAL send copies of this final report (after it is accepted) to the Potato Industry Advisory Committee. Flier as posted out to 400 potato enterprises in SA on Nov.1st, 2002 follows.

South African potato study tour

*What was learnt and an update on **Black Dot***

In September this year seven growers (incl Aaron Haby), one agribusiness adviser (Andrew Hayton), two researchers (incl Chris Williams) and a tour leader from Australia attended the inaugural Southern Hemisphere Potato Workshop held in South Africa. Before the workshop they toured potato growing areas in the Western Cape and the Northern Province, as well as visited the South African Foundation Seed Potato Unit near Lydenburg, Roodeplaat Vegetable Research Institute near Pretoria where the South African research and breeding programs are conducted, processors of potatoes, and a fresh produce market. A session is being held to talk about what they saw and learnt.

When	14 th November 2002
Where	Barn Convention Centre in the Mannum Motel Randell Street, Mannum, in the main street opposite the caravan park and ferry
Time	2.45 to 5.00pm

AGENDA

2.45-3.00pm	Background to the study tour and coffee
3.00 - 3.20 pm	A grower's perspective of South Africa Video and discussion <i>by</i> Aaron Haby
3.20 - to 3.50 pm	What did we learn that could benefit the Australian potato industry <i>by</i> Chris Williams (SARDI) and Andrew Hayton (Wesfarmers)
3.50 - 4.00	Panel discussion
4.00 - 4.15	Break and a coffee
4.15 - 4.45pm	Update on progress with black dot R&D <i>by</i> Robin Harding (SARDI)
4.45 - 5.00pm	General Discussion and conclusion.

RECOMMENDATIONS/OUTCOMES TO BENEFIT THE AUSTRALIAN POTATO INDUSTRY

-
- The Australian Potato Industry should strongly consider insertion of more human health and cooking information on fresh potato packs to promote consumption:-
 - (a) human health and nutrition data, eg, “*Eat fruit and vegetables 5-A-DAY for better health*”. Such practices are claimed to increase sales in South Africa;
 - (b) cooking end uses of the tubers in the pack (eg. Desiree most suitable for potato salads, stews etc or Coliban suitable for baking, boiling, etc).
- (a) the Australian Potato Industry should hold discussions with Potatoes South Africa and similar South American groups to develop and foster Southern Hemisphere (SH), (1). co-operative SH Potato Industry Committee or Forum, and (2). An associated SH Potato Research Forum or Committee.

The aims of the SH Industry Committee could be to foster closer relations between different Southern Hemisphere countries to exchange progressive ideas, improve information transfer, variety trading, comparisons and selection of new technologies with the aim of improving the industry. The latter also includes selection of new technologies to improve yield, quality, reduce costs and maintain environmental standards and consumer confidence.

The SA Research Committee/Forum may consist of sections such as plant nutrition, agronomy, plant protection, breeding and cultivar testing etc. Representatives of the Southern Hemisphere Research Community could meet during and at the end of the next Southern Hemisphere Potato Workshop (likely to be held in Brazil or Argentina in 2004) or similar meetings. Research in plant nutrition eg. To define nutrient deficiencies from petiole tests, could also be co-ordinated, across the Southern Hemisphere. Such a forum could move in parallel with moves by grower associations in different Southern Hemisphere Countries to foster closer relations to improve information transfer, variety trading comparisons and selection of new technologies with the aim of improving the potato industry.

- (b) Fresh potato market outlets in South Africa and South America have the same market expectations as Australia. They seek and pay the highest prices for washed, clean, white skin, bright potatoes with a skin bloom - “the white pearls”! Crisp and French fry sectors have very similar potato specifications worldwide for their own sectors.

The Australian Potato Industry hold/take part in further discussions to foster development of a Southern Hemisphere co-operative potato breeding, and variety exchange and evaluation program. One major aim of such a program would be to increase the exchange of genetic material, parent lines, and new advanced breeder lines and testing of new varieties and lines across similar climactic zones in the Southern Hemisphere, eg. Mediterranean, sub-tropical, semi-arid inland continental type climates. Also pool information on which parent lines are likely to be most useful in such climatic zones.

Regular meetings are needed to establish joint venture Southern Hemisphere potato breeding and/or testing programs in which potato breeders and variety evaluators meet to pool, exchange and select genetic resources to be evaluated across similar climatic zones eg. Mediterranean regions of the Southern Hemisphere, namely Western Cape of South Africa, South and West Australia, the Murray region of New South Wales and Victoria, Argentina, Chile and Peru. Such options can be discussed and developed at the next Southern Hemisphere Potato Workshop that is likely to be held in Brazil or Argentina in 2004, and at similar meetings.

- The South African system of commercialisation of new potato varieties from their breeding program which involves auction of a tender to appoint a sub-licence for each new variety (see the section on commercialisation) for a period of 20 years and returning some royalties to the breeding program, is a basic model that the Australian Potato Industry should consider and modify for possible adoption here.
- Hermes, a crisp variety (from the firm Stet Holland) has been found to have Late blight (*Phytophthora infestans*), Common scab (*Streptomyces scabies*), Powdery scab (*Spongospora subterranea*) and leaf-roll virus resistance when grown on light, acid, sandy soils at the Western Cape (P. Laubscher, pers. comm.). This variety should be introduced into Australia through quarantine by the Australian Potato Improvement Program.
- The Australian Potato Industry should consider the development and use of an elite class of certified seed low in skin blemish and soil borne diseases for prime use to plant virgin ground for fresh market washed potato ware crops (“white pearls”). Such an elite class of certified seed is available in South Africa. They use maximum % of different pathogen infected seed tubers permissible for different generations and classes (Anon, 1998). For example, Black Dot (*Colletotrichum coccodes*) has maximum permissible levels for elite, class 1 and standard certified seed of 5, 15 and 30 %, respectively for generations 4 to 6.
- One useful preliminary observation (at Lydenburg) was that “ when the potting mix growth medium pH was reduced from 5.5 to 4.5 at tuber initiation – this increased the number of tubers per plant from 4 to 14 in one trial” (W. Roeloffze, pers. comm.). More research should be conducted on this practice in Australia, since such increases are very profitable for seed tuber production in mini-tuber production systems for profit.
- A unique, simple wire trellis grid system – like a scaffold was used to keep/hold the plant canopies upright and well ventilated in greenhouse crops. This trellis greatly reduced foliar disease susceptibility in greenhouse plants producing mini-tubers and increased tuber yields – probably due to increased leaf area and light interception!
- Australia should consider introduction through quarantine of the plant *Aspalathus linearis* or “Red Bush” the miracle tea. This plant is unique to the Western Cape, South Africa (grows in a Mediterranean climate on sandy soils). It has potential for production in the Murray Mallee of SA and Mediterranean climates. The “miracle tea” made from the needle like leaves of Red Bush is rich in anti-oxidants, caffeine-free and low in tannins. The tea is rich in flavour and a thirst quencher. Imported as “Rooibos” tea bags.
- Australian scientists (from different disciplines); and growers and agribusiness, (fresh and processing croppers of different ages, and regions) should be encouraged and supported to attend international meetings such as the biennial meetings of the Southern Hemisphere Potato Workshop and associated study tours – to improve information transfer with the aim to improve yield, quality and reduce costs. It also helps Australian producers discuss and compare aspects of new production and marketing systems on the spot in the new countries visited. Another benefit is to discuss and sort out with peers what are the likely best management practices relevant to Australia and opportunities for joint research projects and the exchange of useful technology and modes of industry operation.

ACKNOWLEDGMENTS

It is with pleasure that I thank Horticulture Australia Ltd and AgTour Australia Ltd for funding my travel for this study tour. I also thank Mr R. Lewis, Executive Director of SARDI and Mr A. Dahlenburg, Acting Chief Scientist, Horticulture, SARDI for supporting this study tour. Further I am grateful to my 20 colleagues on the study tour for their support, practical comments and friendship in the best Aussie traditions. Finally, I wish to thank Drs Pierre Nortje and Niel Theron, of Potatoes South Africa for organising the Workshop and Pre-Tour in a most capable, constructive and helpful fashion and to growers and other industry people we visited in South Africa for their hospitality and for showing us and discussing their business operations and crop management systems and exchanging information in a most helpful fashion.

REFERENCES

- Anon. (1998). `South African Seed Potato Certification Scheme. Government Gazette, Republic of South Africa, Vol. 395, No.18890, Govt. Notice R. 664.
- Anon. (1999). The South African Potato Industry: A Review 1998/99. Published by Potatoes South Africa.
- Anon (2002). Corporate profile: M^cCain Foods South Africa. South African Food Review, August, 2002, pages 7-10. Published by National Publishing, an IHS group.
- Morgan, B. (2002). Managing bacterial breakdown in washed potatoes. Potato Australia. Vol. 13, page 51.
- Potatoes South Africa (2002). Proceedings of the First Southern Hemisphere Potato Workshop, Lambert's Bay, South Africa, 23-25 Sept., 2002. Published by Potatoes South Africa.
- Williams, C. and Kirkham, R. (2002). Potato variety improvement, sources of funding and research projects in Australia. 9 pages. In: Proceedings of the First Southern Hemisphere Potato Workshop, Lambert's Bay, South Africa, 23-25 Sept., 2002. Published by Potatoes South Africa.