

# CCARDESA

Centre for Coordination of Agricultural Research and Development for Southern Africa



## AGRICULTURAL PRODUCTIVITY PROGRAMME FOR SOUTHERN AFRICA (APPSA)



### APPSA ROUND UP JANUARY 2020



Government of Malawi



Government of Mozambique



Government of Zambia



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# APPSA

## AGRICULTURAL PRODUCTIVITY PROGRAMME FOR SOUTHERN AFRICA

**(APPSA) ROUND UP - JANUARY 2020**



## BACKGROUND

The Agricultural Productivity Programme for Southern Africa (APPSA) was a World Bank funded project implemented with the coordination of Centre of Coordination of Agricultural Research and Development for Southern Africa (CCARDESA). It was implemented in Malawi, Mozambique and Zambia over a six year period. The programme commenced in March 2013 with US\$ 90 million in IDA Specific Investment Loan (SIL) financing, of which, each country was allocated US\$ 29.8 million. CCARDESA also received US\$ 0.6 million grant to coordinate the program. Project activities began in the three countries in October/November 2013 and closed in January 2020. It is anticipated that this programme will continue, and more countries are expected to join in future.

## INTRODUCTION

The countries of southern Africa are home to about 258 million people and generate total Gross Domestic Product (GDP) of around US\$471 billion. Agriculture is the primary source of subsistence, employment, and income for most of the population. Performance of the agricultural sector has a strong influence on growth, employment, food security, and poverty. Agriculture in this region is dominated by production of food crops, including cereals (e.g., maize, sorghum, rice), roots and tubers (e.g., cassava, sweet potato), and food legumes (e.g., groundnuts, beans, soybeans).

Agricultural production in southern Africa is still faced with challenges which include: low productivity, low intensification and adoption of promising technologies, vulnerability to climate shocks, inadequate facilities, shortages of qualified staff, and low levels of overall investment and budget support.

Analysis identified several yield gaps that could be narrowed with additional investments in technology adaptation and dissemination. However, the dispersion of R&D investment and agricultural scientists in Africa across so many small institutes makes it difficult to assemble in the same location the critical mass of researchers needed to address the generally more complex problems of African agriculture.

Regional integration has proven to be an effective strategy helping groups of countries facing common research challenges to increase the efficiency of their investments in agricultural R&D. Technology spillover is already occurring within the sub-region, and a few high-yielding crop varieties and improved crop and livestock management practices have been successfully disseminated across borders.

The Comprehensive Africa Agriculture Development Programme (CAADP) in its Framework for African Agricultural Productivity (FAAP), among other

things calls for massively scaling up regional collaboration in agricultural R&D to efficiently address capacity constraints and increase technology spillovers.

The SADC Regional Indicative Strategic Development Plan (RISDP) identifies Regional Integration as the key to economic growth and poverty reduction. SADC has therefore taken a proactive role in pursuing a regional approach to agricultural research focusing on programs that are of strategic importance to the region and that have large potential for spillovers across country borders. For example, SADC member states already adopted a common seed certification policy, with the aim of increasing the movement of improved germplasm across national borders.

In 2011, SADC member states established the Centre for Coordination of Agricultural Research and Development for Southern Africa (CCARDESA) as a sub-regional body to lead collaboration in agricultural R&D. The Agricultural Productivity Program for Southern Africa (APPSA) coordinated by CCARDESA focused on agricultural technology within the context of a regional approach. This was well aligned with the objectives of the World Bank's Africa Strategy, which emphasizes the need for investments to improve the competitiveness and resilience of African agriculture.

## PROJECT OBJECTIVE

The project development objective (PDO) was: 'to increase the availability of improved agricultural technologies in participating countries in the SADC region.'

## PROJECT COMPONENTS

There were three main components within which the project was implemented. These are described below, and the summary budget is presented in Table 1.

### *Component 1 - Technology Generation and Dissemination*

This component focused on implementation of technology generation and dissemination activities associated with the commodities being targeted by the Regional Centers of Leadership (RCoLs). An RCoL is defined as a leading agricultural technology center or programme with established capacity (or the potential to establish capacity) that distinguishes it as a leader in the region and beyond. Malawi led in maize and maize-based farming systems, Mozambique led in rice and rice-based farming systems, and Zambia led in food legumes and food legumes-based farming systems. The commodities were selected based upon a regional priority setting study and priorities indicated by each country.

### ***Component 2 - Strengthening Regional Centers of Leadership***

This component aimed at raising the capacity of each country to be the RCoL in the selected commodity. Through targeted interventions the core capacities of RCoLs were strengthened by support to: (i) upgrading research infrastructure such as, physical infrastructure, laboratories, and office equipment; information technology and knowledge management systems; (ii) improving administration and performance management systems; (iii) developing human capital including provision of scientific training at the post graduate level and by upgrading skills through short courses or targeted training; and (iv) strengthening seed production capacity, seed regulatory functions, and related services.

### ***Component 3: Coordination and Facilitation***

This component supported project coordination. Coordination and facilitation activities were undertaken at national and at regional levels. At national level the key activities included planning and budgeting, management and administration, monitoring and evaluation, safeguards compliance, and regional engagement. At the regional level the type of support provided by CCARDESA broadly included, convening regional strategic meetings, peer review and networking, technical

backstopping, monitoring and evaluation, administration and management. The component also supported policy harmonization and advocacy work (needs assessments, and policy dialogue or policy harmonization activities, etc.) in key areas that affect R&D such as policies and legislation for intellectual property rights, operationalization of the SADC harmonized seed regulatory system, implementation of biosafety regulations, and similar topics.

## **THEORY OF CHANGE**

Low agricultural productivity in southern Africa is driven by, among others: complex agricultural production systems, limited and diffuse capital investments, limited access to improved technologies, human resource constraints, poor quality of facilities and infrastructure, weak technology generation and dissemination systems, vagaries of climate, and barriers to transnational technology spillover.

The APPSA theory of change (Figure 1) was based on the premise that if a regional approach to agricultural research focusing on programmes that are of strategic importance to the region was adopted, and supported by committed collaboration among scientists, capital investment, human capital development, infrastructure improvement and better service delivery, and policies to allow

spillovers across country borders, then there would be an *‘increase in availability of improved agricultural technologies in participating countries in the SADC region’*, and that in turn would lead to a longer-term goal of improving productivity and production

of safe and nutritious food within priority farming systems in southern Africa.

The underlying results chain and theory of change for APPSA is depicted below:

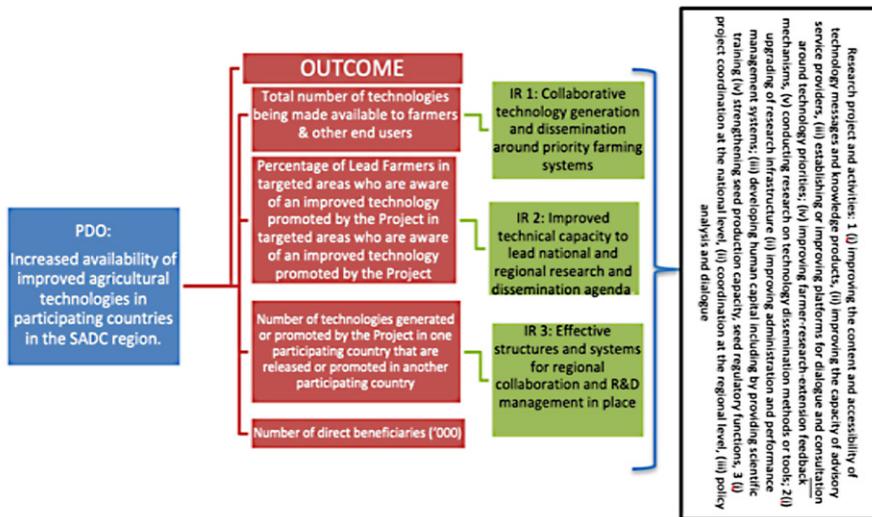


Table 1: Project costs and financing (US\$ million)

Project components	Project costs				Totals with contingencies			
	Malawi	Moz.	Zambia	Total	Overall total	IDA Credit financing	Regional IDA Grant financing	Percent of IDA financing
1. Technology Generation and Dissemination	11.65	11.68	12.41	35.74	37.98	37.24	0.0	42
2. Strengthening Regional Centers of Leadership	11.52	11.13	12.46	35.11	37.85	37.79	0.0	42
3. Coordination and Facilitation	5.68	7.52	4.88	18.08	18.81	14.37	0.60	16
<b>Total Baseline Costs</b>	<b>28.85</b>	<b>30.33</b>	<b>29.75</b>	<b>88.93</b>	<b>94.64</b>	<b>89.40</b>	<b>0.60</b>	<b>100</b>
Physical contingencies	0.44	0.36	0.42	1.22				
Price contingencies	1.51	1.67	1.31	4.49				
<b>Total Project Costs</b>	<b>30.80</b>	<b>32.36</b>	<b>31.48</b>	<b>94.64</b>	<b>94.64</b>	<b>89.40</b>	<b>0.60</b>	

## PROJECT APPROACH

The project was approached as a coordinated regional cooperation effort with the three participating countries sharing information, knowledge and activities, and deriving mutual benefits.

**Activities:** The process through which activities were developed is summarized below:

**Step 1:** Through national consultative processes, each country identified the commodity area that distinguished it as a leader in the region and beyond, and around which its RCoL would be established. Malawi (maize), Mozambique (rice, and Zambia (food legumes).

**Step 2:** Research proposals were developed in each country, through participatory processes, and scientists from other countries were invited to collaborate. It was a condition that each research proposal involve a minimum of two participating countries.

**Step 3:** The proposals were subjected to national peer review to shortlist and then regional review by a panel of experts assembled by CCARDESA.

**Step 4:** Selected proposals were approved for funding and research activities commenced.

**Step 5:** Other project activities relating to procurements, development and improvement the infrastructure, and development human capital were initiated.

*The collaborative R&D projects included a set of activities designed to ensure that technologies generated under APPSA were made available to farmers and other end users through various dissemination pathways. The technology dissemination activities also focused on promotion of improved technologies that were generated before commencement of APPSA.*

**Implementation:** Each country had a Programme Management Unit (PMU) with a Coordinator and other appropriate officers for smooth management of the programme. Programme management was according to APPSA guidelines.

**Coordination:** At national level, activities were coordinated by: Department of Agricultural Research Services (DAR, Malawi), Instituto de Investigação Agrária de Moçambique (Agricultural Research Institute of Mozambique, IIAM), and Zambia Agriculture Research Institute (ZARI), respectively. Regional coordination was done by CCARDESA.

**Monitoring:** In order to ensure that there was compliance and progress with activities toward project development objective, as well as national/regional aspirations, National Steering Committees made up of agriculture Permanent Secretaries and representatives from agriculture Ministries as well as participating and some relevant institutions, such as farmers union and CGIAR, provided

oversight at this level. At regional level, agriculture Permanent Secretaries, World Bank and CCARDESA representatives comprised a Regional Steering Committee.



Conference in Lilongwe, Malawi

## KEY PROJECT ACCOMPLISHMENTS

According to the project M&E framework, it can be concluded that APPSA performed well. The achievements scored are summarized below:

### 1. Regional research collaboration and spill-over

APPSA has demonstrated that well-coordinated regional research collaboration can be achieved with significant spill-over, and economic benefits. This is confirmed by the 74 collaborative research projects carried out among the participating countries, broken down by lead into 22 (Malawi), 21 (Mozambique) and 31 (Zambia). However, because of the regional approach used, there was a multiplier effect in the additional benefit to each country in terms of other projects that

they participated in, bringing Malawi to 65, Mozambique to 67 and Zambia to 71 (Table 2).

Table 2: Distribution of collaborative research projects

Country	Projects Led	Projects Collaborated	Total
Malawi	22	43	65
Mozambique	21	46	67
Zambia	31	40	71
<b>Total</b>	<b>74</b>		

\*Project completion rate was 75% across the three countries.

### 2. Establishment of Regional Centres of Leadership (RCoLs)

APPSA has helped the SADC region to establish RCoLs for maize in Malawi, rice in Mozambique and food legumes in Zambia. Through these dedicated science and research centers, it is expected to develop expertise and knowledge repositories and to improve the cost efficiency of research in the various commodity crops within the region.

### 3. Advancement of research on commodities and themes of regional interest

The project has been instrumental to reactivate some NARs to generate new research information and products on commodities and practices that are of importance to the region (Table 3). Prior to this, several of the NARS had been handicapped by lack of funds to carry out research.

Table 3: Range of commodities and practice covered in the project

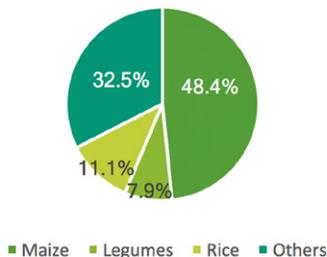
Commodity/Thematic Area	Total # Projects
Cassava	5
Legumes	28
Maize	21
Rice	10
Sorghum	2
Climate Smart Agriculture	8
<b>Total</b>	<b>74</b>

The themes under which research projects were developed included: Nutrition (vitamin A maize, QPM, high iron/zinc beans, utilization of grain legumes), Human health/food safety (aflatoxin, mycotoxin levels in maize and groundnuts), Mitigating the effects of climate variability (drought tolerant maize, legumes and rice, CSA), Germplasm (collection and characterization), Soil/water management (soil fertility, CA technologies, water use efficiency), Promoting “new” cash crops (soybean, pigeon pea, rice), Post-harvest storage (small scale metal silo testing/fabrication, R&D on storage pests), Agro-processing , value addition (groundnut, bambara nut, soybean), Existing and emerging pest/disease threats (surveillance on MLN, MLN resistance, FAW), Livestock improvement (management), Production and productivity (input use trade-offs, crop rotation), and Scaling up dissemination (demonstration, field days, media efforts).

**4. Technology generation and dissemination**

Out of the 74 projects undertaken by the countries, 156 technologies were generated. In total 314 technologies and management practices were made available to farmers against a target of 209. This was a 150% success rate. More than 50% of the technologies generated were on crop improvement (Figure 2, Table 4). Apart from the technologies and practices disseminated at national level, at regional level 30 technologies which

included 5 newly released provitamin-A maize varieties were promoted.



**Figure 2:** Proportions of technologies generated by commodities

**Table 4:** Numbers of new crop varieties released

	Malawi	Mozambique	Zambia
Legumes	6	8	14
Maize	14	3	5
Rice	2	2	3
Sorghum		4	
Varieties submitted for release	20	16	27

**7. Infrastructure development and improvement**

The project provided extensive infrastructure improvement support, which will benefit NARS for many years to come. For instance, a new rice research center was constructed at Namacura, Mozambique, and there were improvements made to national research stations – offices, laboratories, and irrigation systems.



The New Administration Office at Bvumbwe - Malawi

**8. Regional M&E framework**

The three participating countries adopted for use, a cloud-based MIS which had been adopted by CCARDESA. This has set a basis for regional integration of research data and information. Although there is a feeling that the system needs improvement, the principle is itself considered an achievement.

**9. Seed systems**

Funding from APPSA was used to assist each of the three participating countries to advance their national seed systems towards a regional harmonized system. This is already yielding fruit in the seed distribution system and cross border exchanges among these three countries.

**10. Regional collaboration network**

APPSA laid a foundation for functional collaboration in the region. This was achieved through the collaboration among scientists that worked on same projects across borders, the project management mechanism that brought country offices together, regional steering committee comprised of country representatives, and the commodity lead scientists' network.

**PROJECT IMPACTS**

It is generally agreed that most agriculture projects have a lag phase of more than five years before the adoption and impact could truly be assessed. APPSA was implemented over six years. Yet two distinct areas of impact could already be identified.

**1. Infrastructure and human capital development:**

The support to infrastructure and equipment has made it possible for scientists to more conveniently carry out research of high quality. In turn, it has increased their appetite for preparing proposals to source for research funds.

The RCoLs provided mentorship to young scientists through the PI and Co-PI model to improve quality of science.

At the same time some of the trainees whose studies were funded by the project as well as other project scientists have experienced career progression as a result of research output and higher qualifications.

**2. Support to harmonization of seed systems:**

The flow of good quality seeds across country borders has increased as a result of the progress made in harmonization of seed systems. It was reported that the demand for APPSA generated seeds has grown among farmers.

**PROJECT LESSONS LEARNT**

- The regional approach to implementation of R&D subprojects reduced duplication and contributed to effectiveness in research outputs.
- Learning and diversity as well as quality of research projects were enhanced by including scientists from the CGIAR and universities in the projects. However this could be improved.

- Harmonized and nonrestrictive policies in the three participating countries made it easy for countries to exchange ideas and materials.
- The project theory of change needs to be clearly conceived in order to enhance PDO M&E.
- The clear governance structure of APPSA which aligned very well with the government structures facilitated smooth implementation and management of the programme.
- The use of regional M&E and harmonized MIS facilitated learning and effective management of the programme.

## RECOMMENDATIONS

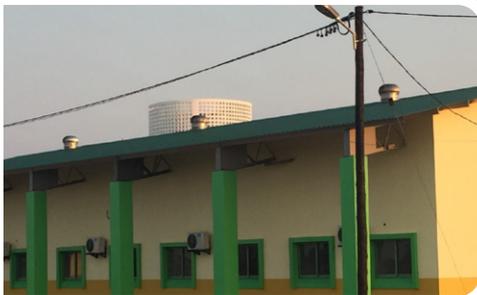
1. Broaden and strengthen partnerships with other institutions outside of the NARS, such as CGIAR, universities and NGOs who are in a position to add value to quality of science, relevance of projects, marketing and adoption.
2. State the theory of change clearly so that it enhances M&E.
3. Given the high numbers of technologies generated by APPSA, there is need to do more to enhance adoption of new varieties and technologies. A wider use of demonstrations should be promoted.
4. Improve the mobility of extension staff who have to cover wide areas, possible by providing motorbikes.
5. As the productivity among the beneficiaries is expected to increase, there is need for more studies to address post-harvest processes such as improved storage systems and access to suitable markets.
6. Integrate the financial records management with the Main system for the Ministry.
7. Women participation in APPSA was above 50% and they play a critical role in production and marketing. Therefore prioritize gender and market studies.
8. RCoLs should continue documenting and sharing project success. These can be shared with a wider audience through the Southern African Agricultural Information and Knowledge System (SAAIKS).



*Agricultural Equipment*



*Agricultural Equipment*



*Laboratory of Biotechnology and Seed laboratory - Mozambique*



*Chitedze Road Rehabilitation works - Malawi*



*Mobile soil testing laboratory - Zambia*



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