AGRUCULTURAL RESEARCH COUNCIL – SOUTH AFRICA

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AGRICULTURAL RESEARCH: ENHANCING PRODUCTIVITY THROUGH INTELLECTUAL PROPERTY

BY

DR. SHADRACK R. MOEPHULI
ARC: PRESIDENT & CEO
ARC MANDATE PER ACT

➢ To CONDUCT RESEARCH, DEVELOPMENT & TECHNOLOGY TRANSFER IN ORDER TO:
  • Contribute to better quality of life;
  • Facilitate/ensure natural resource conservation
  • Promote agriculture & industry;
RESEARCH & DEVELOPMENT MANDATE

• GRAIN CROPS
  • Maize, sorghum, barley, sunflower, soya bean, dry beans, wheat, groundnuts, cowpea, bambara, tobacco, new crops

• HORTICULTURE
  • Vegetables, root & tuber vegetables, citriculture, subtropical crops, deciduous fruits, citrus, viticulture, temperate crops etc

• LIVESTOCK (production & diseases)
  • Cattle, sheep, goats, poultry, pigs, vaccines etc

• AGRICULTURE ENGINEERING

• NATURAL RESOURCES
  • Soils, climate, water, biocontrol etc
SOUTH AFRICA & UPOV

- Member country to UPOV 1978
  - Act amended in 1996 -- conformity to Constitution
- Plant Improvement Act, 1976 (Act 53 of 1976)
- SA Patents Act 57 of 1978 (as amended)
- SA Trade Marks Act 194 of 1993 (as amended)
- TRIPS Agreement
- Intellectual Property Rights from Publicly Financed Research & Development Act 51 of 2008
GRANTED BREEDER’S RIGHTS

- Enables commercialization & technology transfer
- Conducted through Plant Improvement Act – variety listing
- Period of Breeder’s right:
  - 25 years for trees and vines
  - 20 years for all other crops
  - Initial 5 years – exclusive rights
  - Remaining 15 years right – holder must issue licence to anyone requesting
  - National authority may expropriate rights for national interest – food security needs
  - National authority may issue a compulsory licence
  - Automatic expiry of rights following prescribed period
  - Farm saved seed allowed
ARC INTELLECTUAL ASSETS

Mainly Comprised of:

- Plant Breeder’s Rights – predominant
- Patents
- Copyrights – publications
- Trademarks
- Trade secrets
- Know How
- Other unregistered IP
IPR FROM PUBLICLY FINANCED R & D ACT

• Purpose:
  – Publicly funded R & D must:
    a) be protected;
  b) Utilized; and
  c) commercialized
  – To benefit people of South Africa
  – Recipients of public funding act in a manner conducive to public good
  – Acknowledge & reward innovation
  – Enable economic growth through enterprise development
  – Allows publishing of scientific results
POSSIBLE EFFECT OF IPR ACT ON PUBLIC INSTITUTIONS

• Technology Transfer Office to manage IP
  – Disclosure
  – Identification, protection, development
  – Commercialization
  – Benefit – sharing arrangements
  – Reporting to National IP Management Office

• IP protection – benefit sharing arrangements

• Administrative impact

• Qualified IP experts to advice and manage
POSSIBLE EFFECT OF THE IPR ACT IN SOUTH AFRICA

• INVENTOR/RESEARCHER:

  – 20 % of revenue for first R1 million
  – Thereafter at least 30 % of net revenue from institution from the invention
  – Good for the inventor – incentive & protection
  – Prescription is perceived as onerous
  – Most institutions already have benefit – sharing systems with inventors – often these provide for higher percentage for inventors
  – Compliance may reduce benefit – sharing percentages for inventors
POSSIBLE EFFECT OF IPR ACT ON PRIVATE SECTOR

• Majority of R & D projects are co-funded (public & private)
  – May result in administrative burden for institutions
  – May be disincentive for private funding of R & D
  – Still to learn impact on economy and the creation of new businesses
  – May lead to reduced co-funding arrangements
  – May lead to increase in the development of trade secrets by private entity
  – Impact on agricultural productivity remains unclear
ARC INTERPRETATION OF THE IPR ACT

• ARC Intellectual Property Rights Policy
• Technology Transfer Office
  – Intellectual Property Manager
  – Commercialization Manager
  – Corporate Legal Advisor

• Policy used for technology transfer
  – Licencing
  – Commercialization
  – Income generation
  – Investment into R & D
R & D INTENSITY & AgGDP CONTRIBUTION 1910 – 2008
IP Technology Transfer Mechanisms

- **Direct Transfer**
  - Advisory Services for Livestock Productivity
  - Publications for productivity enhancement
  - Training for productivity improvements
  - Information dissemination

- **Agency Mandate**
  - Licensing
  - Contract arrangements

- **Partnerships**
  - Project partnership
  - Consortium arrangements
FAMACHA: Checking a goat for anaemia in Nkwezela Village (Bulwer), KwaZulu-Natal
FAMACHA© system taken up by Farming Systems Research and farmers being trained
NATIONAL WHEAT CULTIVAR EVALUATION PROGRAMME

- Conducted in all provinces, at 67 localities testing 76 cultivar/environment interactions

- Data published in the Production Guidelines for small grain production (four publications)

- Distributed to 8000 small grain producers

- Scientifically founded and objective decision-making guideline for producers
PRODUCTION GUIDELINE FOR EMERGING COMMERCIAL SMALL GRAIN PRODUCERS

- First publication of this kind aimed at emerging commercial producers

- Contains all information on production practices for small grain production

- English copies distributed to 1000 producers already

- Copies of same publication in Sesotho available
Cotton Plant Protection Training – SADC Region

- **Malawi** (2 workshops)
  - 90 Extension officers trained
  - Serving 75,000 small-scale farmers

- **Zambia** (3 workshops)
  - 120 Extension officers trained
  - Serving 45,000 small-scale farmers

- **South Africa** (1 workshop)
  - 17 Chief Extension Officers trained
  - 4 Provinces (NW, Mpumalanga, Limpopo, KZN)
  - Serving 1000 small-scale farmers
  - Promoting cotton as a cash crop
MARKET SHARE OF ARC IRRIGATION CULTIVARS FARMER’S DEMONSTRATION

• ARC currently at 40% market share of wheat cultivars produced under irrigation conditions in the RSA

• 2250 tonnes of ARC cultivars sold and produced in the 2009/2010 production season

• 25000 ha under irrigation planted to ARC cultivars

• Irrigation wheat is a significant stabilizing factor in the production of bread products in the RSA
MARKET SHARE OF THE BALREY CULTIVAR PUMA UNDER IRRIGATION

- 5700 ha under irrigation in the Northern Cape and Northwest Provinces planted to Puma

- This represents 58% of the total barley production in the irrigation areas

- Total production of 35000 ton Puma realised in these areas

- Puma is a significant stabilising factor in supplying malting barley to the industry
In 2009 the ARC released 11 new varieties to the South African stone fruit industry. The varieties released, are either replacing older and non-performing varieties, or will fill important harvesting gaps in the season. The eleven new varieties are made up of:

- four plums
- five peaches
- two nectarines

Of the four plums, two have a full red, one a black and one a yellow skin colour. Of the peaches, three were for the dessert industry, one for the canning industry to extend the harvesting season, and one for the drying industry. Of the two nectarines released, one is a very early variety for the fresh market. The second variety which is being marketed as “Colorburst™”, will extend the drying season for the yellow skin nectarines suitable for drying. “Colorburst™” is the trade mark registered for the unique range of yellow-skin nectarines bred by the ARC and is currently sold exclusively by Woolworths in South Africa.
Commercialization (cultivars released + all other related activities)

- A new blushed pear selection, with the trade name Cheeky™ was released to Deciduous Fruit Industry. The uniqueness in this cultivar lies in the ability to keep its delicate blush during warm periods, good storage ability of up to 12 weeks and pleasant taste after storage. Cheeky comes on the market when there are no other blush pears. Blush pears fetch premium prices. Result of a breeding programme.
IMPACT OF LICENSING ON ARC

ARC income from royalties (2003/04-2009/10)

Year

2003-04
2004-05
2005-06
2006-07
2007-08
2008-09
2009-10

Royalties amount (ZAR)

R 4 000 000

R 6 000 000

R 8 000 000

R 10 000 000

R 12 000 000

R 14 000 000
The ARC has bred a new citrus cultivar called ‘Sonet’ and although it is still being evaluated, it has already attracted huge interest from citrus farmers. The response to a presentation at a citrus growers day organised at Addo Research Farm to inform citrus farmers about the qualities of ‘Sonet’ was overwhelmingly positive. The cultivar has also attracted international interest and indications that this citrus cultivar will be sought after on global markets. The cultivar will be released for commercial production once the comprehensive evaluation process has been concluded and will enhance the competitiveness of South African citrus farmers on global markets.
Vaccines developed against parasitic nematodes:

Vaccine against internal parasites (*Haemonchus*: nematodes) for sheep and goats is a crude homogenate of adult worms. The vaccine use results in the increase of the income generated by resource-poor farmers and commercial farmers by increasing the animal productivity and cutting the huge spending in treatment of the herds. The vaccine is cheap to produce and to sell. It is produced in collaboration with Moredun Research Institute, UK.

30 Boer goats vaccinated & protected
ARC’s IP: SIT (Sterile Insect Technique)

Some excellent progress has been made with the sterile insect technique (SIT) programme, which currently includes false codling moth (the most important insect pest for the citrus industry, but also a pest on stonefruit and table grapes), and Mediterranean fruit fly and codling moth, both key pests on deciduous fruit. A programme funded by government for productivity.

River, and the Warm Bokkeveld, Tulbagh/Wolseley, Kaaimansgat and Langkloof areas. Two additional areas where fruit farmers are developing on their farms, viz. Klein Swartberg and Prince Albert in the Karoo region, are also due to start a fruit fly monitoring programme with a view to later implementing SIT.
Partnership: SmartFreshSM Technology

Commercialization in South Africa

Control

SmartFresh Treated
USE OF IP FOR BENEFIT – SHARING

• As a public entity ARC utilizes IP to enhance benefit sharing:
  – Effective technology transfer – mainly for agriculture development and growth
  – Enable competitiveness of the agriculture sector
  – Contribute cultivars that are important for food security
  – Incentivise innovation through:
    • Further investments into Research and Development
    • Providing a share of the revenue generated to inventor
    • Stimulate enterprise development
    • Facilitate access to poor farmers for development & productivity

• Intellectual Assets are critical for Agricultural productivity!
Token of appreciation from Bulwer farmers To ARC Team: Christmas cake
Re a Leboha
Siyabulela
Siyabonga
Siyathokoza
Ha khensa
Ria livhuwa
Baie dankie
THANK YOU