



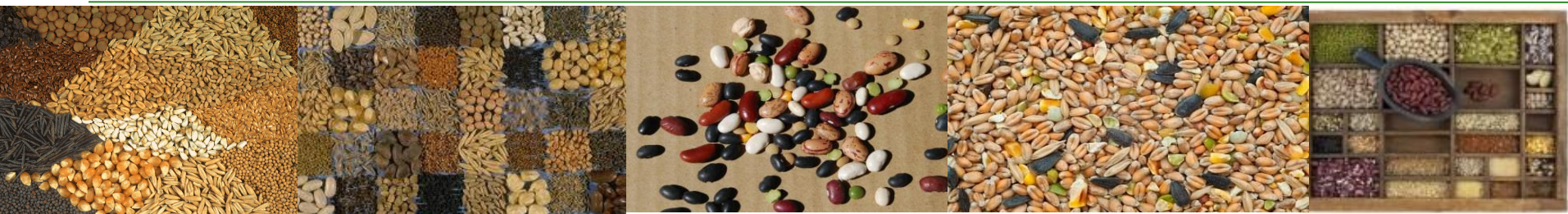
National Agricultural
Marketing Council
Promoting market access for South African agriculture

DESKTOP VIEW OF THE SOUTH AFRICAN SEED INDUSTRY

A look at the value chain and different activities and role-
players

By the Markets and Economic Research Centre of the
National Agricultural Marketing Council

May 2012



THE SOUTH AFRICAN SEED VALUE CHAIN

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- Producers and processors in the seed industry
- SANSOR

Research Team

- André Jooste (NAMC – Project Leader)
- Corné Dempers (NAMC)

THE SOUTH AFRICAN SEED VALUE CHAIN

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OUTLINE

- Introduction
- SANSOR – structure and function
- Role-players
- World seed market
- SA seed market
- Seed development and production process
- Costs involved

INTRODUCTION

- ✘ Development of the seed industry in South Africa dates back to the 1940's when the first grouping occurred in the form of the South African Seedsmen's Association.
- ✘ Seed quality control was formalized during the 1950's with the establishment of the first company laboratories for seed testing.
- ✘ The introduction of seed legislation to South Africa and subsequent reorganization during the 1960's led to the establishment of the South African Plant Breeders' Association, South African Hybrid Maize Organization, South African Vegetable Growers Association and South African Forage Crop Seed Association.
- ✘ Negotiations among the respective crop-specific seed associations started during the 1970's, which eventually led to establishment of an umbrella organization, i.e. ANSO (Association of National Seed Organizations). Privatisation during this time further led to the establishment of the Association of South African Seed Analysts (ASASA).
- ✘ The rationalization of seed certification was one of the most important factors, which led to the establishment of the South African National Seed Organization (SANSOR) in 1989 in which almost all noteworthy role players in the seed industry were gradually incorporated.

INTRODUCTION

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- ✘ Political transformation in South Africa since 1990 was an important factor in further restructuring of the seed industry. This restructuring was particularly the result of deregulation of agricultural marketing, with the subsequent declaration of small grain crops as seed in terms of the Plant Improvement Act (Act No. 53 of 1976) and the introduction of small grain seed certification schemes.
- ✘ Any dynamic industry sector should be represented by a body that could act as mouthpiece in its interest. Such a body then serves as liaison mechanism with state authorities and all other interested parties, as well as platform for internal liaison among members of the relevant industry.
- ✘ SANSOR is such a body and represents the South African seed industry as an association of all interested role players.

SANSOR – STRUCTURE AND FUNCTION

STRUCTURE OF SANSOR

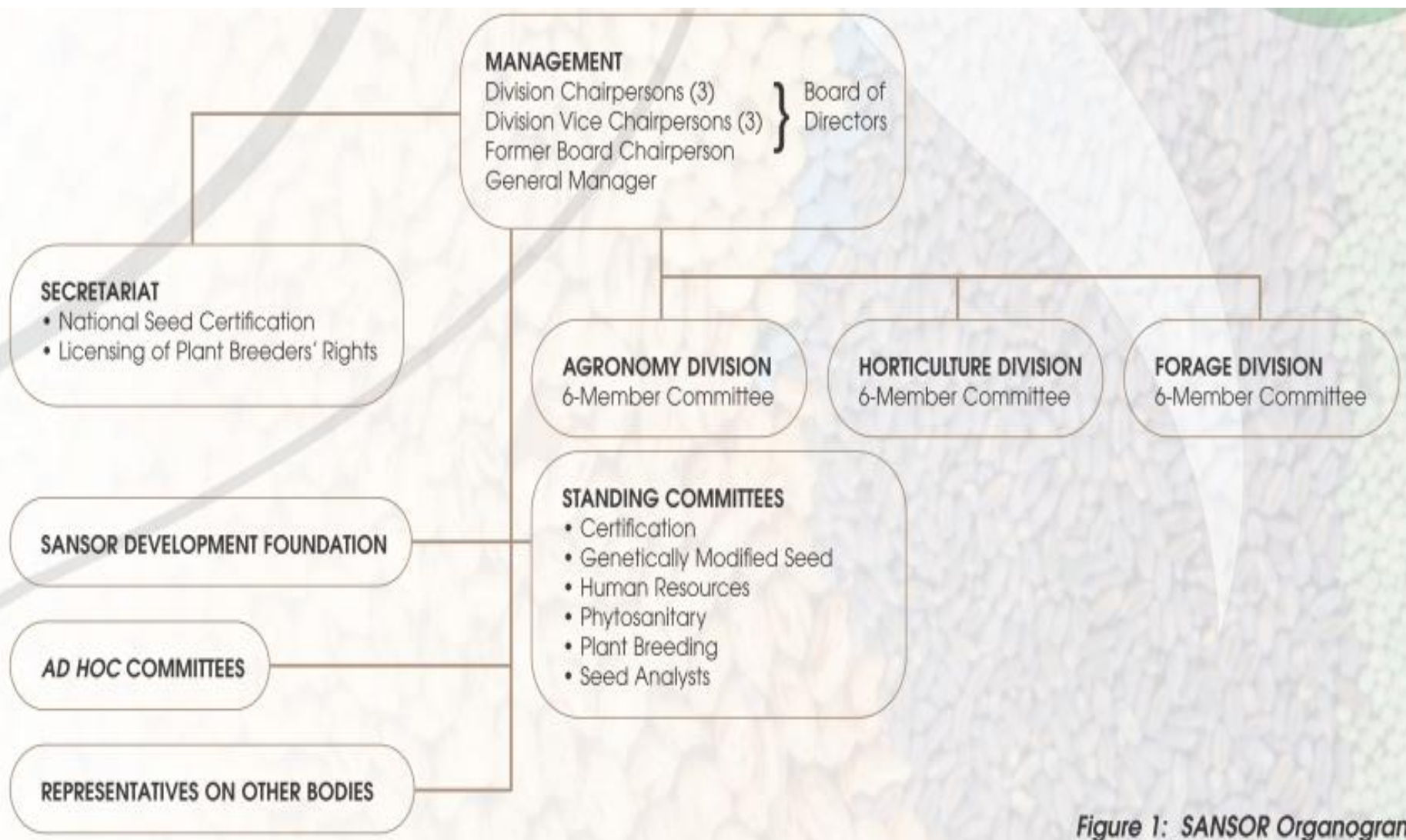


Figure 1: SANSOR Organogram

PRACTICAL FUNCTIONS OF SANSOR

SANSOR is responsible for conducting the following functions in practice:

- Continuous monitoring of current legislation and development of recommendations for amendments, as well as inputs in the development of new legislation.
- Training of seed inspectors by presenting courses, workshops and seminars.
- Representation of the industry on all relevant negotiation fora on behalf of SANSOR members.
- Mediation in the case of disputes.
- Liaison with government departments, organized agriculture, universities and non-governmental organizations as part of public relations.
- Promotion through press releases, position papers and/or statements, articles and brochures.
- Assistance to the industry to identify problems and negotiations with the relevant parties to resolve such problems.
- Continuous consultation as a service to members.

SANSOR IN COLLABORATION WITH THE STATE

SANSOR maintains an agreement on co-operation with the offices of the Registrar of Plant Improvement, Registrar of Plant Breeders' Rights and Executive Officer of Agricultural Pests with regard to the following aspects:

- ✗ Certification of seed crops by SANSOR in terms of the Plant Improvement Act, 1976 (No. 53 of 1976);
- ✗ Assistance with the maintenance of national variety lists;
- ✗ Assistance with the development of national variety lists in the case of new crops, as well as the collection of seed samples and variety descriptions;
- ✗ Arrangement for the execution of post-control tests by the Registrar of Plant Improvement with the aim of monitoring the efficiency of seed certification for maintaining varietal purity;
- ✗ Collection, codification and submission of samples from all seed units under certification for post control tests by the Registrar of Plant Improvement;
- ✗ Promotion of liaison between private laboratories and the Official Seed Testing Laboratory;

SANSOR IN COLLABORATION WITH THE STATE

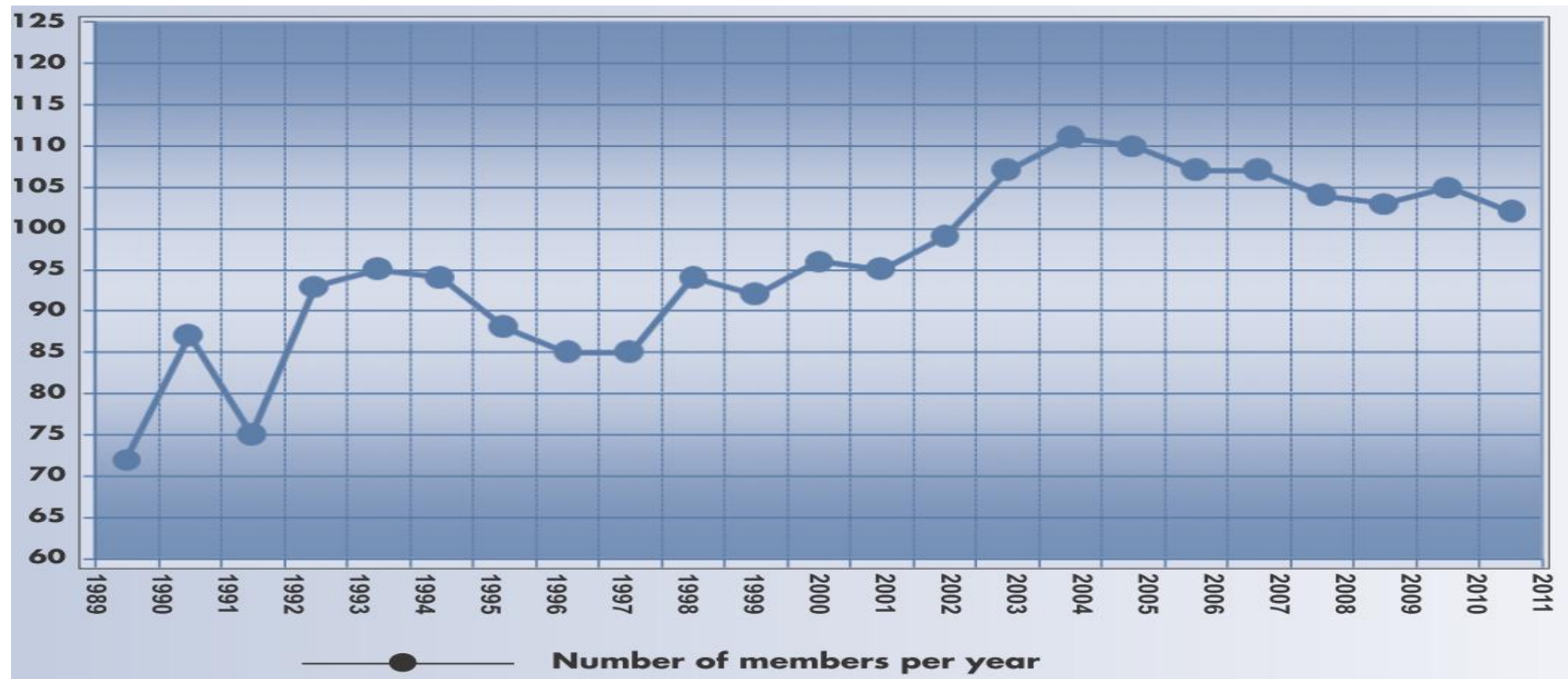
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SANSOR maintains an agreement on co-operation with the offices of the Registrar of Plant Improvement, Registrar of Plant Breeders' Rights and Executive Officer of Agricultural Pests with regard to the following aspects:

- ✗ Participation in applicable meetings of the Organization for Economic Co-operation & Development (OECD) and International Seed Testing Association (ISTA);
- ✗ Involvement with the development of new legislation or amendments to existing legislation;
- ✗ Management of applications for listing on Table 8 (mandatory certification in terms of the Plant Improvement Act) and investigation of applications for the selling of uncertified seed;
- ✗ Submission of recommendations in all problem cases to the relevant Directorates of the National Department of Agriculture;
- ✗ Continuous liaison with the Executive Officer of Agricultural Pests on all phytosanitary issues; and
- ✗ Training of seed inspectors to conduct field inspections on crops for the presence of seed borne diseases as support to the Executive Officer of Agricultural Pests for the issue of phytosanitary certificates.

SANSOR Membership

- ✗ A total of 102 members were recorded for the 2010/2011 financial year, comprising 65 full, 23 associate, 7 affiliate and 7 honorary members.



ROLE-PLAYERS

SANSOR MEMBERSHIP CLASSIFICATION

- ✘ Companies are listed by activities as:
 - Breeders
 - Broker/Agent
 - Conditioner/Cleaner
 - Exporter
 - Grower/producer
 - Importer
 - Retailer
 - Wholesaler

- ✘ Various and or all activities may be done by the same company.

SANSOR MEMBERSHIP CLASSIFICATION

Companies are also listed by crops as:

- Farm seed (forage & pasture)
- Flower seed
- Maize seed
- Vegetable seed
- Lawn seed
- Sorghum seed
- Soybean seed
- Field seed (grain crops)
- Alfalfa / Lucerne seed
- Clover seed
- Cotton seed
- Sunflower seed
- Tree seed
- Peanut seed
- Cereal seed / Winter grains
- Wild bird seed
- Seed coatings
- Equipment
- Agricultural chemicals
- Others
- Dry bean seed

The same company may be involved with more than one crop.

SANSOR MEMBERSHIP CLASSIFICATION BY ACTIVITIES

Breeders:

- Advance Seed
- Agriocare (Pty) Ltd.
- ARC-Grain Crops Institute (GCI)
- ARC-Animal Production Institute Rangelands & Nutrition, Cedara
- ARC-Roodeplaat Vegetable & Ornamental Institute
- ARC-Institute for Industrial Crops
- ARC-Small Grain Institute
- Barenbrug SA
- Capstone Seed
- DMS Genetics
- Dow AgroSciences Southern Africa (Pty) Ltd.
- EJAVis Aanleg BK
- Institute for Commercial Forestry Research (ICFR)
- Klein Karoo Saad Produksie
- Koegelenberg
- Lemacor
- Link Seed (Pty) Ltd.
- Lowveld Agri Research & Support Services (Pty) Ltd. (LARSS)
- Monsanto South Africa Pannar Seed (Pty) Ltd.
- Pioneer Hi-Bred RSA (Pty) Ltd.
- Pro-Seed CC
- Procell Seed
- Qualita Seeds
- Sakata Seed Southern Africa (Pty) Ltd.
- Sensako Pty. Ltd.
- Sidestep Boerdery BK t/a Peanut Bear
- Starke Ayres (Pty) Ltd.
- Syngenta Seed S.A. (Pty.) Ltd.
- The New Nut Company United Seeds cc
- Van Rooyen Seed

SANSOR MEMBERSHIP CLASSIFICATION BY ACTIVITIES

Broker/Agent:

- Advance Seed
- Agriocare (Pty) Ltd.
- Alliance Seeds (Pty) Ltd.
- Asbeseed CC
- Cradock Saad Verspreiders
- Country Wide Nuts Cc
- Envirogrow Kaap Agri Bedryf Ltd.
- Klein Karoo Saad Bemarking
- Kwazulu Hybrid Seeds
- Moorreesburgse Koringboere (Pty) Ltd.
- Nickerson-Zwaan SA (Pty) Ltd.
- Northern Seed Production CC
- N.W.K Co-op Ltd.
- P-Farm Agents
- Peu Seed Processors (Pty) Ltd.
- Pietermaritzburg Agricultural Services
- Qualita Seeds
- SA Groundnut Marketing (Pty) Ltd.
- SABBI
- Sakata Seed Southern Africa (Pty) Ltd.
- Seedcor (Pty) Ltd.
- Senwes Ltd.
- Starke Ayres (Pty) Ltd.
- The New Nut Company
- Tsitsikamma Seeds
- Tuinroete Agri Ltd.

SANSOR MEMBERSHIP CLASSIFICATION BY ACTIVITIES

Conditioner/Cleaner:

- Advance Seed
- Agricol (Pty) Ltd.
- Agriocare (Pty) Ltd.
- All-Gro
- ASTEC Africa (Pty) Ltd.
- Barenbrug SA
- BP Greyling
- Capstone Seed
- Country Wide Nuts Cc
- Cradock Saad Verspreiders
- Dry Bean Seed (Pty) Ltd.
- EJAVis Aanleg BK
- Free State Co-op Ltd.
- G.W.K. Ltd.
- Hygrotech SA (Pty) Ltd.
- Johan van der Westhuizen & Sons
- Kaap Agri Bedryf Ltd.
- Kango Seed
- Klein Karoo Saad Produksie
- Klein Karoo Saad Bemarking
- Koegelenberg
- Lemacor
- Link Seed (Pty) Ltd.
- Lowveld Agri Research & Support Services (Pty) Ltd. (LARSS)
- Madzivhandila College of Agriculture
- McDonald Seeds cc.
- Monsanto South Africa
- Moorreesburgse Koringboere (Pty) Ltd.
- N.W.K Co-op Ltd.
- Olam S.A. (Pty) Ltd.
- Oos Vrystaat Kaap Bedryf Bpk.
- Pannar Seed (Pty) Ltd.
- Peu Seed Processors (Pty) Ltd.
- Pioneer Hi-Bred RSA (Pty) Ltd.
- Qualita Seeds
- RE Groundnuts (Pty) Ltd.
- Roba Nuts
- SA Groundnut Marketing (Pty) Ltd.
- Sakata Seed Southern Africa (Pty) Ltd.
- Sensako Pty. Ltd.
- Sentraal-Suid Koöp Ltd.
- Senwes Ltd.
- Sidestep Boerdery BK t/a Peanut Bear
- Skema Products CC
- Starke Ayres (Pty) Ltd.
- The New Nut Company
- Tsitsikamma Seeds
- Tuinroete Agri Ltd.
- Vaalhartz Groundnuts
- Van Niekerk Brothers
- Van Rooyen Seed
- Zesto Grondbone

SANSOR MEMBERSHIP CLASSIFICATION BY ACTIVITIES

Exporters:

- Advance Seed
- Agricol (Pty) Ltd.
- Ball Straathofs (Pty) Ltd.
- Barenbrug SA
- Capstone Seed
- G.W.K. Ltd.
- Hygrotech SA (Pty) Ltd.
- Johan van der Westhuizen & Sons
- Kango Seed
- Klein Karoo Saad Produksie
- Klein Karoo Saad Bemarking
- Koegelenberg
- Kynoch Kunsmis
- Link Seed (Pty) Ltd.
- Lowveld Agri Research & Support Services (Pty) Ltd. (LARSS)
- Lucerne Seed Trade Organization
- McDonald Seeds cc.
- Monsanto South Africa
- National Seeds (Pty) Ltd.
- N.W.K Co-op Ltd.
- P-Farm Agents
- Pannar Seed (Pty) Ltd.
- Peu Seed Processors (Pty) Ltd.
- Pioneer Hi-Bred RSA (Pty) Ltd.
- Olam S.A (Pty) Ltd.
- Qualita Seeds
- Roba Nuts
- SA Groundnut Marketing (Pty) Ltd.
- Sakata Seed Southern Africa (Pty) Ltd.
- Sensako Pty. Ltd.
- Shalom Agriculture cc
- Sidestep Boerdery BK t/a Peanut Bear
- Skema Products CC
- Starke Ayres (Pty) Ltd.

SANSOR MEMBERSHIP CLASSIFICATION BY ACTIVITIES

Grower/Producer:

- Advance Seed
- Agricol (Pty) Ltd.
- Agriocare (Pty) Ltd.
- All-Gro
- Barenbrug SA
- BP Greyling
- Country Wide Nuts Cc
- Dry Bean Seed (Pty) Ltd.
- EJAVis Aanleg BK
- G.W.K. Ltd.
- Hygrotech SA (Pty) Ltd.
- Institute for Commercial Forestry Research (ICFR)
- Johan van der Westhuizen & Sons
- Kango Seed
- Klein Karoo Saad Produksie
- Klein Karoo Saad Bemarking
- Koegelenberg
- Lemacor
- Link Seed (Pty) Ltd.
- Lowveld Agri Research & Support Services (Pty) Ltd. (LARSS)
- Lucerne Seed Trade Organization
- Madzivhandila College of Agriculture
- McCain Foods S.A. (Pty) Ltd.
- McDonald Seeds cc.
- Monsanto South Africa
- Moorreesburgse Koringboere (Pty) Ltd. National Seeds (Pty) Ltd.
- N.W.K Co-op Ltd.
- Oos Vrystaat Kaap Bedryf Bpk.
- P-Farm Agents
- Pannar Seed (Pty) Ltd.
- Peu Seed Processors (Pty) Ltd.
- Procell Seed
- Qualita Seeds
- RE Groundnuts (Pty) Ltd.
- Roba Nuts
- Sakata Seed Southern Africa (Pty) Ltd.
- Sensako Pty. Ltd.
- Sentraal-Suid Koöp Ltd.
- Shalom Agriculture cc
- Sidestep Boerdery BK t/a Peanut Bear
- Skema Products CC
- Starke Ayres (Pty) Ltd.
- Tsitsikamma Seeds
- Vaalhartz Groundnuts
- Van Niekerk Brothers
- Van Rooyen Seed
- Zesto Grondbone

SANSOR MEMBERSHIP CLASSIFICATION BY ACTIVITIES

Importer:

- Advance Seed
- Agricol (Pty) Ltd.
- Alliance Seeds (Pty) Ltd.
- Asbeseed CC
- Ball Straathofs (Pty) Ltd.
- Barenbrug SA
- Capstone Seed
- Free State Co-op Ltd.
- Hygrotech SA (Pty) Ltd.
- Kango Seed
- Klein Karoo Saad Produksie
- Klein Karoo Saad Bemarking
- Kuber Seeds & Chemicals cc
- Kwazulu Hybrid Seeds
- Kynoch Kunsmis
- Link Seed (Pty) Ltd.
- Lourenco Reeves Agencies
- Lowveld Agri Research & Support Services (Pty) Ltd. (LARSS)
- McDonald Seeds cc.
- Monsanto South Africa
- National Seeds (Pty) Ltd.
- Pannar Seed (Pty) Ltd.
- Peu Seed Processors (Pty) Ltd.
- Pioneer Hi-Bred RSA (Pty) Ltd.
- Qualita Seeds
- Sakata Seed Southern Africa (Pty) Ltd.
- Seminis Vegetable Seeds SA (Pty) Ltd.
- Sensako Pty. Ltd.
- Sentraal-Suid Koöp Ltd.
- Shalom Agriculture cc
- Starke Ayres (Pty) Ltd.
- Syngenta Seed S.A. (Pty.) Ltd.

SANSOR MEMBERSHIP CLASSIFICATION BY ACTIVITIES

Retailer:

- Advance Seed
- Agricol (Pty) Ltd.
- All-Gro
- Alliance Seeds (Pty) Ltd.
- Asbeseed CC
- Asera Landbou Produkte cc
- Ball Straathofs (Pty) Ltd.
- Barenbrug SA
- Bayer CropScience (Pty) Ltd.
- BP Greyling
- Cradock Saad Verspreiders
- Dry Bean Seed (Pty) Ltd.
- Free State Co-op Ltd.
- G.W.K. Ltd.
- Hygrotech SA (Pty) Ltd.
- Johan van der Westhuizen & Sons
- Kaap Agri Bedryf Ltd.
- Kango Seed
- Klein Karoo Saad Produksie
- Klein Karoo Saad Bemarking
- Kuber Seeds & Chemicals cc
- Kwazulu Hybrid Seeds
- Kynoch Kunsmis
- Link Seed (Pty) Ltd.
- Lourenco Reeves Agencies
- McDonald Seeds cc.
- Monsanto South Africa
- Moorreesburgse Koringboere (Pty) Ltd.
- National Seeds (Pty) Ltd.
- Nickerson-Zwaan SA (Pty) Ltd.
- Northern Seed Production CC
- N.W.K Co-op Ltd.
- Oos Vrystaat Kaap Bedryf Bpk.
- Pannar Seed (Pty) Ltd.
- Peu Seed Processors (Pty) Ltd.
- Pietermaritzburg Agricultural Services
- Pioneer Hi-Bred RSA (Pty) Ltd.
- Qualita Seeds
- RE Groundnuts (Pty) Ltd.
- Roba Nuts
- Seedcor (Pty) Ltd.
- Seminis Vegetable Seeds SA (Pty) Ltd.
- Sakata Seed Southern Africa (Pty) Ltd.
- Sensako Pty. Ltd.
- Sentraal-Suid Koöp Ltd.
- Sidestep Boerdery BK t/a Peanut Bear
- Skema Products CC
- Starke Ayres (Pty) Ltd.
- Syngenta Seed S.A. (Pty.) Ltd.
- Tuinroete Agri Ltd.
- Vaalharts Graan Bemarking (Pty) Ltd.
- Vaalhartz Groundnuts
- Van Niekerk Brothers
- Van Rooyen Seed
- YARA SA

SANSOR MEMBERSHIP CLASSIFICATION BY ACTIVITIES

Wholesaler:

- Advance Seed
- Agricol (Pty) Ltd.
- Agriocare (Pty) Ltd.
- All-Gro
- Alliance Seeds (Pty) Ltd.
- Asbeseed CC
- Asera Landbou Produkte cc
- Ball Straathofs (Pty) Ltd.
- Barenbrug SA
- Bayer CropScience (Pty) Ltd.
- Capstone Seed
- Country Wide Nuts Cc
- Cradock Saad Verspreiders
- Dry Bean Seed (Pty) Ltd.
- EJAVis Aanleg BK
- Envirogrow
- Free State Co-op Ltd.
- G.W.K. Ltd.
- Hygrotech SA (Pty) Ltd.
- Johan van der Westhuizen & Sons
- Kaap Agri Bedryf Ltd.
- Kango Seed
- Klein Karoo Saad Produksie
- Klein Karoo Saad Bemarking
- Kuber Seeds & Chemicals cc
- Kwazulu Hybrid Seeds
- Kynoch Kunsmis
- Lemacor
- Lourenco Reeves Agencies
- Lucerne Seed Trade Organization
- Madzivhandila College of Agriculture
- McDonald Seeds cc.
- Monsanto South Africa
- Moorreesburgse Koringboere (Pty) Ltd.
- N.W.K Co-op Ltd.
- Oos Vrystaat Kaap Bedryf Bpk.
- Pannar Seed (Pty) Ltd.
- Peu Seed Processors (Pty) Ltd.
- Pioneer Hi-Bred RSA (Pty) Ltd.
- Qualita Seeds
- RE Groundnuts (Pty) Ltd.
- Roba Nuts
- SA Groundnut Marketing (Pty) Ltd.
- Sakata Seed Southern Africa (Pty) Ltd.
- Sensako Pty. Ltd.
- Sentraal-Suid Koöp Ltd.
- Shalom Agriculture cc
- Sidestep Boerdery BK t/a Peanut Bear
- Starke Ayres (Pty) Ltd.
- Syngenta Seed S.A. (Pty.) Ltd.
- Tuinroete Agri Ltd.
- Van Niekerk Brothers
- Van Rooyen Seed

SANSOR MEMBERSHIP CLASSIFICATION BY CROPS

Maize seed:

- Advance Seed
- All-Gro
- ARC-Grain Crops Institute (GCI)
- Barenbrug SA
- Capstone Seed
- Cradock Saad Verspreiders
- DMS Genetics
- Free State Co-op Ltd.
- G.W.K. Ltd.
- Hygrotech SA (Pty) Ltd.
- Klein Karoo Saad Bemarking
- Link Seed (Pty) Ltd.
- Madzivhandila College of Agriculture
- McDonald Seeds cc.
- Monsanto South Africa
- National Seeds (Pty) Ltd.
- N.W.K Co-op Ltd.
- Oos Vrystaat Kaap Bedryf Bpk.
- Pannar Seed (Pty) Ltd.
- Peu Seed Processors (Pty) Ltd.
- Pioneer Hi-Bred RSA (Pty) Ltd.
- Procell Seed
- Sensako Pty. Ltd.
- Senwes Ltd.
- Starke Ayres (Pty) Ltd.

SANSOR MEMBERSHIP CLASSIFICATION BY CROPS

Soybean seed:

- Advance Seed
- Agriocare (Pty) Ltd.
- All-Gro
- Capstone Seed
- Dow AgroSciences Southern Africa (Pty) Ltd.
- Free State Co-op Ltd.
- G.W.K. Ltd.
- Link Seed (Pty) Ltd.
- Madzivhandila College of Agriculture
- Monsanto South Africa
- National Seeds (Pty) Ltd.
- N.W.K Co-op Ltd.
- Oos Vrystaat Kaap Bedryf Bpk.
- Pannar Seed (Pty) Ltd.
- Pioneer Hi-Bred RSA (Pty) Ltd.
- Procell Seed
- Sensako Pty. Ltd.
- Senwes Ltd.

SANSOR MEMBERSHIP CLASSIFICATION BY CROPS

Sunflower seed:

- Advance Seed
- Agriocare (Pty) Ltd.
- Capstone Seed
- DMS Genetics
- Free State Co-op Ltd.
- G.W.K. Ltd.
- Klein Karoo Saad Bemarking
- Link Seed (Pty) Ltd.
- Monsanto South Africa
- N.W.K Co-op Ltd.
- Oos Vrystaat Kaap Bedryf Bpk.
- Pannar Seed (Pty) Ltd.
- Pioneer Hi-Bred RSA (Pty) Ltd.
- Sensako Pty. Ltd.
- Senwes Ltd.

SANSOR MEMBERSHIP CLASSIFICATION BY CROPS

Cereal seed/Winter grains:

- Advance Seed
- Agricol (Pty) Ltd.
- All-Gro
- ARC-Grain Crops Institute (GCI)
- Barenbrug SA
- Capstone Seed
- Dow AgroSciences Southern Africa (Pty) Ltd.
- Free State Co-op Ltd.
- G.W.K. Ltd.
- Kaap Agri Bedryf Ltd.
- Link Seed (Pty) Ltd.
- Monsanto South Africa
- Moorreesburgse Koringboere (Pty) Ltd.
- N.W.K Co-op Ltd.
- Oos Vrystaat Kaap Bedryf Bpk.
- Pannar Seed (Pty) Ltd.
- SABBI
- Sensako Pty. Ltd.
- Sentraal-Suid Koöp Ltd.
- Senwes Ltd.
- Tuinroete Agri Ltd.
- Van Rooyen Seed

SANSOR MEMBERSHIP CLASSIFICATION BY CROPS

Vegetable seed:

- Agricol (Pty) Ltd.
- All-Gro
- Alliance Seeds (Pty) Ltd.
- ARC-Roodeplaat Vegetable & Ornamental Institute
- Ball Straathofs (Pty) Ltd.
- Capstone Seed
- Cradock Saad Verspreiders
- Envirogrow
- Free State Co-op Ltd.
- G.W.K. Ltd.
- Hygrotech SA (Pty) Ltd.
- Johan van der Westhuizen & Sons
- Kaap Agri Bedryf Ltd.
- Kango Seed
- Klein Karoo Saad Produksie
- Klein Karoo Saad Bemarking
- Kuber Seeds & Chemicals cc
- Kwazulu Hybrid Seeds
- Lourenco Reeves Agencies
- McCain Foods S.A. (Pty) Ltd.
- McDonald Seeds cc.
- Nickerson-Zwaan SA (Pty) Ltd.
- Northern Seed Production CC
- Oos Vrystaat Kaap Bedryf Bpk.
- Peu Seed Processors (Pty) Ltd.
- Pro-Seed CC
- Qualita Seeds
- Sakata Seed Southern Africa (Pty) Ltd.
- Seedcor (Pty) Ltd.
- Shalom Agriculture cc
- Starke Ayres (Pty) Ltd.
- Van Niekerk Brothers

SANSOR MEMBERSHIP CLASSIFICATION BY CROPS

Forage & pasture:

- Advance Seed
- Agricol (Pty) Ltd.
- ARC-Animal Production Institute
Rangelands & Nutrition, Cedara
- Ball Straathofs (Pty) Ltd.
- Barenbrug SA
- BP Greyling
- Capstone Seed
- Free State Co-op Ltd.
- G.W.K. Ltd.
- Hygrotech SA (Pty) Ltd.
- Institute for Commercial Forestry
Research (ICFR)
- Kaap Agri Bedryf Ltd.
- Klein Karoo Saad Produksie
- Klein Karoo Saad Bemarking
- Kwazulu Hybrid Seeds
- Link Seed (Pty) Ltd.
- McDonald Seeds cc.
- Moorreesburgse Koringboere (Pty) Ltd.
- N.W.K Co-op Ltd.
- Oos Vrystaat Kaap Bedryf Bpk.
- Pannar Seed (Pty) Ltd.
- Pietermaritzburg Agricultural Services
- Sakata Seed Southern Africa (Pty) Ltd.
- Sensako Pty. Ltd.
- Senwes Ltd.
- Starke Ayres (Pty) Ltd..
- Tsitsikamma Seeds
- Tuinroete Agri Ltd.
- Van Rooyen Seed

WORLD SEED MARKET

THE WORLD'S TOP 10 SEED COMPANIES

Company - 2007 seed sales (US\$ millions) - % of global proprietary seed market

Company	USA \$ - Million	% of market
1. Monsanto (US)	4 964	23%
2. DuPont (US)	3 300	15%
3. Syngenta (Switzerland)	2 018	9%
4. Groupe Limagrain (France)	1 226	6%
5. Land O' Lakes (US)	917	4%
6. KWS AG (Germany)	702	3%
7. Bayer Crop Science (Germany)	524	2%
8. Sakata (Japan)	396	<2%
9. DLF-Trifolium (Denmark)	391	<2%
10. Takii (Japan)	347	<2%
Top 10 Total	14 785	67%

The proprietary seed market (that is, brand name seed that is subject to intellectual property), accounts for 82% of the commercial seed market worldwide.

In 2007, the global proprietary seed market was US\$22,000 million. (The total commercial seed market was valued at \$26,700 million in 2007.)

The commercial seed market, does not include farmer-saved seed.

SIZE OF USA SEED INDUSTRY

- With the global commercial market for planting seed currently estimated at \$38.5 billion, the U.S. market is estimated to be 30 percent of the global market.
- The domestic share of U.S. seed exported is equal to approximately \$1.25 billion which is approximately 10 percent of the overall value of the U.S. seed industry.

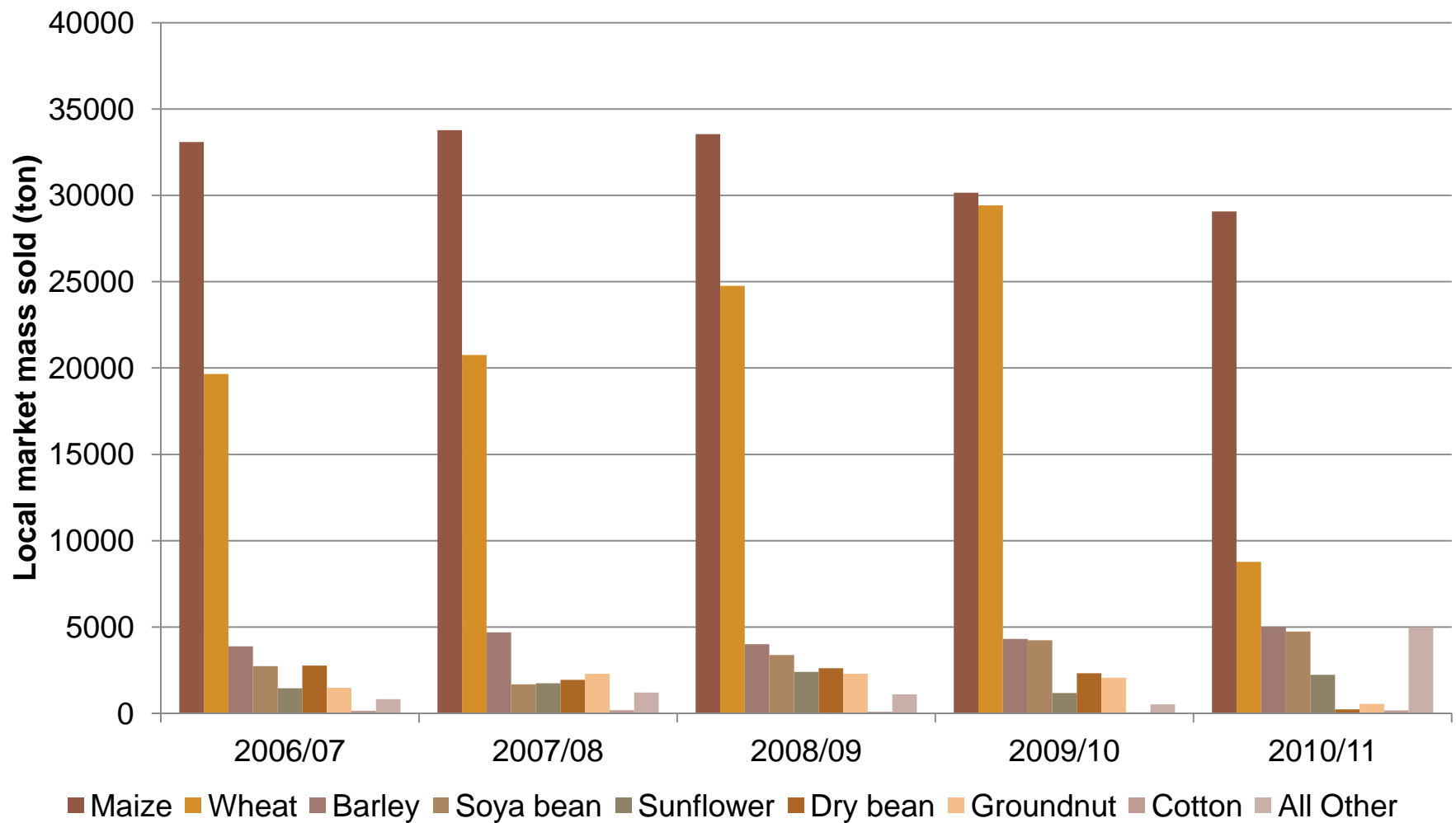
Export year	USA Exports (\$)	World Trade
2006	879 680 000	3 993 838 493
2007	1 019 679 000	4 033 776 878
2008	1 277 310 000	4 074 115 646
2009	1 150 403 000	4 114 855 733
2010	1 253 484 375	4 156 004 351

SA SEED MARKET

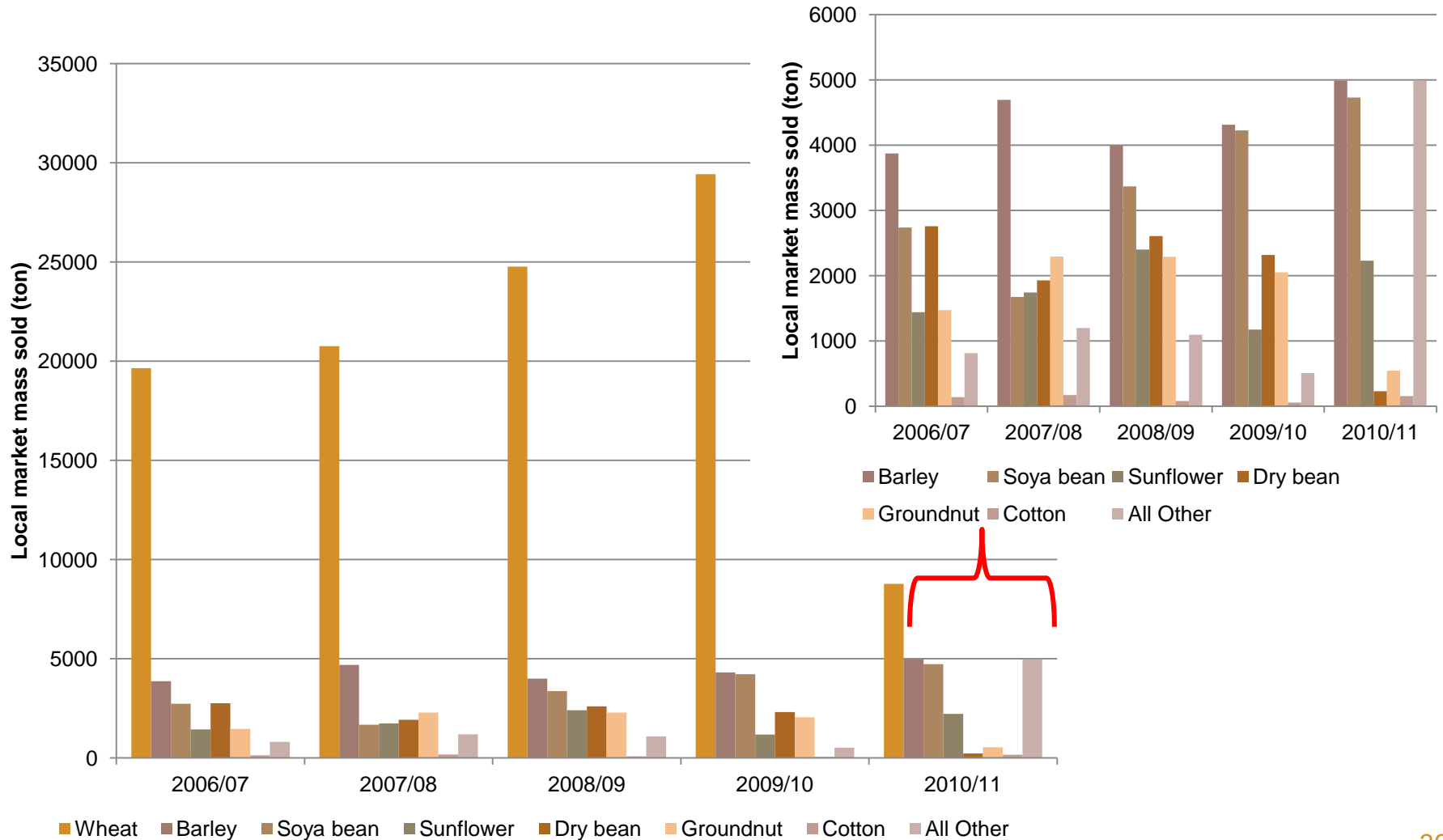
SIZE OF SA SEED INDUSTRY – MARKET VALUE BASED ON RETAIL SELLING PRICE (R'MILLION)

	SA Agronomic crops (R'million)	% of Total	SA Horticultural crops (R'million)	% of Total	SA Forage & Pasture crops (R'million)	% of Total	Total SA Market Value (R'million)
2006	1 549.06	75.8%	344.84	16.9%	150.22	7.3%	2 044.12
2007	1 875.16	77.3%	372.72	15.4%	176.78	7.3%	2 424.66
2008	2 083.39	74.9%	457.96	16.5%	240.95	8.7%	2 782.30
2009	2 433.87	74.8%	583.02	17.9%	238.93	7.3%	3 255.82
2010	2 678.40	73.8%	673.40	18.5%	279.16	7.7%	3 630.96

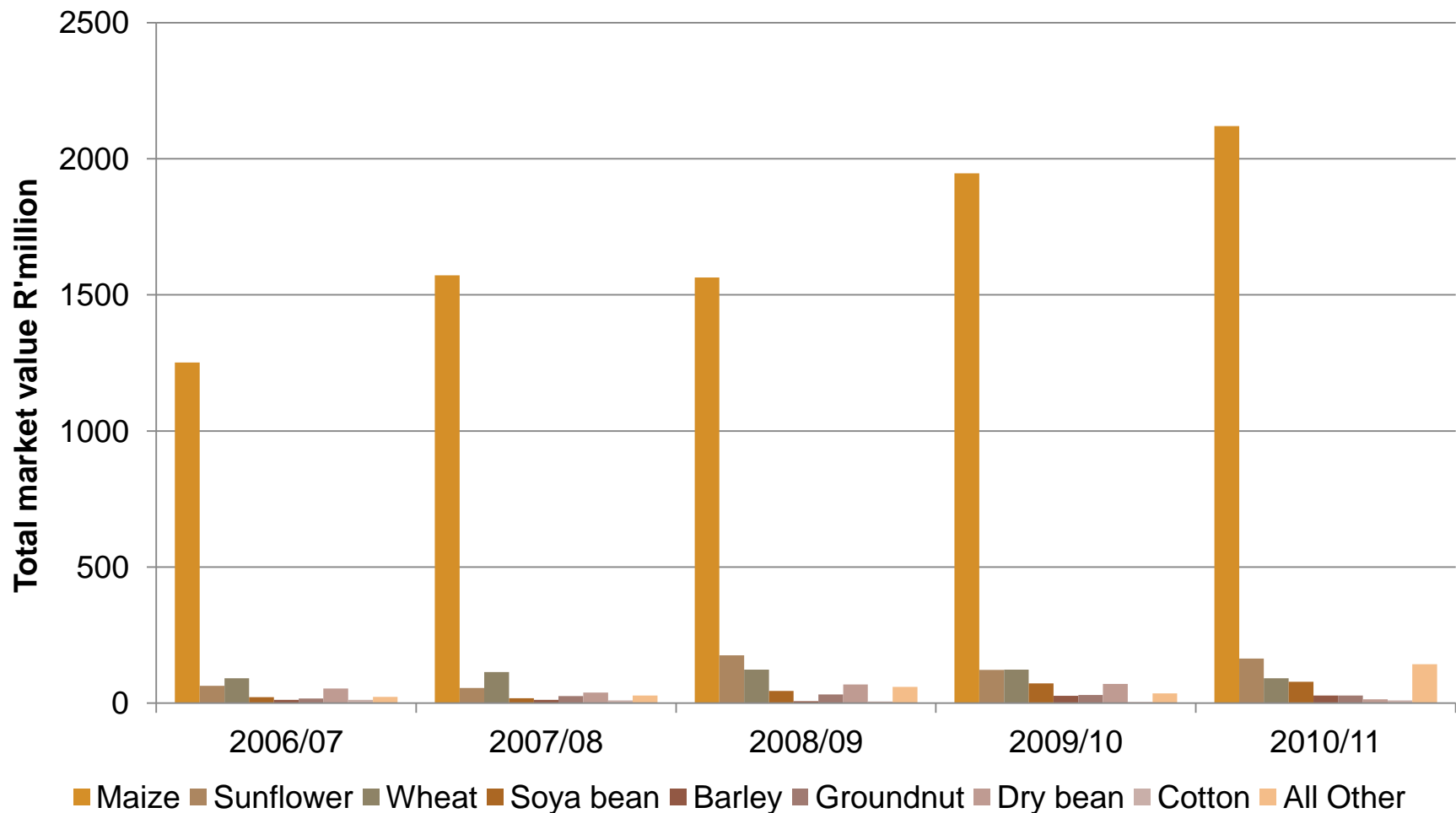
SIZE OF SOUTH AFRICAN AGRONOMIC SEED INDUSTRY



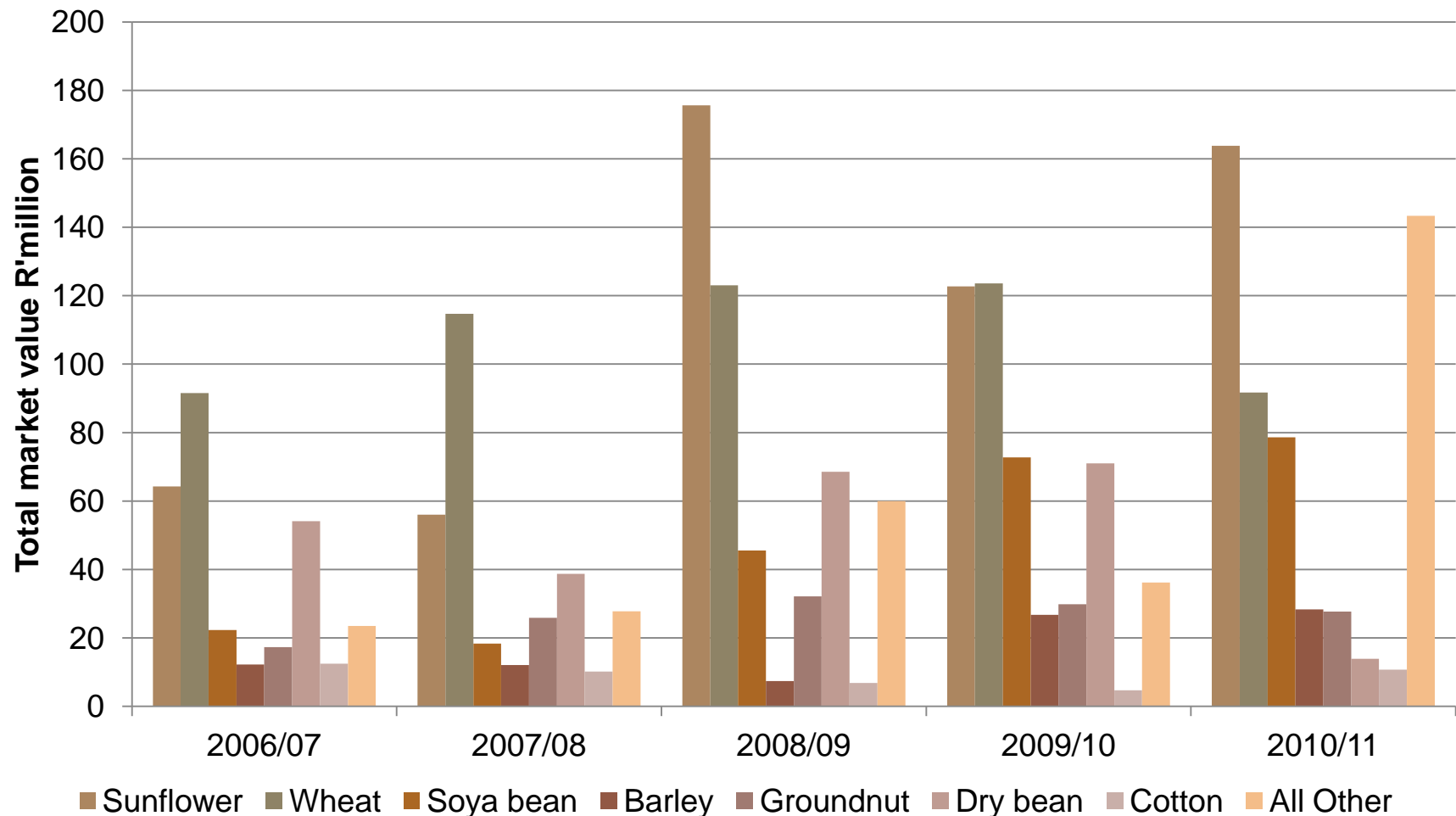
SIZE OF SOUTH AFRICAN AGRONOMIC SEED INDUSTRY – EXCLUDING MAIZE



TOTAL MARKET VALUE OF SOUTH AFRICAN AGRONOMIC SEED INDUSTRY

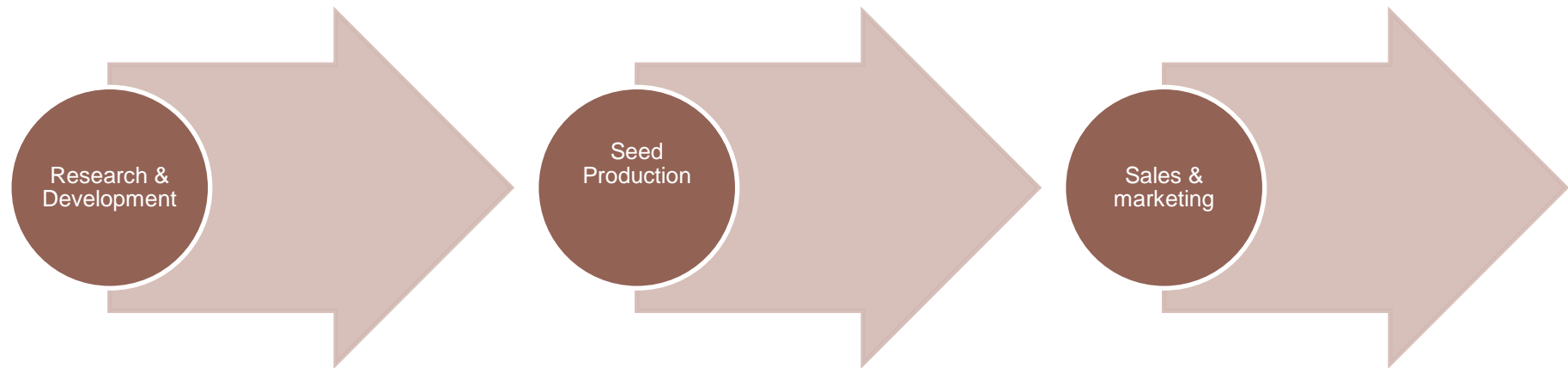


TOTAL MARKET VALUE OF SOUTH AFRICAN AGRONOMIC SEED INDUSTRY – EXCLUDING MAIZE



SEED DEVELOPMENT AND PRODUCTION PROCESS

DIVISION OF ACTIVITIES FOR SEED PRODUCTION WITHIN A COMPANY





Research &
Development

RESEARCH & DEVELOPMENT

- ✖ Seed consist of genetics and technology.
- ✖ Genetically modified organism (GMO) genes (traits) are the technology that is transported by the genetics of a parent seed.
- ✖ Seed is developed to enhance yield, improve disease resistance and growth patterns.
- ✖ The germ plasma (genetics) may be developed locally or imported.
- ✖ The traits (technology) are develop internationally and imported.

RESEARCH & DEVELOPMENT

cont....

- ✗ Two basic types of products:
 - Open or self pollinating (Wheat, soybean and groundnuts)
 - Hybrids (Maize, sunflower, cotton, vegetable seed, forage)
- ✗ Hybrids start with development of two genetically pure parent seeds through a selective inbreeding process that may take up to seven years.
- ✗ Open pollinating plant start with the selective inbreeding of parent seed.
- ✗ Hybrids and open pollinating seed can be conventional or GMO enhanced for pest, herbicides or both.
- ✗ Companies are licensed for the use of the GMO traits and pays a technology fee to the patent owner.
- ✗ Where the genetics are not developed by the company, royalties are paid to the breeders.

RESEARCH & DEVELOPMENT

cont....

- ✘ Companies are licensed for the use of the GMO traits and pays a technology fee to the patent owner.
- ✘ Where the genetics are not developed by the company who use it, royalties are paid to the breeders.
- ✘ Because growing conditions and diseases in SA may differ from where the germ plasma and traits are developed, a lot of R&D is necessary to adopt to local requirements.
- ✘ The inbreeding or selective breeding process is done through various trails.

RESEARCH & DEVELOPMENT

cont....

- ✘ The trails start off in laboratories (\pm 2 years), then small plots that imitate growing conditions and with constant monitoring the verification of required characteristics can take place (\pm 3 years).
- ✘ The research facilities are in different locations for the purpose of disease, yield and drought resistance testing.
- ✘ The seed cultivar are then registered in terms of the Plant Breeders Act and Plant Improvement Act.
- ✘ Further semi commercial trails are conducted for 2 more years before the seed is commercially released.



RESEARCH & DEVELOPMENT

cont....

- ✘ Breeders develop thousands of cultivar lines annually, of which a few pass through the process as described.
- ✘ Billions are spent annually by various companies on research into new technologies and hybrids.
- ✘ The development of a new GM-crop can cost as much as R520 million, before the crop is introduced commercially.
- ✘ Technology such as biotechnology, nanotechnology and marker-assisted breeding (MAB) are used to develop new products for the market. Markers are used to identify specific genes to address a specific problem (such as drought or stalk-borer).
- ✘ These new technologies enable breeders to shorten the breeding period considerably.
- ✘ Companies spend between 10 and 15% of turn over on R&D.

A large, light brown arrow pointing to the right, with a dark brown circle on its left side containing the text "Seed Production".

Seed
Production

SEED PRODUCTION – THE EXAMPLE OF MAIZE

- ✘ Once a decision is taken for the commercial release of a variety, the production process start.
- ✘ The process start with the multiplication of the parent seed.
- ✘ Generally two practices:
 - Producers are contracted to grow the seed on their farms by which they buy the seed and are compensated with a premium buy back;
 - Producers are contracted but do not take ownership of the seed and are compensated for expenses and a premium.
- ✘ All of the production are done under irrigation to limit risk.
- ✘ Production areas are also in different parts of the country to ensure that various weather and production risks are limited.

SEED PRODUCTION – THE EXAMPLE OF MAIZE

cont....

- ✗ For the production of hybrid seed (conventional or GMO), the female seed are planted for example in four rows alternating with two male rows ($\text{♀}4:\text{♂}2$), this ratio varies from hybrid to hybrid eg. 4:2, 6:2 etc. depending on the amount of pollen the male produces.
- ✗ To ensure that the plants are ready for pollination on the same time, the female and male plants are plant at different time intervals. The time of planting is different for different hybrids, depending on the days to flower of the two ♂ lines.



SEED PRODUCTION – THE EXAMPLE OF MAIZE

cont....

- ✘ The female's tassels are removed by hand or mechanical before any silks form on the female plants.
- ✘ If done by hand the labour requirement is about 10 labourers per hectare to ensure that the detassling is done in time.
- ✘ This process ensure that the pollen of the male tassel end up on the silk of the ear of the female plant and that no self pollination takes place.



SEED PRODUCTION – THE EXAMPLE OF MAIZE

cont....

- ✘ For the collection of the seed when ready, two practices are followed:
 - The cobs are harvested wet ($\pm 30\%$ moisture) with imported adapted combines;
 - Or the seed are left to dry in the field to $\pm 13\%$ moisture and then harvested with conventional combines.
- ✘ Most of the role-players make use of transport contractors to collect the harvested seed on the farm and deliver it to the production plant.
- ✘ Time is very important for the wet cobs because of quality losses when the seed are too hot while transported.
- ✘ Once the wet cobs are delivered in lots from the farm, it is de-husked and conveyed into dryers. Through closely controlled warm air, the moisture is taken down to $\pm 13\%$ before it is conveyed to a shelling machine and then into storage.
- ✘ Where seed are harvested dry, the seed are delivered in steel bins or big storage bags. This enhances the monitoring of lots, is easier to handle and also saves on storage space since it can be stacked.

SEED PRODUCTION – THE EXAMPLE OF MAIZE

cont....

- ✗ The process further is much the same for the already dried seed delivered to the plant and on site dried seed.
- ✗ Samples are taken to on site laboratories which work according to ISTA Rules and are registered with DAFF and monitored by them, to be tested for the presence of foreign material, germination as well as genetically purity.
- ✗ No further processing of the seed will take place without an acceptable test result.
- ✗ All of the role-players do not accept seed with at least 90% or more germination rate.



SEED PRODUCTION – THE EXAMPLE OF MAIZE

cont....

- ✗ The seed are then cleaned of all foreign material.
- ✗ Cleaned by an electronic colour scan for discolouring due to water or other damage.
- ✗ Then sorted according to own weight on a gravity table to ensure that lower quality seed are taken out.



- ✗ The seed are then graded according to size with various grout size rollers.
- ✗ Maize seed are treated with fungicides, pesticides for insects that can damage it during storage as well as micro-element treatment.
- ✗ If desired by the end user, pesticides for ground insects may also be applied but only on order.
- ✗ Furthermore, the seed are coloured for distinction between white and yellow maize seed or the distinction are done on the packaging.

SEED PRODUCTION – THE EXAMPLE OF MAIZE

cont....

- ✗ Seed are sold in bags with a specific quantity of seeds in the bag. This ensure that the farmer's plant population per hectare is correct.
- ✗ By way of sampling, the seed weight are determined since the seed weight differ between sizes. Bags are then filled in such a way that the desired quantity of seeds (number of kernels) are in the bag and not just by net weight of the filled bag.
- ✗ During the packing process, samples are taken to ensure that the weight of the bag comply but also for re-testing in the lab for germination and genetic purity.
- ✗ The germination percentage are indicated on the label as well as a lot number to ensure that the seed can be traced back to the farm and also the piece of land where it was grown.
- ✗ After each run through the plant of a certain cultivar, the whole plant is cleaned to ensure that there is no cross contamination between cultivars.

SEED PRODUCTION – THE EXAMPLE OF SOYBEANS

- ✗ The process is the same for soybeans as described for maize with the following differences:
 - ✓ The breeding process begins with two plants and with selective growing merged into one self pollinating plant.
 - ✓ The parent seed are multiplied and then commercialised.
 - ✓ The seed are not treated with any chemicals before packaged and dissemination.
 - ✓ Left over seed after the season are sold to processors.
 - ✓ Producers may plant the seed more than one season.
 - ✓ The seed kept back by growers is seriously influencing the development of new genetics and future of these crops in SA.
 - ✓ Some companies sells seed subject to the farmer signing a license that negates their farmers privilege and prohibits them from retaining seed harvested from one crop for planting in the following season – this ensures ongoing crop viability and therefore investment in research.
 - ✓ Other crops in this group are wheat, groundnuts and sugar beans.

SEED PRODUCTION – ALL CROPS

- ✘ The processes above have to be repeated for all crops for several years and through several generations before the seed has been bulked up enough to be marketed.
- ✘ Breeders supply only about 7 kg of seed to the production unit – this is multiplied by the production unit in the first year to the Pre-Basic Seed generation, then again in the second year to Pre-Basic 2 (if necessary), the third year to Basic Seed and in the fourth year to Certified Seed, after which then only it is sold to farmers for commercial production.



Sales &
marketing

MARKETING AND SALES (CONDUCT)

- ✗ All of the role-players in the seed production industry have their own workforce for the production, marketing and sales of their seed.
- ✗ These also includes agronomists.
- ✗ Seed are sold through agents, co-ops or directly from production plants.
- ✗ Carry over stock are returned to the plant at the end of the season.
- ✗ Maize seed stock is fumigated for insects before returning to storage.
- ✗ No carry over stock is resold without being tested again for germination.
- ✗ Should there be any reason why the seed can't be resold, then it is destroyed because of the chemical treatment.
- ✗ Should there be damage or quality problems before the chemical treatment, the seed are sold as grain.

MARKETING AND SALES (CONDUCT)

- ✗ No carry over stock of soybeans are stored, these are sold to processors.
- ✗ For open pollinating crops, a non-propagation agreement is signed with the farmers to limit the use of seed for replanting.
- ✗ Farmers receive discount for early ordering, early payment and bulk buying.
- ✗ There are also discounts for the co-ops who take ownership of the seed.
- ✗ Price formation is based on the cost of production, value of the product in the market as well as ensuring competitiveness.
- ✗ The recovery of R&D costs are very difficult to determine for a specific cultivar that is sold now but developed over the last 7 years. This leads to some cross financing between cultivars and between crops.

COSTS INVOLVED

COST ITEMS FOR SEED COMPANIES

- ✗ R&D cost can only be recovered in the long term. Constant breeding programs are needed because diseases and plant requirements change constantly.
- ✗ Breeders are highly skilled, scarce professionals.
- ✗ Technology fees (GMO cultivars)
- ✗ Royalties
- ✗ Accreditation
- ✗ Certification
- ✗ DNA tests for genetically purity
- ✗ Safety equipment in plants
- ✗ Logistics and storage to ensure traceability of the lots back to the farm.
- ✗ Technology owner needs to monitor the use of refuge areas where GMO seed are planted and thus responsible for the product stewardship.

COST ITEMS FOR SEED COMPANIES

cont....

- ✘ Down time of plants for cleaning; dry runs on the machines and labour intensive without product output.
- ✘ Premium prices to producers because seed compete with other crops under irrigation.
- ✘ Assistance for spray programs.
- ✘ Credit to farmers by some of the companies.
- ✘ Contractors for the removal of by-products (husks and cobs).
- ✘ Infrastructure cost for production plants is high because most of the equipment is imported.
- ✘ Labour cost, highly skilled breeders to be retained in a competitive environment and additional casual workers during peak times in seed multiplication and production plants.
- ✘ Finance costs, as it takes several years and seed generations, for which the seed production farmers have to be paid, before any return is realized when the cultivar is finally sold for commercial production.