



Government of Malawi



Ministry of Agriculture

DEPARTMENT OF AGRICULTURAL RESEARCH SERVICES

Ministry of Agriculture Irrigation & Water Development of Malawi

A Perspective of National Agricultural Research Service (NARS)

1.0 Introduction

Agriculture is the backbone of Malawi's economy. It is the main livelihood of the rural population which accounts for more than 85% of the estimated 15 million Malawians. It contributes more than 40% to the Gross Domestic Product of Domestic Product (GDP) and accounts for more than 90% of the foreign exchange earnings.

The Malawi Government attaches great importance to the development of agriculture. The Ministry of Agriculture and Food Security conducts agricultural research, through its Department of Agricultural Research Services (DARS) which started way back in 1938. Thereafter, it was established as a technical department under Ministry of Agriculture in 1975. DARS has been generating agricultural technologies to address the challenges that hinder progress in agricultural productivity, food and income security. DARS is the driving force in the development and dissemination of agricultural technologies in Malawi. Its mission, vision, mandate and core values are as follows:

Vision

To be centre of excellence in agricultural research leading to generation of cutting edge technologies and promotion of high quality regulatory and specialist services.

Mission

To conduct strategic and demand driven research that generates environmental-friendly technologies and information and to provide efficient regulatory and specialist services that meets the

Mandate

DARS is responsible for conducting research for agricultural technology development and providing regulatory, technology dissemination and specialist services on all crops and livestock, except tobacco, tea and sugarcane.

Core values

DARS is guided by the following Core Values (TAICROC):

T-Transparency

A-Accountability

I-Integrity

C-Collaborative spirit

R-Responsiveness

O-Openness

C-Commitment to professionalism

1.1 DARS Core Functions

The Department is responsible for conducting agricultural research and provision of regulatory and specialised services on all crops and livestock, with the exception of tobacco, tea and sugar cane. In addition, DARS disseminates its technologies in collaboration with extension service providers and other stakeholders through various channels to ensure adoption and utilization among farmers. There are four main functions coordinated by DARS as follows:

- Technology Development;
- Technology Management;
- Management Information; and
- Administration and Support Services

1.2 Service Centres and their roles

DARS operates a network of nineteen service centres that are strategically located in all agro-ecological zones of Malawi. These covers a total land area of 2,731 ha. Among the services centre there are 18 research stations which categorized into the following four groups:

1.2.1 *Agricultural Research Stations:* Agricultural Research Stations have the capacity to coordinate at least one of the Commodity Groups. Three research centres fall under this category: Chitedze (field crops), Bvumbwe (Horticulture), Lunyangwa (Tree crops such as coffee and macadamia).

Three research centres fall under this category are:

- a) Chitedze: Coordination of research services in the following Commodity Groups: (1) Cereals, (2) Legumes, (3) Oilseeds and Fibres, (4) Soils and Agricultural Engineering, and (5) Technical Services.
- b) Bvumbwe: Coordination of research services in (1) Horticulture, and (2) Plant Protection.
- c) Lunyangwa: Coordination of research services in Livestock and Pastures.

1.2.2 *Agricultural Experiment Stations:* Agricultural Experiment Stations have the capacity to coordinate at least one of the Commodity Research Teams. Four research centres fall under this category: Kasinthula, Makoka, Lifuwu, Mkondezi:

Four research centres fall under this category:

- a) Kasinthula: Coordination of (1) Irrigation and (2) Drainage Research

- b) Makoka: Coordination of Cotton research
- c) Lifuwu: Coordination of Rice research
- d) Mkondezi: Coordination of research on (1) Spices and (2) Root and tubers.

1.2.3 Agricultural Experiment Sub-stations: Agricultural Experiment Sub-stations are agro-ecological trial centres for testing promising technologies. Nine research centres fall under this category. The following research centres fall under this category.

- a) Chitala: Lakeshore and low lying (200 – 760 masl; 600 – 800 mm rainfall).
Testing site for dry and marginal land cropping and site for livestock breeding program (Malawi Zebu and goats)
- b) Mbawa: Medium-altitude (760– 1,300 masl; 800 – 1,200 mm rainfall) moderate. Testing site for arable crops and site for livestock breeding program (Malawi-Zebu)
- c) Baka: Lakeshore low lying area (400 – 760 masl; 600 – 800 mm rainfall), generally dry. Testing site for dry land crops.

1.2.4 Agricultural Experiment Trial Sites: Agricultural Experiment Trial Sites are agro-ecological trial centres for testing promising technologies for main research Stations. The following research centres fall under this category:

- a) Ntchena-chena: High altitude (>1,300 masl; >1,000 mm rainfall).
Testing site for horticulture crops particularly coffee.
- b) Bolero: Medium altitude (760 – 1,300 masl; 600 – 800 mm rainfall).
Rainfall shadow area. Testing site for crops with potential adaptability for marginal areas.
- c) Meru: Medium altitude, moderate rainfall (760 – 1,300 masl; 800 – 1,200 mm rainfall). Testing for normal arable cropping.
- d) Ngabu: Very low altitude and dry (<200 masl;<600mm rainfall). Testing site for marginal areas, particularly the Shire Valley.
- e) Bembeke: High altitude (>1,300 masl; >1 200 mm rainfall) with acid soils. Testing site for promising technologies for areas with difficult soils (Acidic and aluminum toxicity)
- f) Tsangano: High altitude (>1,500 mals;>1,000 mm rainfall). Testing site for wheat, potato and fruit technologies.

Research Organisation

The main activities of Agricultural Research Station are organised into two broad areas: (i) advisory services and (ii) research programmes. Research and advisory services are organized into seven commodity groups, which comprise several commodity teams. There are two commodity groups under “Advisory Services” and five under “Research Programmes”. However, some research commodity groups, e.g., Soils and Agricultural Engineering, also provide advisory services. The activities of these groups and teams are briefly described below.

Advisory Services

The station provides technical advisory services in the field of: crops, livestock, farming systems, agroforestry, plant protection and quarantine, regulatory services, soil surveys, soil management, seed services, soil and plant analyses, library services, farm machinery, agricultural engineering, crop plant preservation. There are two service-oriented commodity groups: (i) Technical Services and (ii) Plant Protection and Quarantine. Apart from providing the essential services to the farming community, these commodity groups also conduct some research to address farmers’ problems on seed production, storage, pests and diseases, conservation of plant genetic resources, biological control and plant protection.

Research Programmes

The station conducts research in various agricultural fields. These are in the five research oriented commodity groups: (i) Cereals, (ii) Grain Legumes, Oilseeds And Fibres, (iii) Horticulture, (iv) Livestock and Pastures and (v) Soils and Agricultural Engineering. These commodity groups also provide essential advisory services to the farmers. For example, the Soils and Agricultural Engineering Commodity Group conducts soil and plant analyses and formulates fertilizer recommendations based on soil test results.

Commodity Groups and Teams

All the seven service and research-oriented commodity groups are represented at Chitedze. The commodity groups are presented below (commodity teams are presented in brackets)

1. Technical Services Commodity Group (Seed Services; Plant Genetic Resources; Agriculture Statistics, Economics and Data Processing Unit (AGREDAT); and Library and Information Services).

2. Plant Protection and Quarantine Services Commodity Group (Produce Inspection; Plant Protection, Biological Control and Quarantine; and Crop Storage).
3. Cereals Commodity Group (Maize).
4. Grain Legumes, Oilseeds and Fibres Commodity Group (Groundnuts; Fibres and Oilseeds; and Pulses).
5. Livestock and Pastures Commodity Group (Livestock; and Pastures).
6. Horticulture Commodity Group (Tropical Fruits and Spices; and Roots and Tubers).
7. Soils and Agricultural Engineering Commodity Group (Soil Fertility and Microbiology; Soil Survey; Agroforestry; and Farm Machinery).

The majority of the commodity teams are represented at Chitedze, except those that are agro-ecology specific. Those not fully represented at Chitedze include: rice (Lifuwu), citrus and deciduous fruits (Bvumbwe), coffee (Bvumbwe), tree nuts crops (Bvumbwe) and vegetable crops and mushrooms (Bvumbwe). What follows is an outline of the major constraints, objectives, experiments conducted and the achievements of the Commodity teams over the last few decades.

RESEARCH AND DEVELOPMENT PROJECTS UNDER DARS

DARS also implement donor funded projects. These project mostly support technology development, dissemination and infrastructure. There are a number of projects including: (i) Agriculture Productivity Program for Southern Africa (APPSA); (ii) Sustainable Intensification of Maize and Legumes in Eastern and Southern Africa (SIMLESA); (iii) Sustainable Agriculture Productivity Program (SAPP); (iv) Agriculture Sector Wide Approach Support Project (ASWAp-SP); (v) UP-Scaling Project

Agriculture Productivity Program for Southern Africa (APPSA)

APPSA supports agricultural research, technology dissemination, and capacity building activities in the Ministry of Agriculture. It focuses on priority farming systems that have been identified on the basis of a regional priority-setting study. With emphasis on identified leading R&D priorities for the SADC region. It also focuses on the priorities indicated by a country. In Malawi, APPSA is focusing on maize and maize-based farming systems.

Sustainable Intensification of Maize and Legumes in Eastern and Southern Africa (SIMLESA)

SIMLESA aims at: Understanding constraints, opportunities, crop-livestock interactions, resource-use, technology preferences and market access farmers' among farmers engaged in maize and legume production; developing productive, resilient and sustainable smallholder maize-legume cropping and innovation systems for local scaling out; Increasing a range of maize and legume varieties for use by smallholder farmers through accelerated breeding, regional testing, release and availability of performance data; supporting the development of regional and local innovation systems and; Building capacity of NARS to increase efficiency of agricultural research today and in the future.

Sustainable Agriculture Productivity Program (SAPP)

The Programme aims at reducing poverty and improving food security among the rural population. It thrives to achieve a viable and sustainable smallholder agricultural sector by advocating good agricultural practices. The Programme concentrates on the enhancement of agricultural productivity through the use of simple and affordable technologies which are suitable for smallholder adoption, with the aim of helping bridge the large gap between actual and potential yields. Besides programme management and coordination, the Programme envisages the following two main components:

1-Adaptive research and knowledge management. An adaptive research programme supports fine-tuning of agricultural technologies to fit Malawian socio-economic and agro-ecological conditions. This research programme is anchored on knowledge management and communication initiatives.

2-Farmer adoption of good agricultural practices. This facilitates dissemination and adoption of good agricultural practices. Consequently, this increases crop yields, diversifies production, reduces yield variability, reduces labour inputs and improves soil health through integrated packages of improved soil and water management. The Programme also improves farmers' access to the inputs needed to successfully practice good agricultural practices. These include: tools, equipment, seeds of alternative (mainly legume) crops, fertilisers, financial services, post-harvest facilities, and improved market infrastructure.

Agriculture Sector Wide Approach Support Project (ASWAp-SP)

ASWAp-SP aims at improving the effectiveness of investments aimed at food security and sustainable agricultural growth, and strengthen the natural resource base in agricultural lands, through a doubling of the area under sustainable land management as a basis for securing

ecosystem services and sustainable agricultural productivity. The project has the following four components:

- i. Institutional development and capacity building
- ii. Sustainable food security, agricultural growth and diversification.
- iii. Project coordination; and
- iv. Improvement and maintenance of unpaved rural roads.

UP-Scaling Project

Up-Scaling project coordinates production of pre-basic (breeder) and basic seed. It thrives to maintain the existence of agricultural technologies that have been developed and released by government researchers. It strengthens availability of adequate amounts of original pre-basic (breeder) and basic seeds of legumes, cereals, pastures, horticultural crops and improved livestock breeds in order to enhance their productivity. It anchors at maintaining the legacy of agricultural research and multiplication of promising materials that can relieve Malawi from food shortages. Consequently enhancing economic growth.

ACHIEVEMENTS OF DARS

DARS have successfully generated agricultural technologies. It has also executed many dissemination activities. Details of technologies released under DARS effort in last five years are outlined in the following section.

FUTURE PROSPECTS

DARS anticipate to generate technologies that best suit different agro-ecologies in Malawi. It desire to provide real-time farming solutions that suit their socio-economic context.