

SEED SECURITY IN MALAWI WITH EMPHASIS ON FOOD CROPS

By

Francis Ng'ambi and Moses F.A. Maliro

A draft report prepared for submission to Africa Biodiversity Network (ABN) by Malawi Economic Justice Network (MEJN) (Project Holder)

The views expressed in this report are of the authors and do not necessarily reflect the views of the Project Holder or of the ABN.

**LILONGWE, MALAWI.
APRIL 2003.**

SEED SECURITY IN MALAWI WITH EMPHASIS ON FOOD CROPS

Francis Ng'ambi¹ and Moses F.A. Maliro²

¹ Board Chair, Malawi Economic Justice Network (MEJN), fngambi@hotmail.com; ncmnccs@eomw.net

² Senior Lecturer in Plant Breeding at Bunda College of Agriculture, University of Malawi, P.O. Box 219, Lilongwe, Malawi. mmaliro@hotmail.com

TABLE OF CONTENTS

1.0	Preamble
1.1	Country of Study
1.2	The Aim of the Study
1.3	Coordination of the Study
1.4	The Researchers
2.0	Research Methodology
2.1.1	Scoping and Preparations
2.1.2	Selection of Farmer Organizations
2.1.3	Data Compilation
3.0	Background information on Malawi
3.1	Physio-geography
3.2	The Economy
4.0	Relevant Literature
5.0	The Seed Sector
5.1	Seed Security Defined
5.2	Historical Perspective of the Seed Programmes in Malawi
5.3	Problems with Seed Supply
5.4	Liberalization of the seed sector and regulatory reforms
5.5	Stakeholders of the Seed sector
5.5.1	Key Role Players
6.0	Seed Saving and Security in Malawi
6.1	Current Status of Seed Security in Malawi
6.2	The Informal Seed Production
6.3	Farmers' Objectives and Motivation
6.4	Extent of Seed Saving Activities
6.4.1	CARE International
6.4.2	ASSMAG
6.4.3	BWANKHOSA-Case Study
6.4.4	World Vision International
7.0	Overall Successes and Challenges
7.1	Successes
7.2	Challenges
7.2.1	Inadequate Storage facilities
7.2.2	Unreliable Market
7.2.3	Expensive Inputs
7.2.4	Financial Constraints for routine inspection of seed
7.2.5	Inadequate Personnel
7.2.6	Erratic Weather Conditions
7.2.7	GMO Food Aid
7.2.8	Poor Road Network
8.0	Policies and Trends Influencing Seed Security- Farmers' Perspectives
8.1	Positive Impact
8.2	Negative Impact
9.0	Current Supporting Structures
9.1	Government Breeders, Seed Monitoring Centers and Research Institutions
9.2	Phyto-sanitary services
9.3	Plant Genetic Resources Centers
10.0	Farmers' Perceived Needs
10.1	Need for Agricultural Input Loans
10.2	Consultations with Seed Producers in pricing of seed

- 10.3 Training Needs
- 11.0 The Commercial Seed Industry
- 12.0 Institutional Programmes
 - 12.1 Government Research Institutions
 - 12.2 International Agricultural Research centers
 - 12.3 Bunda College of Agriculture
- 13.0 Enhancing and Supporting Seed Security
 - 13.1 Researchers' Perspective
 - 13.1.1 The Review of Policy of the Seed Sector
 - 13.1.2 Mobilization and support to farmers' associations
 - 13.1.3 Equipping smallholder farmers with knowledge and skills
 - 13.1.4 Government supporting services and structures
 - 13.2 Constraints on seed security in Malawi
 - 13.3 Limited Scope of Seed Companies
 - 13.4 Marketing Structures
- 14.0 Summary and Recommendations
 - 14.1 Seed Policy Review
 - 14.2 Liberalization of the Economy
 - 14.3 Seed Production standards
 - 14.4 Village Seed Banks
 - 14.5 Sustainability of Smallholder farmer seed saving system
 - 14.6 Linkages between Seed Producers' association and Commercial oriented Associations
 - 14.7 Marketing of smallholder farmers' seed

TABLES

Table 1: National Goals and Selected Strategies	p14
Table 2: Conceptual framework to ease problems in Seed and Food Security	p 18
Table 3: Key Role players in Seed Security in Malawi	p 20

FIGURES

Figure 1: Map of Malawi showing its neighbouring countries	p12
---	------------

BOXES

ACRONYMS AND ABBREVIATIONS

ABN	African Bio-Diversity Network
AIMS	Agricultural Input Markets
ASSMAG	Association of Smallholder Seed Multiplication Action group
ADD	Agricultural Development Division
ADMARC	Agricultural Development and Marketing Cooperation
APIP	Agricultural Productivity Input Programme
ATRC	Agricultural Technology Release Committee
IARC	International Agricultural Research Centre
ARET	Agricultural Research and Extension Trust
ADP	Area Development Programme
CIAT	International Center for tropical Agriculture
CSO	Civil Society Organization
CONGOMA	Council for Non-Governmental Organizations in Malawi
CPAR	Canadian Physicians for Aid and Relief
CARE	Cooperation Assistance and Relief Everywhere
CBO	Community Based Organization
CRSP	Collaborative Research Support Programme
DARTS	Department of Agricultural Research and Technical Services
DEA	Department of Environmental Affairs
EC	European Community
FAO	Food and Agricultural Organization
GOM	Government of Malawi
GDP	Gross Domestic Product
IITA	International Institute for Tropical Agriculture
IARC	International Agricultural Research Centre
ICRISAT	International Crop Research Institute for Semi-Arid Tropics
MPTF	Maize Productivity Task Force
MoAI	Ministry of Agriculture and Irrigation
MPRS	Malawi Poverty Reduction Strategy Paper
MASIP	Malawi Agricultural Sector Investment Programme
MEJN	Malawi Economic Justice Network
MIPA	Malawi Investment Promotion Agency
NRCM	National Research Council of Malawi
NGO	Non-Governmental Organization
NASFAM	National Association for Small Farmers' Association Of Malawi
NASSPR	National Smallholder Seed Producers Association
NSCM	National Seed Company of Malawi
OPV	Open Pollinated Variety
PROSCRAP	Promotion of Soil Conservation and Rural Production
SMAG	Seed Multiplication Action Group
STU	Seed Technology Unit
SADC	Southern African Development Community
TAS	Traditional Authorities
TIP	Targeted Input Programme
VDC	Village Development Communities
WVI	World Vision International
ZMM-GT	Zambia, Malawi, Mozambique-General Trade

PREAMBLE

African Biodiversity Network (ABN) based in Addis Ababa Ethiopia is a non profit making organization formed in With the aim of

ABN organized various meetings and in June 2002 at a meeting held in Rome, farmer and community seed security issues were highlighted as core themes affecting food security, cultural and ecological diversity, economic and community stability. It was further highlighted that such securities and integrities are currently being threatened by the global trends in industrial agriculture. Particular references were made to the constantly re-hybridized seed, genetic engineering of food crops, bio -prospecting and plant patents and associated economic pressures.

It was recognized that much of the knowledge and experience of seed security is held by farmers and farmer communities and the developmental sector thus non-governmental organizations or community service organizations (NGOs/CSOs). The ABN therefore realized the need to consolidate and document this information in order to best strategize programmes in support of in-country seed security. The information collected from such a study would therefore meet the need to better organize and plan independent initiatives to safeguard farmer seed varieties and the socio-cultural, ecological and economic systems they support.

The Aim of the Study

Participating countries of the ABN were requested to do the following in the research study:

- ❖ To conduct literature research,
- ❖ To identify the key role-players involved in and influencing the traditional seed sector country wide,
- ❖ To identify current seed security projects and initiatives country wide;
- ❖ To get an overview of the formal/commercial seed industry and its accompanying structures,
- ❖ To get the institutional seed-saving programmes/seed banks,
- ❖ To get an overview of government policy and legislation on seed production, seed trade and phyto-sanitary requirements,
- ❖ To collect visual material, stories, information on social-cultural events and practices associated with seed security,
- ❖ And to then make practical recommendations to strengthen, support and/or develop in-country seed security

Survey and Research Findings

- ❖ There are many missing links between government seed producers, seed multipliers, seed market and farmers to promote sustainable seed security in Malawi
- ❖ Most farmers (up to 85%) prefer OPV seed other than Hybrids because OPVs are easily accessible as they can be recycled making them affordable to local farmers.
- ❖ The 1996/1997 market liberalization has made seed more expensive due to rising input prices emerging from the removal of agricultural subsidies thereby making seed security difficult to achieve.
- ❖ The formal seed sector is not ready to promote OPVs because they are considered un conducive to their market strategies

- ❖ The action groups and farmer seed producers associations can play a vital role in seed security if they are well supported by government and donors with technical and financial support.
- ❖ Small holder farmers seed multiplication scheme is profit oriented and yet is weak in marketing strategy such as making basic seed accessible

RECOMMENDATIONS

- ❖ The Seed Policy which has already undergone a review and now enjoys involvement of the private sector interested in the seed production and marketing, needs further assessment to address new issues that are currently affecting seed security in Malawi.
- ❖ Even though the seed sector has been boosted by the liberalized economy in that seed has been available where it was scarce, there is need to promote the ability of Malawian farmers to produce their own seed. Government has to take a deliberate move to protect local farmers' intellectual rights in seed production.
- ❖ To promote seed quality, the government should extend its services to all seed producers and provide adequate resources as well as timely service.
- ❖ Due to high poverty levels in Malawi, village seed banks run by CBO and NGOs should be supported since this is the only way by which farmers can access seed. There is need to empower the local farmers on how to preserve seed from genetic erosion by growing self pollinated crops which maintain genetic integrity.
- ❖ Seed marketing system within the SMAG should be done in a transparent and accountable way that involves the seed producers themselves.
- ❖ Promotion of seed producers and commercial oriented associations would be vital in technology and skill transfers in the promotion of seed security.

1.0 EXECUTIVE SUMMARY

The study in Malawi was undertaken within the framework of ABN's objectives as outlined in the preamble. However, the seed security study in Malawi put more emphasis on food crops such as Maize and legumes because of their dietary and cash crop importance. It is also one of the few areas in the agricultural sector where a considerable amount of research has been done already with the aim trying to improve on the sector. But for purpose of this research, the idea was to examine what the key players are already doing in the area, constraints and difficulties met in the sector especially by the local farmers and finally what can be done to improve seed security with recognition of intellectual property rights of the farmers themselves to produce, multiply and conserve their seed.

Even though the seed sector in Malawi is dominated by the informal sector, counting for about 85% of all cultivated seed, the formal sector too has been tackled specifically to show how their activities impinge on seed security positively or negatively in as far as affordability and accessibility of the seed is concerned.

1.1 Country of Study

The study was conducted in Malawi, as a network member country of ABN. Other countries involved in a similar study include Kenya, Uganda, Ethiopia, South Africa and Zambia.

1.3 Co-ordination of the study (National Coordinator Organization)

The Malawi Economic Justice Network (MEJN), a coalition organization for NGOs participating in the PRSP process for Malawi, coordinated the research study. MEJN, the Project Implementer for the study is represented in ABN by Mr. Francis Ng'ambi, who is also the Board Chair for MEJN and coordinator for the seed security study in Malawi.

1.4 The Researchers

The research team was composed of Mr. Francis Ng'ambi with specific responsibility on government policy and legislation, collection of visual materials and Mr. Moses F.A. Maliro (plant Breeder and Biotechnologist) with specific task to analyze the seed system, seed multiplication, projects and seed saving programmes/seed banks.

2.0 Research Methodology

2.1 Scoping and Preparations

The study team commenced the work on 4th March 2003 when the researchers met to discuss the terms of reference and defined the scope of the study. The team noted that the ultimate purpose of the study was to enhance food security hence decided to *focus on seed security for food crops particularly cereals, legumes, roots and tuber crops as well as vegetables*. A list of organizations known to be involved in seed security issues was drawn.

The team identified three major scopes of the study as:

- (i) Literature search on seed security in Malawi,
- (ii) The main study – survey to collect information on seed security activities/projects and finally
- (iii) Synthesis of the information and make recommendation.

Institutions where literature review could be done were also identified (**Appendix: 2**). After preparation of a time schedule of visits to organizations and farmer groups, the survey commenced.

Information on projects and activities on seed security and case studies, was collected through interviews using an unstructured questions as guidelines in the form of a checklist of questions

(**Appendix: 2**) was used in focus group discussion with members of Farmers' Associations or organizations.

The approach of the study was selected for its flexibility in collecting information especially that it touches on opinions and sharing of ideas. It provides access to a rich body of knowledge, which can be crosschecked as the group discusses the issues. Various publications that were made available to the research team were also used as reference materials in consolidating analysis and compilation of the report.

2.2 Selection of Farmer organizations and Groups

Selection of farmers, farmer associations, organizations or groups for field study was based on type of seed security activities or projects they were involved in such as production of basic seed, multiplication of seed, marketing, seed certification or training of people in the seed sector. Other factors such as geographical location of the farmers, diversity of NGOs working with the farmers, diversity of crops dealt with by the various groups, accessibility and location to the various farmer groups was also considered. The list of organizations and farmer groups visited is provided in **Appendix: 1**.

2.3 Data Compilation

As the questions were basically open-ended, the information was qualitative. The information was therefore compiled by considering all the facts and views provided or expressed during the discussions. Where quantitative data was available from reports and publications relevant data was extracted to provide a clear picture of the status of the seed industry in the country.

3.0 BACKGROUND INFORMATION ON MALAWI

3.1 Geography and Demography of Malawi

Malawi is a subtropical country situated between latitudes 9° and 18° N and longitudes 33° and 36°S (NRCM, 1999). It is a landlocked country that is bordered to the West and Northwest by Zambia, to the North and Northeast by Tanzania, and to the Southwest, South and Southeast by Mozambique (ZMM-GT, 2000) (Fig. 1). The population of Malawi as revealed by the 1998 population census is around 9.8 million, with 4.8 million male and 5.0 million females.

About 14% of the population lives in the urban areas with the remaining 86% residing in rural areas (ZMM-GT, 2000).

3.2 Physio-geography

It is reported by DEA (1994) that Malawi can be divided into five zones: Rift Valley Floor, Rift Valley Scarp zone, Hill zone, Plains and High Plateau. Many climatic elements such as rain, radiation and the wind have been successfully harnessed to provide food and energy for sustenance of life. However, there are natural climatic fluctuations year after year. The impact of this climatic change includes changes in precipitation, evaporation rates, and soil moisture. These have serious effects on agriculture, water resources, energy, vegetation, health and the economy.

The climate is tropical continental with two distinct seasons i.e. the rainy season from November to April and the dry season from May to October. However, from May to July it is relatively cool and in some high altitudes areas drizzles are common. Annual rainfall in Malawi ranges from 700mm to 1800 mm. Its distribution is influenced by topography and proximity to Lake Malawi. The mean annual minimum and maximum temperatures for Malawi range from 12 to 32°C. The highest temperatures occur at the end of October or early November but thereafter rainfall brings in moderating effects.

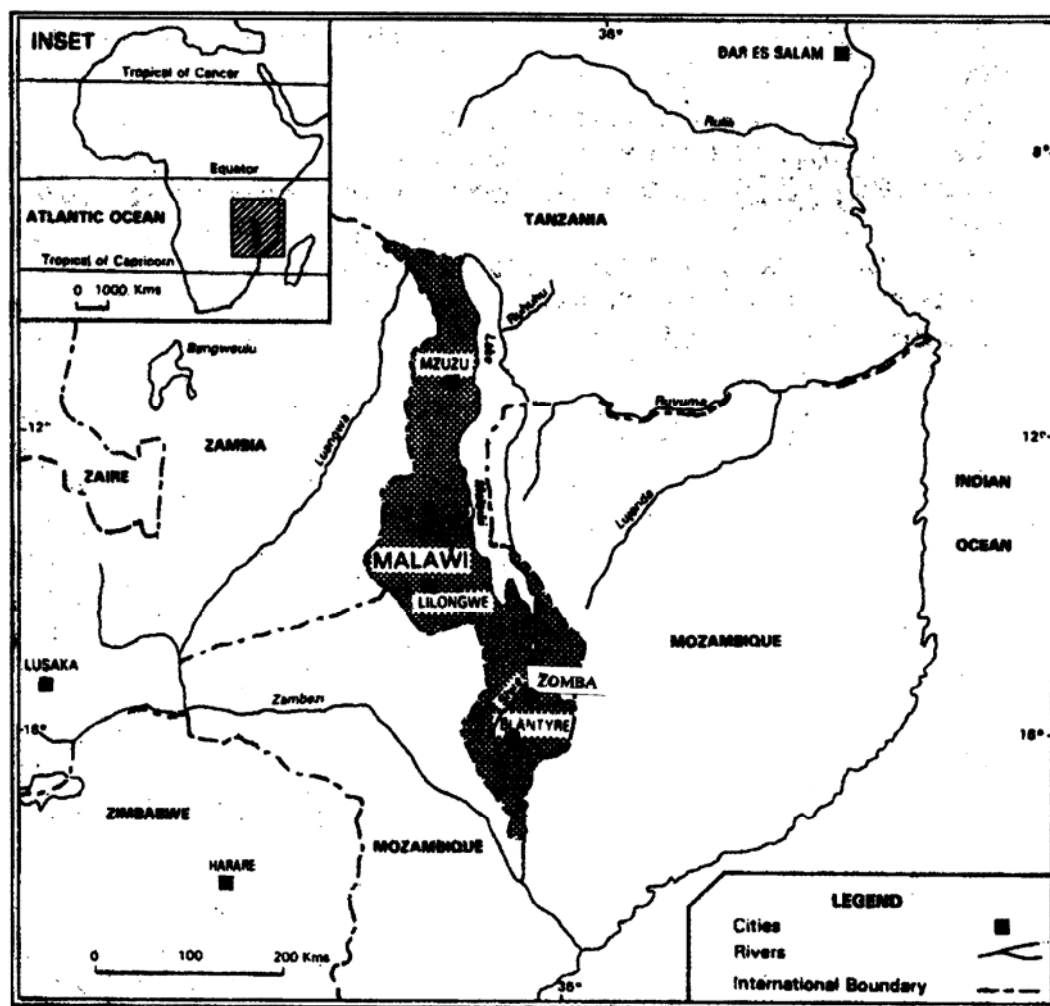


Figure 1: Map of Malawi showing its neighbouring countries³

The country has four main classes of soils: latosols, lithosols, and calcimorphic and hydromorphic soils. Most of the soils along the rift valley are alluvial in nature, rich in nutrients and suitable for agriculture. On the escarpment slopes and plateaux the soils are heavily leached and of medium fertility.

In the hilly places, the soils are shallow and such areas are used as catchments areas and for protection of indigenous fauna and flora. Only 31% of the country's total land area is suitable for rain fed agriculture at traditional level of management and another 31% is only marginal. At present cultivated land exceeds suitable land for rain fed agriculture at traditional management level. By 1990, the total land under cultivation accounted for 49% of the country's land resources. Some 600,000 ha of land are under reserved areas, national parks, forest and wildlife (DEA, 1994). Maize is the major staple food and its production is the most dominant agricultural activity supporting over 90% of the population (GOM, 1999).

³ Produced by the Department of Survey, Malawi (Modified from Agnew and Stubbs, 1972)

Malawi contains some of the world's important wetland ecosystems. The most important wetlands include shoreline plains of Lakes Malawi, Chiuta, and Chilwa, a diversity of *dambo* ecosystems, and marshes of the Shire River system (DEA, 1994). It has a large lake called Lake Malawi, which is 580 km long and constitutes about 20% of the total land area of the country (ZMM-GT, 2000).

In relation to vegetation, Malawi has the following major biotic communities: montane evergreen forests, montane grasslands, semi evergreen forest, closed and open canopy woodlands of wetter and drier areas, mopane, sand dune vegetation, grasslands, lakes and islands (DEA, 1994). The country depends on water resource for various purposes such as, hydroelectric power, drinking, industrial development, rain fed and irrigated agriculture. There are large scale and small-scale irrigation projects for sugarcane, tea, coffee, rice and vegetables. Lake Malawi and Shire River serve as cheap sources of transportation.

Malawi's forests occupy about 3.6 million ha or 38% of the country's land area. Indigenous forests cover 98% of this forested area and the rest is plantations (DEA, 1994). The country has 5 National Parks, 4 Game Reserves and 69 Forest Reserves (FAO, 1995).

Malawi's main energy source is forest biomass, accounting for 98% of the total energy used. Forests are the major source of energy, petroleum products account for 3.5% while hydro-electricity constitutes only 2.5% of the energy consumed. Some of the energy is derived from ethanol, coal and solar energy.

3.3 The Economy

Malawi ranks amongst the poorest countries in the world because it has one of the lowest human development, health and nutrition indexes in the sub-Saharan Africa. Agriculture is the most important sector of the country's economy producing more than 36.2% of the Gross Domestic Product, employing about 80% of the labour force and contributing to about 90% of Malawi's export earnings. Of a total population of 12 million, the vast majority depends on smallholder subsistence agriculture using traditional farming practices. Within the agricultural sector, about 60% of household cultivate less than 1 ha of land, with 25% having access to less than half hectare. It is estimated that about 15% of the smallholders have access to sufficient land to produce a marketable surplus whereas 55% of households have to supplement their production with income earning activities outside their farms, mostly through casual labour.⁴

It is estimated that 64% of the population live below poverty line. The incomes of the people in Malawi are very low and unevenly distributed⁵. Hence, the primary objective of the present government is to reduce poverty by improving the livelihoods of the population through better household food security, improved nutrition and health services and increased cash income.

In 1998, the Malawi government released a Vision 2020 document in which the goals and aspirations of the people of Malawi to year 2020 were outlined. On the aspirations for food security and nutrition the following strategies were singled out:

- Increasing food production
- Developing irrigation
- Developing livestock sub sector
- Improving efficiency of markets

⁴ NRCM, 1979

⁵ GOM, 1999

- Reducing losses
- Improving disaster management
- Improving land utilization and management
- Economic empowerment of vulnerable groups
- Promoting non farm income generating activities
- Improving nutritional status of the people⁶.

In 2002 the Malawi government launched the Malawi Poverty Reduction Strategy. The strategy has four pillars: rapid sustainable pro-poor economic growth and structural transformation, enhancement of human capital development, improvement of quality of life of the most vulnerable, and promotion of good governance. The strategy is aimed at involving and benefiting the poor population by broadening the income distribution and generation of employment. The key sector within the strategy is agriculture and the other are micro, small, and medium scale industries; natural resources, manufacturing, tourism and small-scale mining. In agriculture, Malawi seeks to ensure that small-scale farmers have access to inputs and markets, and are able to add value to their products. This will ensure improvement in agricultural production⁷.

Smallholder production based on maize cereal as a staple crop and food legumes such as common bean as a cheap source of protein, availability of good quality seed and its maintenance has been critical to improvement of its food productivity in the country. Due to *unaffordable prices of seed* in Malawi, most smallholders use recycled and own saved seed, which is often of poor quality and low viability *but accessible to them*.

The government of Malawi, in its efforts to improve crop production and mitigate food insecurity, has been promoting food crop diversification among farmers. One of the major challenges to realize the food crop diversification as well as increased cereal food crops has been in availability of quality seed of recommended crop varieties. The government has therefore, since early 1990's promoted seed multiplication of various crops. Various organizations and institutions have initiated projects focusing on smallholder farmers on seed security projects. These organizations range from local to international. Currently there are many governmental and non-governmental organizations involved in various seed security projects (**Table 2**). The current government/national agenda on the priorities in agricultural research and development are stipulated in **Table 1**.

⁶ GOM, 1998

⁷ GOM, 2002a

Table 1. National Goals and Selected Strategies

Goals	Selected Strategies
Attain food security	Increased productivity and efficiency per unit area
Raise household incomes	Promotion of production of high value commodities
Increased export potential	Promotion of production of high value export commodities
Attain high nutrition status and improved living standards	Increased supply of commodities with high nutritive values
Diversify commodities	Promotion of production of close substitutes for the major traditional commodities
Supply raw materials to the agro-based industry	Promotion of industry targeted production system
Sustainable use of natural resources and protection of the environment	Promotion of environmentally friendly farming system activities and technologies

Source: NRCM (1999)

4.0 RELEVANT LITERATURE

There is a diversity of publications relevant to seed security in Malawi. The Main depository of the documents include Bunda College of Agriculture and Chitedze Research Station Library, the Ministry of Agriculture and Irrigation (MoAI) headquarters-relevant offices such as the Deputy Director of Department of Agricultural Research and Technical Services (Deputy DARTS) responsible Seed Services Unit. Other Agricultural Research Stations such as Bvumbwe Research Station, Lunyangwa Research Station and other experimental stations do keep copies of annual reports of their own specific projects. NGOs and other organizations are sources of documents of their specific seed security projects. The following is the list of relevant publications on Seed Security:

Conroy A.C. (1993), The economics of smallholder maize production in Malawi with reference to the market for hybrid seed and fertilizer. Thesis, PhD, Economics and Social studies, Institute of Development Policy and Management. University of Manchester

Cromwell E. (1996) Governments, Farmers, and Seeds in a changing Africa. Overseas Development Institute. London.

Cromwell E. and Zambezi B.T. (1993), The Performance of the seed sector in Malawi, An analysis of the influence of organizational structure, Overseas Development Institute, London.

Danagro A. (1987), Regional seed production and supply project in Malawi. (Volume 11D) Southern African Development Coordination Conference

Daudi, A.T. and Maganga, J.L. 2001. Produce Inspection and Quarantine Services in Malawi.

Phiri, I.M.G., Saka A.R. and Chilebwe, E.H.C. (Eds), 2001: Sustainable Development in Malawi, Department of Agricultural Research and Technical Services (DARTS) Annual Scientific Proceedings No. 1 Lilongwe PP 236-240.

- Ferguson A. Kambewa P. and Mkandawire R. (1990-91).** Bean production and use practices: Results of the 1990-91 Socio-Economic Research in the Three Regions of Malawi. Technical Report.
- Hoyle S.T. (1949),** Hybrid maize, with a note on maize seed selection, In Nyasaland Agricultural Quarterly. Pp25-30.
- CIAT (1998),** Seed multiplication and dissemination strategies in Malawi. Annual Report. Bean Project IP-1 and ip-2
- ICRISAT (1994),** Southern and Eastern Africa Region (1994). Annual report.
- ICRISAT, (2001),** ICRISAT Medium-term Plan 2002-2004. People First. Patancheru 502 324 Andhra Pradesh, India
- Johnson D.T. (1985).** Maize production in Malawi, Department of Agriculture. Lilongwe.
- Kaunda C. Alexander M.R., and Edriss E. (2000).** Opportunities and constraints in the marketing of groundnuts and Soya bean in Malawi: Case study for Lilongwe and Kasungu Agricultural Development Division. Fourth Regional Meeting of the Forum for Agricultural Resource husbandry. 10-14 July 2000, Lilongwe Malawi
- Kydd J.D. (1990).** The role of the private sector in African Agricultural Research. International Development Journal. 2: 254-256.
- Lin E and Ngulube S (2002).** Market study on OPV and grain legume seed. Natural Resource International Ltd, IPP Consultants, EU framework contract, EC Food security for Malawi. Draft Report. Lilongwe, Malawi.
- Luhanga J.H (1985).** Seed production for Malawi's Agriculture. Chitedze Agricultural Research Station. Lilongwe.
- Maideni, F.W. 2001.** Seed certification and Quality Control Services in Malawi, Phiri, I.M.G, Saka A.R. and Chilembwe, E.H.C. (eds) 2001 Agricultural Technologies for Sustainable Development in Malawi, Department of Agricultural Research and Technical Services (DARTS) Annual Scientific Proceedings No. 1 Lilongwe PP 236-240.
- Malawi Government (2000),** National Seed Compendium, Draft. Malawi.
- Malawi Government (1971),** Rules and Regulations for Maize Seed Production, Chitedze Agricultural Research Station. Lilongwe
- The Malawi Government Bean Improvement Project (1998),** Annual Report, Chitedze Agricultural Research Station
- Minde I.J., Teri J.M., Saka V.W., Rockman K. and Benesi I.R.M. (1997).** Accelerated multiplication and distribution of cassava and sweet potato planting material in Malawi. In: Alternative strategies for smallholder seed supply. Edited by Rohrbach D.D., Bishaw Z. and A.J.G. van Gastel. Proceedings of an International Conference on options for strengthening

National and Regional seed systems in Africa and West Africa. 10-14 March, 1997. Harare, Zimbabwe.

Mloza Banda, H.R. (1988), Seed Science and Technology Laboratory Manual, Crop Science Department – Bunda College of Agriculture, Lilongwe. 88 pages

Msimuko A. (1997), Action Aid's experience with small-scale seed production and distribution in Malawi. In: Alternative strategies for smallholder seed supply. Edited by Rohrbach D.D., Bishaw Z. and A.J.G. van Gastel. Proceedings of an International Conference on options for strengthening National and Regional seed systems in Africa and West Africa. 10-14 March, 1997. Harare, Zimbabwe.

NASFAM Titukulane, National Smallholder Farmers Association of Malawi – Newsletter

Ngulube S.D. Phiri M.A.R. AND Edriss E. (2000). Improving smallholder productivity in Malawi. A case study of Blantyre/ Shire highlands. Fourth Regional Meeting of the Forum for Agricultural Resource husbandry. 10-14 July, 2000, Lilongwe, Malawi. Pp 172.

Nsapato L. (2001), Some International Agreements Relating to Food and Agriculture with Reference to Genetically Modified Organisms. Phiri, I.M.G., Saka A.R. and Chilebwe E.H.C. (Eds) 2001: Sustainable Development in Malawi, Department of Agricultural Research and Technical Services (DARTS) Annual Scientific Proceedings No. 1 Lilongwe PP 241-246.

Nsapato` L and Chiwona` E.A. 2001: Plant Genetic Resources Conservation and Utilization in Malawi. Sustainable Development in Malawi, Department of Agricultural Research and Technical Services (DARTS) Annual Scientific Proceedings No. 1 Lilongwe PP 236-240.

Phiri, I.M.G, Saka, A.R. and Chilebwe E.H.C (Eds) 2001. Proceedings No. 1, Lilongwe PP 252-256

SADCC, (1998), Southern African Development Coordination Conference(SADCC)(1988), Regional Seed production and supply project. Malawi: Volume 2.

Thomas B. and A. Spaeth (2001). Review of the three years food security programme focusing on maize productivity and smallholder credit. Euronet Consulting (EC) Food Security programme for Malawi. Draft Report. Lilongwe, Malawi.

SHDI, (2001), Self Help Development International – Conservation Based Integrated Rural Development Project – Chiradzulu – Malawi Ref: S12.49083. B1999/5. Half- year report August 2001 – January 2001

5.0 THE SEED SECTOR

5.1 Seed Security Defined

A country is regarded as seed secured when the following are satisfied. First is the availability of seed. Thus sufficient quantity of appropriate seeds must be within reasonable proximity to the target communities. The second is access which implies that members of the community must have adequate financial or other resources to timely procure or barter for appropriate seeds of preferred food crops and/or varieties. The third parameter is utilization where the seed must be of acceptable quality (genetic, physiological, physical and phyto-sanitary). The same parameters apply to food security as well (**Table:2**).

Seed is often indistinguishable from grain or any other plant part used to propagate a plant. In this context seed can simply be defined as grain or plant propagule that is used for planting rather than for consumption. In general farmers can and often plant own saved seed, or use a range of acquisition methods including purchase, barter, borrowing and begging. Seed can be acquired from several sources such as relatives, neighbours, friends and /or local markets. From this it can be deduced that farmer seed provision systems are integral to food production and food security.

The farmer- user often determines the quality of the seed otherwise if it is from outside the farmer's crop, the quality tends to be regulated by "good neighbourliness". Therefore, in most cases farmer seed quantities might not be large and are not necessary required to be produced year after year.

The amount of seed farmers save or acquire is determined by several factors. These include the size of the farm to be planted in the next season, the type of crop and what it will be used for, and the need for multiplying plantings where crop stand might be affected by the environment, pests and diseases, hazards or a combination of factors. Collectively such factors constitute household seed security at the subsistence farmer level. It might be instructive to analyze the interrelationships between food security and seed security to determine what intervention strategies might be appropriate in mitigating the effect of disaster that might afflict a community. The seed industry is therefore a key sector to the improvement of agricultural productivity in the country. The table below outlines the conceptual frame work that can assist to focus on real problems faced by communities in a food/ seed crisis situation and how best to intervene.

Table 2: Conceptual framework to ease problems in Seed and Food security

PARAMETER	FOOD SECURITY	SEED SECURITY
Availability	Sufficient quality of appropriate food stuffs are within reasonable proximity to the target communities	Sufficient quality of appropriate seeds are within reasonable proximity to the target communities
Access	Members of the community have adequate financial Or other resources to timely procure or barter for appropriate food stuffs	Members of the community have adequate financial or other resources to timely procure or barter for appropriate seed of preferred food crops and /or varieties
Utilization	Food is properly Used (processing, Storage, nutrition, Child care, health and Sanitation practices)	Seed is of acceptable quality (genetic, physiological, physical and phyto-sanitary).

5.2 Historical Perspective of the seed Programmes in Malawi

The provision of farm inputs including quality seed, which is disease free, is essential for sustainable agricultural productivity. A programme aimed at developing in-country capacity to multiply and certify seeds of all crops was initiated in 1976 within the Ministry of Agriculture. Major aspects of the seed multiplication programme included and targeted at the following crops.

- (a) Massive investment in the hybrid maize and tobacco breeding programmes within the Department of Agricultural Research and Technical Services;
- (b) Price incentives for the commodities;
- (c) The formation (in 1978) of a parastatal Company National Seed Company of Malawi (NSCM) which produced and distributed seed to farmers;
- (d) The establishment in (1976) of the Seed Services (Seed Technology Unit) within the Department of Agricultural Research to be responsible for seed quality control (seed certification and testing);
- (e) The introduction of subsidies on farm-inputs (seeds and fertilizers);
- (f) The provision of credit facilities to entrepreneurs including smallholder farmers;
- (g) The involvement of the Agricultural and Marketing Corporation (ADMARC), a parastatal organization, in seed marketing and distribution;
- (h) The intensive promotion of maize hybrids and tobacco growing by extension workers within the Ministry of Agriculture.

By 1979, a full-fledged seed certification scheme based on international standards was operational. A seed-testing laboratory at Chitedze Agricultural Research Station became (accredited) to the International Seed Testing Association (ISTA). The laboratory issues a range of certificates, which facilitate international trade. With the services of this seed services Unit, the country has the capacity to export seed such as tobacco and hybrid maize. Establishment of the unit has also facilitated adoption of hybrids and other new varieties countrywide and also in the neighbouring countries.

5.3 Problems with Seed Supply

With the promotion of the government policy on crop diversification it has created a high demand for seed of all major food crops particularly cereals, legumes, roots and tubers and vegetables. It therefore became necessary that appropriate strategies be developed to ensure seed security in the country. Despite the success in the provision of planting materials in maize and tobacco serious problems existed in the country of crops such as composite maize, groundnut, beans, soybeans, sorghum, cassava, mangoes, millet, rice and vegetable. At that time the NSCM (now bought by Monsanto) had little success in the production and distribution of other crop seeds particularly open pollinated varieties and self pollinated crops seeds which farmers can be recycled and maintain the genetic integrity. This resulted in high seed retention rate for the self-pollinating (beans, groundnuts, etc) and demand under these circumstances were unpredictable.

To take care of seed for self-pollinators and open pollinated varieties the Ministry of Agriculture and Irrigation (MOAI) initiated a smallholder seed programme although at the initial stages little quality of seed was produced such that majority of farmers still relied on their own local and unimproved crop varieties, which are low yielding.

5.4 Liberalization of the seed sector and regulatory reforms

With the problems highlighted above in mind, since 1993 the seed sector underwent a period of major policy and regulatory review in order to redress the situation. A national seed policy was therefore developed in 1993 and led to liberalization of the seed sector. This therefore has resulted into the following major outputs;

- (a) increased NGO involvement in seed programmes;
- (b) a functioning seed quality control programme;
- (c) launching of nation-wide variety demonstration programme;
- (d) initiation of small-scale entrepreneur development programme;
- (e) launching by MIPA of investment promotional campaign;
- (f) inclusion of seed in relief and credit packages;
- (g) recognition of seed as a major constraint in crop and livestock production;
- (h) increased interest and support in seed security projects by the donor community (such as European Union (EU), ODA and World Bank)

6.0 STAKEHOLDERS OF THE SEED SECTOR

6.1 Key Role Players

There are both formal and informal key role players in seed security sector in Malawi. The following were identified.

Table 3: Key Role players in Seed Security in Malawi

	NAME OF ORGANIZATION	CROPS/ACTIVITIES FOCUS	ADDRESS	CONTACT PERSON
1	ADMARC	Distribution of agric. inputs including seed	P.O. Box 5052, Limbe	Mr. Kaima, Inputs Controller
2	Chitala Agricultural Research Station		P.O. Box 315 Salima	Mr. Mtuana
3	Chitedze Agricultural Research Station	Groundnuts, Maize	Box 158, Lilongwe	Mr. E. H. Kapeya, Dr Nhlane
4	Kasinthila Agricultural Research Station	Production of basic seed, millets, sorghum	P.O. Box 28, Chikwawa.	Mr. E.M. Chinthu, (Lilongwe based)
5	Lifuwu Agricultural Research Station	Rice: Breeding production of basic seed & multiplication	P.O. Box 102, Salima	Mr. Mzengeza, Mr. Kanyika
6	Lunyangwa Agricultural Research Station	Horticultural Crops, Roots and Tubers	P.O. Box 59, Mzuzu	Mr. H.D.C. Msiska
7	Bvumbwe Research Station	Legumes, Horticulture crops, tree nut crops vegetable crops	P.O. Box 5748, Limbe	Mr. Nsanjama
8	Bean Improvement Project	Common Bean production of basic seed	P.O. Box 158, Lilongwe	Dr Rowland Chirwa
9	Bunda College of Agriculture	Beans, Indigenous vegetables, training	P.O. Box 219, Lilongwe	Head, Crop science dept. Dr Kwapata
10	Action Group II, Maize Productivity Task Force	Maize OPVs	P.O. Box 30135, Lilongwe 3	The Chairperson.
11	Seed Certification and quality control services	Quality control services	P.O. Box 158, Lilongwe	Ms Mtambo
12	Quarantine Services	Control of diseases by imported seed	P.O. Box 158 Lilongwe	

COMMERCIAL SEED SECTOR				
13	PANNAR Seed Limited	Maize	P.O. Box 353, LL	Mr. P. V. Rooyen, (G/Manager)
14	MONSANTO (Formerly National Seed Malawi, Cotton & Milling NSCM)	Maize	P.O. Box 30050, Lilongwe	Mr. Charles Price (Team Leader)
15	Seed Co. Malawi	Maize		Dr. J.D.T. Kumwenda
16	Association of smallholder seed multiplication Action Group (ASSMAG)	Maize (OPVs), Groundnuts, beans, pigeon peas	P.O. Box 30679, Lilongwe 3	Mr. Abel K.H. Banda, Board Chairman
VOLUNTARY ORGANIZATIONS IN SEED SECTOR				
17	Council for NGOs in Malawi (CONGOMA)	Coordinating NGOs	P.O. Box 480 Blantyre	The Executive Secretary
18	CCAP Synod Livingstonia	Maize, Legumes multiplication	P.O. Box 6 Ekwendeni	Mr. Sichinga, Mr. S. Nkhandwe
19	Churches Action for Relief and Development (CARD)	Seed Multiplication	P.O. Box 2467 Blantyre	The Programme Manager
20	Evangelical Lutheran Development Programme (ELDP)	Seed Multiplication	P.O. Box 2467, Blantyre	Project Coordinator
21	Christian Service Committee (CSC)	Seed Multiplication	P.O. Box 30123, Blantyre	The T/leader (Agric.) Mr. M. Banda
22	Action Aid	Seed Multiplication of Roots and Tubers	P.O. Box 30735, Lilongwe	Country Director, Sekou Jobe
23	Oxfam		Blantyre	Programme manager
24	Africare	Mobilizing and providing support to farmer groups in seed multiplication	Lilongwe	Country Representative
25	World Vision International	Mobilize farmer groups in seed multiplication	Blantyre	Country Director
26	Self Help development International	Mobilization of farmers to establish seed banks, provide inputs & training		Mr. Winstone Chiwaya
27	Nkhoma Synod	Support to farmer groups in seed multiplication	P.O. Nkhoma, Lilongwe	Agricultural Coordinator
28	PROSCARP	Seed multiplication through supporting farmers	P.O. Box 1481, Lilongwe	Monitoring and Evaluation officer
29	CADECOM	Support to farmers	P.O. Box 30384, Lilongwe	National Coordinator

30	CPAR	Support to farmer groups with agricultural inputs including seed	P.O. Box 30998, Lilongwe	Project Coordinator
31	Inter Aid	Agric. inputs, support to farmer groups	P.O. Box 31405, Lilongwe	Project Officer
32	Concern Universal	Agric. Inputs support to farmer groups	Box 217, Dedza	Mr. Mwanza
33	IFDC	Information analysis and provider-inputs including seed	P/B 353, Lilongwe 3	Mr. Kanchacha, Information Officer
34	CARE International	Establish/mobilize farmers into groups for seed multiplication, marketing etc	P/Bag A89, Lilongwe	Ms. S Chitedze, P/Manager, Mr. A Kambwiri, Agric. Coordinator
35	NASFAM	Acquisition of seed inputs	P.O. Box 30716, Lilongwe	Mr. W. Kalizulu, Mrs. G. Kamalizeni.
36	Plant Genetic Resources center (Gene Bank)	Conservation of threatened and local seed materials	P.O. Box 158, Lilongwe.	Mr. L. Nsapato, Curator
37	ICRISAT	Breeding-Breeders Seed. Production of basic seed. Monitor seed production of g/nuts.	P.O. Box 158, Lilongwe	Dr. P. Subramanyam; Dr Chiyembekeza.

The key role-players in seed security in Malawi include **the Public seed Sector** which covers Ministry of Agriculture and Irrigation (MoAI), research institutions that conduct research in crop Improvement and breeding. These are the sources of basic seed of recommended crop varieties. Scientists from these institutions have a responsibility of monitoring basic seed production or certified seed production that is produced through contract farmers or farmer associations (**See Chart of The Malawi Seed Industry Appendix: 3**).

There is a **seed services unit** under the Ministry of Agriculture and Irrigation whose responsibility is to inspect and evaluate any seed produced to ensure acceptable seed quality. The unit therefore certifies all seed that is produced in the country. **Phyto-sanitary Inspection Service Unit** is another government key role player in the seed sector because it ensures that seed imported or being introduced into the country is disease and pest free.

The second category is that of **commercial sector**. This sector includes the commercial companies and has tended to produce hybrid varieties and not self-pollinators or open pollinated varieties to maintain their business. The other category is that of **non-governmental organizations** that involved in supporting farmers and their Associations acquisition of seed crop varieties normally not supplied by the commercial organizations. The seed includes that of self-pollinators, OPVs and vegetatively propagated crops (such as cassava and sweet potatoes).

7.0 SEED SAVING AND SECURITY IN MALAWI

7.1 Current Status of Seed Security in Malawi

Statistics reported by IFDC (2002) recently through its Malawi Agricultural Input Markets (AIMS) Development Project, show that the potential seed demand based on recommended rates and hectareage (**Appendix: 4**) exceeds by far the actual available stock on the market/suppliers. For instance the estimated required hybrid maize seed was 8,873 metric tonnes and 8,792 metric tonnes was sold while required local maize seed was 22, 819 metric tonnes, composite maize was 625 metric tonnes, but only 1256 metric tonnes was sold. This shows that far much fewer farmers in 2002 season planted certified seed of maize while majority planted their own saved seed.

Similar situation was for beans (*Phaseolus vulgaris*) where estimated requirement was 17,166 metric tonnes but only 1120 tonnes was sold for planting; estimated Soya beans seed requirement was 3,675 metric tonnes and only 31 metric tonnes was available and sold-while groundnuts seed requirement was at over 12 000 metric tonnes but only 2526 metric tonnes was available and sold. The same case applies to the rest of the crops. In fact no certified seed was available for other crops (**See Appendix: 5**).

These statistics are recent and even reflect what has been happening in the previous seasons. Where some seed stocks remained unsold at the end of the season it was mainly because they were not available (distribution) to the target communities, or the communities did not have resources to procure. This status shows that there is critical seed insecurity in the country as far as use of certified seed is concerned. Majority of the farmers' plant own saved seed, which is not improved, seed quality not assured, while others do not have enough to plant. This situation clearly shows that it is the informal seed sector playing a big role in seed supply in the country. No wonder, therefore, that Malawi does have some if not a majority of its people food insecure.

7.2 The Informal Seed Production

Over 80% of the country's population live in the rural areas and are mostly engaged in subsistence farming. Over 70% of the seed that is used by the smallholder farmers in Malawi is farm saved seed and it is within the culture of Malawians to share seed. There is intense exchange of seed among households and payment is usually in kind and not necessarily direct exchange or for cash.

The Ministry of Agriculture and Irrigation (MoAI) realizes the importance of use of good quality seed by the smallholder farmers and therefore has been committed to supporting smallholder seed production. Over the years the government has been assisting smallholder seed multiplication programmes by arranging for official certification of seed produced by smallholder farmers. A result of this support has seen the country be self sufficient in rice seed and an improvement in the supply of seed of other crops.

The government has been supplying the start up materials to Addis multiplying seed or to various NGOs that have been implementing smallholder seed multiplication as part of their development strategy. The government has also been training farmers and staff in seed production techniques through out the country.

The ASSMAG programme is one of several programmes in seed production by smallholder farmers. During 1995-1999 DFID supported Action Aid to implement a smallholder seed Multiplication Project in which small groups of farmers were provided with ways and means to produce good quality seed and sell to fellow farmers. Other NGOs like Plan International, WVI, CARE, Concern Universal are also engaged in seed production programmes for smallholder

farmers. The NGOs help to overcome constraints of financing and providing technical skills in seed production or lower transaction costs and risks of traders in the early stages of developing such enterprises. However the question of sustainability and empowerment of the communities to undertake such tasks should not be ignored.

7.3 Farmers' Objectives and Motivation

Malawi's agriculture sector boasts of having a hard working population. It is one of the biggest assets for the country's agricultural productivity in general. There is a lot of energy and enthusiasm among farmers so that if seed security programme is well planned, it can easily be implemented because the people involved are able and willing to work hard.

Through discussions with farmers currently involved in the seed security programmes revealed that most of them find that seed production generates more income than grain production for food. The seed is generally sold at higher prices than the regular grain for food. As such seed saving activities offer an attractive business venture to the farming community.

Open pollinated varieties of cereals (i.e. maize) and self pollinated crop seed is not attractive to commercial seed companies as such certified seed has not been available for farmers on the market. Farmers therefore take this as an opportunity and necessary for them to produce certified seed for their communities (which could not be supplied by seed companies).

The third motivation is that by engaging fellow farmers within the communities in seed production/multiplication it ensures seed availability, access as well as utilization since proximity is no longer a problem. If financial resources can be limited, then barter can take place, thereby ensuring that most farmers use certified seed.

Another motivation noted is that most OPV varieties tend to be materials adapted to local climate, disease resistant and in case of maize OPVs have flint grain which is preferred to hybrids. The seed can also be recycled for two to three years hence tend to be cheaper than hybrid seed. Availability of certified seed of diverse types of crops is promoted by farmers themselves engaged in seed saving activities thus ensuring food crop diversification and in turn food security.

7.4 Extent of Seed Saving Activities

Following review of policies on seed industry and liberalization of the economy, the seed sector has a lot of NGOs engaged in supporting seed saving activities or programmes among farmers. For a full list of farmers' Associations and NGOs engaged in the activities see **Table 3**. The following are case studies of some of the major NGOs working and supporting farmers in seed saving programmes:

7.4.1 CARE International

Programmes (Cooperative Assistance and Relief Everywhere) is one of the major NGOs in the country that has and is still assisting farming communities in seed production programmes. CARE International started its programmes in Malawi in 1999. It is a non-profit organization and its Head Office is in Lilongwe City. The organization has four main country programmes which include (i) Development programme (ii) Health (iii) Emergency and (iv) Food Security. It is under the Food Security Programmes that CARE is involved in seed security activities.

CARE's Food Security programme has four components including Agriculture and Natural resources, Marketing, training and organization development and Technical Natural Resource Management.

Crops of Focus

The agriculture and Natural resources component is concerned with promotion of crop production. The focus so far has been on beans, groundnuts, cassava, sweet potatoes and Irish potatoes.

CARE is implementing its programmes through the existing local structures – the Community based organizations (CBO's). One of such CBOs is the Village Development Communities (VDCs). CARE works through its Agriculture Coordinator who is assisted by Agricultural Field Assistants, (volunteers trained by CARE itself). CARE provides initial seed to selected impact area VDCs and it becomes the responsibility of VDCs to identify beneficiaries. The beneficiaries are then trained in seed multiplication through the support of CARE. The training is conducted by experts from the government (researchers/breeders) who are also the source of the basic seed.

The beneficiaries are given the initial seed quantities of 3kg/person in case of beans, 4 kg/person for groundnuts, 1 pail for Irish Potato tubers and a 50 kg bag/person for sweet potato vines and cassava cuttings. Upon harvesting the beneficiaries pay back twice the quantity they were given to the VDCs. The VDCs then have a responsibility of setting up a seed bank where the seed is stored. The sweet potato vines and cassava cuttings are preserved in “*dambos*” while waiting for distribution. In the following season the VDCs identify other beneficiaries such that the seed banks are for revolving seed for the community. Eventually, the communities are expected to be seed secured.

Commercial Seed Production

Recently 2002/2003 season CARE has engaged 60 farmers in commercial seed production of groundnut seed of Chalimbana and CG7. These farmers are producing the seed following all the government recommended practices and under monitoring and inspection of seed Inspectors of the breeders and Seed Services Unit of Ministry of Agriculture and Irrigation.

To ensure that the commercial seed production by farmers is sustainable the initial costs for basic seed and inspection activities have been paid by CARE. After farmers have sold the seed the costs will be deducted from their sales and be deposited into a “commercial seed Multiplication Fund” to be opened. This fund will be used to purchase basic seed and meet the monitoring and inspection costs in the subsequent seasons for the farmers, thus making the programme sustainable. Similar arrangements are being planned for farmers to produce certified seed of bean.

These seed multiplication projects are currently covering impact areas of Lilongwe – in Traditional Authorities (TAs) of Kalolo, Khongoni, Kabudula and Chitukula, and Dowa in Traditional Authorities of Nkukula, Chiwere and Dzoole.

Agricultural Recovery Project

This is another project relevant to seed security being implemented by CARE. The project originated from relief activities under which CARE was distributing relief food to badly affected families by hunger during the critical periods of food shortage. Such families happened to have lost all their food resources hence needed to recover their seed resources.

Beneficiaries under this project are identified by Relief Committees in the affected areas. Currently the project is covering Dowa district in T.A. Chakhaza and Lilongwe district in TAs Mtema and Chadza.

Cooperation with other NGOs

CARE International is also implementing the Agriculture Recovery project through other NGOs. There is an NGO Consortium coordinated by WFP and CARE has been distributing seed of various crops through the consortium in other areas of the country. The Agriculture recovery project was planned for a one-year period and once it is phasing out, another similar project known as C-SAFE (a regional project for Malawi, Zimbabwe and Zambia) will start. In this project CARE will be in the forefront in Malawi. Under this coming project the seed will be given to farmers in exchange for labour in community development work.

Successes

CARE through seed security projects has made notable impacts in terms of reduction in hunger among the participating households. This was clearly noted particularly during the years of 2001/2002 when there were a lot of malnutrition cases due to severe food shortage in the country. The households that were participating in its project were doing better and survived.

Seed availability has improved in the impact areas of the project. Through group training programmes CARE has trained VDCs in organization for development such that the farmers themselves are now capable of mobilizing their own resources to solve some of the problems other than just waiting for external support.

Other successes are on marketing Savings and Loan programmes through which where women have been mobilized into 10-30 member groups and trained on how to save their income on a weekly basis. Such savings have provided a cushion to group members during the period food crises. One such group has been reported to have saved up to MK 120 000.00 in one year.

Constraints to CARE seed security projects

A short life span of projects has been reported as a constraint to the lasting success of CARE's seed security projects. Farmer groups are left to run the projects on their own after one or two years' period and thus when they are just about to learn how to organize themselves. This becomes a constraint because adoption rate of Malawian farmers is said to be slow so that more time is required for farmers to change their attitudes and adopt such new concepts. Follow-ups to old project areas are therefore necessary to encourage the farmers.

Use of volunteers – trained as Agricultural (seed multiplication) advisors from the communities has been another major constraint. Since such people have been advising fellow farmers voluntarily it has been difficult to sustain their services as well as their household livelihood. It is therefore suggested that where possible, farming communities should be setting and contribute fund for supporting the services of Volunteers. Currently CARE has started training the VDCs and other CBOs to take up most of the volunteer advisory services.

Funding of CARE Food Security Activities

CARE Food Security activities, which include seed security, are funded by the Government of Australia, USAID and OFID.

7.4.2 ASSMAG

ASSMAG, an acronym for Association of Smallholder Seed Multiplication Action Group, is one of the outputs of the Malawi Government initiatives to ensure seed security in the country.

Background of ASSMAG

The European Community (EC) has since 1995 been supporting Malawi's initiative and programmes aimed at improving household food security.

One of such initiatives was the setting up of a Maize Productivity Task Force (MPTF) with the objective to increase maize production, promotion of crop diversification and to encourage smallholder farmers to adopt technologies specifically designed to increase smallholder productivity.

Within the MPTF, were four action groups and Action group 2 was dealing with development of alternative sustainable seed supply systems that would ensure the provision of affordable improved seeds and to promote crop diversification and grain legumes in particular.

To develop a permanent mechanism for seed multiplication and distribution, efforts concentrated on the establishment of seed producers associations and a national umbrella organization, the National Smallholder Seed Producers Association (NASSPA). The idea behind this effort was to organize farmers in groups and form associations to facilitate seed production, processing and marketing and to provide access to credit.

At the formation of NASSPA it was assumed that seeds would automatically find their market, since most farmers are smallholders with limited financial means but with a need for improved seeds (OPVs). Since these seeds are less expensive than hybrid varieties, farmers would be able to afford seeds. Farmers were therefore trained by the extension services in seed multiplication technologies and cropping practices.

While NASSPA made a number of achievements on supply of OPVs and bean legume seeds a number of shortcomings led to its breakdown. These were related to poor management structures and capacities, lack of proper supervision and monitoring, unclear project concept with no time horizon and exit strategy, and a number of technical problems aggravating the situation, in particular when EC funding was interrupted due to financial mismanagement and diversion of funds by the NASSPA management in 2001.

After the dismissal of the management, NASSPA was broken down and regional associations were hardly in a position to re-organize production and marketing of OPV seeds by themselves. A restructured farmers association was therefore formed under the name of ASSMAG.

Organization of ASSMAG

ASSMAG is run by a board at national level and has a Secretariat, which coordinates Associations. There do exist 8 ASSMAGs countrywide. A single ASSMAG covers seed multiplication farmers of an entire Agricultural Development Division (ADD). Each ASSMAG at ADD level is further subdivided into smaller groups referred to as Seed Marketing Action groups (SMAG). A wide variation on number of members exist among SMAGs. Membership ranges from 20 to 300 farmers per SMAG. Each SMAG has a committee made up of 10 members. There is a membership fee of MK5,000 for a three year period. The farmers produce the seed and the association markets it on their behalf. The type of seed they produce ranges from basic to commercial covering such crops as OPV maize, rice, sorghum, groundnut, beans, soybean, cowpea and pigeon pea.

7.4.3 BWANKHOSA SSMAG – (Case Study)

Area of coverage and crops

One of the 8 ADDS in the country is Salima ADD. Its area coverage extends from Bwanje river valley through Salima district up to Nkhotakota district.

A meeting was convened with a sample of 21 farmer members of Bwankhosa SSMAG (See **Appendix: 5** for the list of members present). Most of the members present were from Kumalimba Seed Marketing Action Group. The SSMAG was formed in 1999 with 11 farmers but membership has since grown to 152 farmers in Kumalimba SMAG, 56 farmers in Bwanje SMAG, 230 farmers in Nkhota-kota SMAG and 20 farmers in Lifuwu SMAG. The SSMAG farmers are currently producing seed of maize, groundnuts, rice, pigeon pea, Soya-bean and cassava.

Determination of how to Produce Seed

In the previous seasons (2001/2002), government's demand was of 200 metric tones of OPV maize seed for its Targeted Input Programme (TIP). The whole ASSMAG was challenged with this demand to satisfy. Therefore each SSMAG was asked to indicate how much it would be able to supply according to its capacity. No quota was therefore given but ASSMAG still did not satisfy the government's demand by the beginning of 2002/2003 growing season.

Criteria for Membership

For one to become a member, he or she should have a large field for isolation distance in case of Maize seed production and personal interest. Members do pay a membership fee of MK5000.00 for the first three years and then MK 2000.00 for the subsequent three-year periods. Other consideration include age limit of 18 to 60 years, which is considered as energetic enough for the activities involved. The member must also be of good character.

Practices

Each SMAG has monitors who have been trained in seed multiplication practices. Before a farmer/member is accepted for seed multiplication the monitors do check on the land requirement and history. Seed Inspectors from the Government also do come to monitor the crop regularly. Farmers/SMAGS do meet the inspection costs themselves.

Source of Inputs

Basic seed is sourced from Chitedze Research Station and ICRISAT. Farmers procure fertilizer from private suppliers of Agricultural inputs.

Packaging and Price Selling

The farmers themselves do the processing and packaging of the seed. Due to lack of resources packaging is often less attractive compared to those of competitors outside the country. However farmers still feel their seed is of high quality and competitive enough with that from neighboring countries. Pricing of the seed is done at ASSMAG level in competition with other local and international seed suppliers and as such farmers are not consulted widely.

Other Support Services

The SSMAG has been receiving support from an Italian based organization known as COSPE. This organization has organized Lifuwu SMAG of this association into a cooperative.

Achievements

Bwankhosa SSMAG is rated as one of the successful farmer associations in seed multiplication in terms of organization despite a number of constraints faced by the whole association. Its membership has grown large within a short period of time and this suggests that seed multiplication business is attractive. The farmers have been capable of following the required practices in seed multiplication. If provided with adequate support, the farmers are determined to become independent and capable of searching their own markets and compete with international suppliers.

Results of a marketing study of ASSMAG by Lin and Ngulube (2002) showed that good years were between 1996 and 1999 when EU purchased most of the seed at very high prices. Based on 1998/99 sales production in 1999/2000 was very high but the marketing by NASSPA was in disaster because farmers did not get their money. Dropout rate in most SMAGS after this season in 2000 was about 40%.

Constraints

The following issues were highlighted by the farmers as major constraints to their seed multiplication business.

- (i) Expensive inputs – especially fertilizers. Fertilizers are said to be more expensive in Malawi compared to neighboring countries, as the result seed production costs tend to be high. Inspection and monitoring costs are paid by farmers themselves and most of them don't have enough financial resources.
- (ii) Lack of reliable market – so far the government TIP has been the readily available market of ASSMAG seed, but this is not permanent. There is a need for ASSMAG to set various marketing strategies for its produce (conduct Field days, and set demonstration plots.)
- (iii) Few lending institutions especially for agricultural inputs.
- (iv) Low prices – so far ASSMAG produce prices have been low in comparison to the production costs. Consequently farmers have not been able to make profit so as to meet all the costs involved in seed multiplication such as Seed Inspection cost.
- (v) Use of a hoe for field operations is a constraint and farmers feel it is high time they get mechanized by use of tractors for major field operation
- (vi) Lack of group dynamics especially in sourcing out financial support.

Farmers feel they still need some external funding support to meet some of these costs until at a stage when they can become financially independent to meet all these costs on their own. For instance last season (2001/2002) their OPV maize seed was sold at K40/kg, groundnuts at K35/kg, Soya bean at K30/kg. The study also revealed that local farmers do not regard SMAG seed as of high quality and do prefer seeds from outside the country. Another point was that SMAG seed was not treated (no colour dye) and not packaged attractively hence did not compete with private company seed.

SMAGS are not allowed to sell their seed before it is certified neither are they allowed to sell their seed outside ASSMAG. They cannot influence the price of their seed as prices are set by ASSMAG members. In addition ASSMAG has very high deductions (10%) for wastages etc. There were also not enough scales or scales don't work. Often SMAGS had no market information to help them in forward planning of production. Lin and Ngulube further reported that delivery of basic seed by ASSMAG was late. Sampling of seed for certification was reported to be late. This often results into late certification, sales and late payments. SMAGS members have in general no access to inputs credits.

7.4.4 WORLD VISION INTERNATIONAL

Programme on Seed Security

World Vision International is one of the NGO's in the country playing a vital role in seed security. WVI is a non-profit making organization, operating countrywide. Among its programmes is the Food Security Programme. Just as is the case with Care International, WVI has seed multiplication activities as part of the food security programme.

WVI operates through its Field staff referred to as Project Coordinators. The Field Officers working in Agriculture are referred to as Agricultural Project Coordinators. Each Coordinator is responsible for an Area Development Programme (ADP). Each ADP has about 5000 households. Farmers are then organized into clubs of 10-25 farmers.

Through collaboration with appropriate institutions the farmers are trained in seed multiplication (agronomic practices) and marketing of the seed (in conjunction with NASFAM and GOM).

The WVI seed multiplication project has been focusing on OPV maize varieties, groundnuts, beans and Soya bean. In the project, WVI provides input support to the farmers including follow up visits using Agricultural Field staff and Assistant Managers to monitor and provide technical support. The initial support that WVI provides in kind is of basic seed. The first beneficiaries repay back in the ratio of 1 to 2 or 3 times what they were given. The seed repayments are put into a revolving village seed bank. Using the seed bank, more beneficiaries are identified and supported.

Successes

WVI has 26 ADPs countrywide with about 500-1000 beneficiaries (for Food Security component alone per year) in each ADP. Through this, WVI has registered improvement in household income among the beneficiaries through sales of seed. Food availability is also reported to have improved in those communities. These ADPs have also played a role as learning centers for the surrounding communities. WVI therefore feels proud to be part of the efforts in implementing the food Crop diversification policy of the Malawi Government.

Challenges

Despite these successes, challenges still exist in regard with Marketing, seed quality and financial constraints. There aren't ready markets for the seed produced by these farmers. Farmers still largely depend on selling to ADMARC and yet ADMARC market is not guaranteed as it was in the past. Farmers are therefore forced to sell the seed at lower prices just like any grain meant for food.

Maintenance or production of high quality seed among the farmers is hampered by unaffordable fertilizer inputs. Farmers cannot afford to purchase adequate recommended quantities of fertilizer to produce high quality seed. Further more farmers are not able to meet the Government of Malawi (GOM) seed inspection costs. The Seed Inspectors are also few and fail to monitor all the seed multiplication farmers countrywide on time.

Funding and Sustainability

WVI does provide the funding of the seed multiplication programmes by paying for the initial costs of basic seed, fertilizers and monitoring and inspection costs. However the village seed banks have been established to ensure sustainability of the programme. WVI has already seen some farmer clubs graduating and stand on their own.

8.0 OVERALL SUCCESSES AND CHALLENGES

8.1 Successes

From the view -point of the key-role player in seed saving activities by smallholder farmers and the farmers themselves a number of successes have been registered. First the review of the government policies on seed sector has seen various NGOs including seed security activities in their community development programmes (**Table: 3**). There are now a number of NGOs

supporting smallholder farmers to be seed secured. The government through the financial support from international community has successfully mobilized smallholder farmers into associations in seed production of OPV maize varieties and other food crops. Availability of certified OPV seed has increased in the country tremendously. The initiatives have resulted into more smallholder farmers trained on agronomic practices of seed multiplication.

8.2 Challenges

The seed saving projects have, in the development process, met a number of challenges such as:

8.2.1 Inadequate Storage facilities

Smallholder farmers do not keep seed under environments that would ensure maintenance of seed viability. The farmers in addition do not have all the necessary facilities to ensure that the seed is properly or evenly dried and processed, treated against pests and diseases and purity. Poor packaging, seed treatment (colour) have made customers perceive fellow smallholder farmers seed as of poor quality as compared to the imported OPV seed which is often treated with colored chemicals and in attractive packages.

8.1.2 Un reliable Market

In availability of reliable market is another challenge. The farmers' associations have so far largely dependent on the government targeted input programme and APIP as the main market for ASSMAG seed products. The associations that are supported by other NGOs rely on selling to fellow farmers within their community. Because of the poor market structure, negotiations for higher prices becomes difficult. Prices of ASSMAG seed have been negotiated at the top management level often without consulting the farmers at lower levels.

8.1.3 Expensive Inputs

Farmers also expressed that due to expensive fertilizer inputs, some of them have been unable to apply their seed crop with recommended fertilizer application rates. This greatly affects the quality of seed so produced.

8.1.4 Financial Constraints for routine inspection of seed

Lack of financial resources has been a big problem to ensure that government seed inspectors come to monitor and inspect the crop. As a result certification procedures of their seed have often been delayed. Farmers therefore feel that the government or the NGOs should continue supporting them in meeting the costs of seed inspection until such a time they are able to be financially independent.

8.1.5 In adequate Personnel

NGOs that support farmers further reported that there are fewer government seed inspectors than the demand. This has always resulted in late reporting to farmers' fields for monitoring and inspection.

8.1.6 Erratic Weather Conditions

Drought is another challenge for smallholder seed production in the country where cropping is dependent on rain - fed condition. The rainfall pattern over the years has become increasingly unpredictable making it difficult to ascertain appropriate time of planting. Natural calamities like the drought, floods and disease and pests outbreak do have a negative impact on smallholder farmers' seed saving projects. As such the MoAI

is now encouraging farmers to grow winter crop. Seed multiplication farmers have also shown interest in this.

8.1.7 GMO Food Aid

Food aid of genetically modified food grain poses a threat on smallholder seed multiplication farmers. This has a threat implication especially on seed being produced for village seed banks. During the 2002/03 growing season, Malawi received food aid in form of maize containing Genetically Modified grain. Most of this maize was distributed to beneficiaries as whole grain. There are chances that such grain could fall and germinate or even be planted close fields where farmers are multiplying their seed especially for village seed banks where there may not be strict monitoring. Such incidences may lead to contamination problems in the long run and disturb seed security in the country.

8.1.8 Poor Road Network

Poor road infrastructure in some areas was cited as a challenge to the smallholder seed sector. The road conditions and network is poor in most rural areas where smallholder cannot timely transport their produce as well as difficulty in access of seed inspectors to the fields.

It may be too early to conclude that some of these seed saving projects by smallholder farmers have failed. What is required are continued efforts to overcome the challenges. Currently there is no question about enthusiasm of smallholder farmers in seed multiplication projects.

9.0 POLICIES AND TRENDS INFLUENCING SEED SECURITY –FARMERS’ PERSPECTIVE.

Farmers feel that liberalization of the market has had both positive and negative impact on the seed security.

9.1 Positive Impact

The positive impact is that the commercial seed production (as a business) is no longer a monopoly of a single or few companies. There is competition in the seed industry and this ensures high quality and diversity of products. The policies have given an opportunity to smallholder seed producers to take the venture as a business there by improving their income. The commercial companies stopped producing seeds of OPV and leguminous crops because they proved not profitable as farmers recycle their own seed and could not buy from the commercial companies. The OPV seeds that were once not available on the market are now readily available.

9.2 Negative Impact

On the other hand the policies have negatively affected the marketing of the smallholder farmers’ seed. Liberalization of marketing has given way to seed imports, which tend to be cheaper, than the locally produced seed. Although the seed production costs for smallholder farmers are high, market forces dictate them to lower their selling prices in order to compete with the imported one. As the result the smallholder producers make small profits margin not adequate to improve their seed production requirements.

The government also removed the subsidies on agricultural inputs for smallholder farmers and at the same time the market was liberalized. This has resulted to unaffordable fertilizer prices for the farmers while on the other hand, when the farmers are selling their produce to the private -traders, they negotiate to too low prices to make profits. In this regard farmers feel that, at this infant stage, the local seed producers should be protected to ensure attractive prices of their products, or

provide subsidies on fertilizer inputs to reduce the seed production input costs. ADMARC is no longer a granted sole buyer with granted prices of farm produce.

Farmers feel that for them to get a good market share they need some external financial support that will enable them get into well organized marketing groups with all necessary seed processing facilities and packaging materials. They need the support that could enable them to embark on aggressive marketing activities of their produce.

10.0 CURRENT SUPPORTING STRUCTURES

10.1 Government Plant Breeders, Seed Monitoring Centers and Research Institutions

The smallholder farmer seed saving activities are supported by the structures that were already available for the commercial sector. These include sources of basic seed. Government plant breeders at Chitedze Agricultural Research Station and also at International research centres such as ICRISAT (for the supply of groundnuts seed and CIAT for common bean basic seed) supply the basic seed to the smallholder farmers. They do monitoring, seed inspection and certification of seed through the Seed Technology Unit (STU) whose laboratories are also at Chitedze Research Station. The STU has a responsibility to certify the seed and monitoring the production, processing, marketing and storage throughout the country to ensure that the seed that goes on the market is of good quality. High standards are applied to comply with internationally acceptable standards. (See Appendix 6: “Seed Act, 1998”)

At the moment processing plants for seeds are not available yet, for farmer-seed producers who still use their own local equipment and facilities to process the seed. As such the seed so processed has some impurities. The seeds also end up of variable sizes because of lack of seed screens or sieves. The packaging of the seed is also uneven often put in relatively large packages due to lack of better packaging equipment. Currently marketing of ASSMAG seed is done through its secretariat, which finds the market (buyers) for its members.

10.2 Phyto-sanitary Services

Other supporting structures for the seed saving programmes include the phyto-sanitary services. The government has a unit on Produce Inspection and Quarantine Services whose objectives are to ensure that all produce exported from Malawi is free from pests and diseases, imports are free from any foreign pests and diseases and that storage hygiene is followed, particularly in the processing, handling and storage places firms. These services are there to protect the seed sector in the country as well.

10.3 Plant Genetic Resource Centers

There is a Plant genetic Resources centre for conservation of plant genetic resources. This is an important component in seed security of the country. Its main role, though not direct onto the smallholder seed sector, is through collection and conservation of plant genetic material, which are normally useful, when there is genetic erosion of local materials.



*Gene-Bank Site: Roots and Tubers
Chitedze Agricultural Research Station*

11.0 FARMERS' PERCEIVED NEEDS

The smallholder farmer seed producers perceive the following as their needs.

11.1 Need for Agricultural Input Loans

First they perceived the need to have agricultural input loans readily available as important to enable them apply recommended fertilizer rates to their seed crop in order to produce high quality seed. There are feelings that the government should intervene in controlling fertilizer prices to ensure that there is no overcharging of fertilizer inputs by some private traders. The farmers feel that since they are at an infant stage as associations, and as seed producers who do not have facilities for processing of seed, no funds to meet inspection costs, no facilities for packaging, the government and NGOs should continue supporting them in procurement of basic seed and marketing until they are well established.

11.2 Consultations with Seed Producers in pricing

Farmers also feel they should be widely consulted and involved in setting up prices of their products. When the prices are set at the beginning of the season, the buyers should keep up the

agreement at the time of selling. Currently, because of poorly organized market structures, some farmers have been selling their seed at low prices just like the ordinary food grain.

11.3 Training Needs

Farmers also highlighted regular trainings on group dynamics, and marketing strategies as another important area they need to be supported. The farmers associations would like to become independent, in organization management financially and in marketing of their seed ultimately. Farmers feel if they can be trained to run as cooperatives the issue of becoming independent should be possible within a short period.

12.0 THE COMMERCIAL SEED INDUSTRY

The Commercial Seed Industry is dominated by fewer companies, which include the former National Seed Company of Malawi (NSCM) now bought by Monsanto, Pannar Seed Co. and the Farmers Association (ASSMAG). Although the ASSMAG has been treated under farmers' seed savers but their activities are commercial and at the moment the government programmes are the main outlets of their seeds. While the well-established commercial companies supply hybrid seeds the farmers associations are there to supply the neglected seeds of mostly OPV maize, rice, soybean, bean, cotton and pigeon peas.

Another commercial seed producer is the Agricultural Research and Extension Trust (ARET) who produce tobacco seed. There are also a lot of trade activities taking place on seed internationally. It is reported that (Malawi Government, 2000) some farmers in the country have been using some improved seed from Zambia (Zamseed) the common one being MM604. Some seed also came from Semoc, Mozambique, and seed- company from Zimbabwe, Seed Co. Although Seed Co. had its branches in the country, it was still producing its seed in Zimbabwe until (2001/2002) when it started producing some within the country.



Demonstration Site for Seedco – Company
LILONGWE

The international (informal/unmonitored) trade in seed has made the seed produced within the country have carry-over seed stocks from one season to the next and makes the calculation of the replacement rates tricky. It has been estimated that, hybrid maize used in Malawi is between 11 and 19% of all maize seed used by farmers.

Malawi has also been a market for vegetable seed for companies from South Africa. These include Mayford, Steaks Ayres and Kickoff. These formal seed imports and exports, to and from the neighboring countries and beyond, are done by Monsanto, Planar Seed and Seed Co.



***Monsanto Demonstration Site for Conservation
Village
I. I. LONGWE***

All produce or plants imported into Malawi are inspected in order to ensure that they are free from infestations and conform to the phytosanitary regulations of this country. Documents such as international seed testing certificates, import permits, phytosanitary certificates and fumigation certificates accompanying consignments are verified to ensure that the regulations are complied with.

Most seed exports involve hybrid maize by Monsanto and Pannar Seed and are mostly to Kenya, Zambia, and Tanzania. The exporter is required to arrange for international seed testing and phytosanitary certificates.

13.0 INSTITUTIONAL PROGRAMMES

13.1 Government Research Institutions

Public institutions and some private companies that produce and sell seed in Malawi do the major research in food crops. The Department of Agricultural Research and Technical Services (DARTS) in the Ministry of Agriculture and Irrigation conducts almost all research for the country's important crops. The commercial companies, such as Monsanto, have also been releasing some hybrid maize varieties in the country. Research for plantation crops like Tea and Coffee is conducted by Tea Research Foundation and research in tobacco is done by ARET. There is Agricultural Technology Release Committee (ATCC), which is an official institution within the Ministry of Agriculture and Irrigation, which recommends the release of crop varieties in Malawi. The recommendation is usually based on science, practicability, economics and demand.

13.2 International Agricultural Research Centers

There do exist a number of IARCs, which include CIAT, ICRISAT and IITA that operate in Malawi and to benefit the whole SADC region as well. These IARCs are involved in making seeds of improved varieties available to farmers.

The type of seed they produce is mostly breeders or basic seed. Some IARCs such as CIAT and ICRISAT have been producing certified seed in partnership with smallholder farmers and market it through small merchants (grocery, shop owners, maize mills, clinics) in rural areas.

13.3 Bunda College of Agriculture

Bunda College of Agriculture, a constituent college of University of Malawi offers training in seed science and Technology as a course for undergraduates. A postgraduate Diploma course in Seed Science and Technology has now been approved by the College and is pending the university Senate's approval. The college has been running a more than 20-year period project (Bean/cowpeas/CRSP) on bean research in collaboration with University of Michigan in the USA. The project has since released several bean varieties with characteristics preferred by farmers in Malawi. This project has been in close collaboration with the Bean Improvement Project of the GoM/CIAT.

There is also an indigenous vegetables project, which since 1992, has been promoting cultivation of indigenous vegetables including Cat Whiskers, (Luni), Amaranthus (Bonongwe), Jews mallow (Denje) and Roselle (Limanda & Chidede). One of the major activities of the project has been seed multiplication and distribution of these popular indigenous vegetables.

The indigenous vegetables seed has reached out a lot of smallholder farmers countrywide through ADDs, and NGOs who are working with rural communities. Both the Bean/Cowpea CRSP project and Indigenous vegetables project have been participating in various agricultural shows in efforts to publicize the products to farmers. The indigenous vegetables seed has been packed in small packages as small as 20g packets, which are affordable to smallholder farmers.

The Crop Science Department has also been multiplying cassava seed and sold to NGOs and ADDs who have been distributing to farmers. The Commercial Farm of Bunda College, the Horticulture and Forestry Departments have been subcontracted in Multiplication of OPV maize seed as well as hybrids.

Cultivation of Oyster mushroom is another project, which Bunda College is implementing and working with smallholder farmers surrounding the college. One of the Project's major activities is

to produce mushroom seed and make it available for farmers. The University, therefore, is playing an important role in the seed security of the country through these various projects.

14.0 ENHANCING AND SUPPORTING SEED SECURITY

14.1 RESEARCHERS' PERSPECTIVE

14.1.1 The Review of Policy on Seed Sector

The review of the seed policy of Malawi has made a significant impact on the seed sector. It has allowed more private sector participation in the industry than before. As a result there has been increased seed production and diversity of crop varieties. This is healthy for the sector because competition is effectively controlling seed prices, which would have rapidly increased.

14.1.2 Mobilization and support to Farmers Associations'

Various government and NGO initiatives have succeeded in mobilizing smallholder farmers for seed security Projects. This has made a big difference from the era when seed supply was a monopoly to the current liberalized economy. The farmers need to be supported both financially and with skills to become independent through establishment of facilities for processing and packaging the seed. The farmers need to be supported to develop good market structures. Fertilizers in the country are imported as a result their prices tend to be expensive and unaffordable by most smallholder farmers. Farmers should be organized and where possible be able to import fertilizers directly themselves

14.1.3 Equipping smallholder farmers with knowledge and skills

The government (MoAI) and the NGOs projects on seed security have succeeded in equipping the smallholder farmers with knowledge and skills in production of high quality seed. This has been evidenced in the supply of certified OPV maize seed by ASSMAG for the TIP and "Starter Pack" programmes. The government (MoAI) at Lifuwu Research Station has been producing high quality rice seed through smallholder farmers associations and cooperatives. CIAT and the government bean Improvement project have been multiplying certified seed through small-scale farmers.

14.1.4 Government Supporting services and structures

The government has established all the necessary services units and structures to support the seed industry although they may not be adequately staffed or equipped. These government-supporting services include the Seed Technology Unit (STU), which has a responsibility of seed certification and monitoring. This is also a pre-requisite even for international trade. The source of basic seed and availability of breeders from research station is a key to the seed security in the country. There do exist several international research centres such as ICRISAT, CIAT and IITA that provide basic seed to the seed producers. The government has a plant genetic resources center at Chitedze Agricultural Research station. This station is an important backup to the seed industry and is important that all these receive the necessary support.

14.1.5 Constraints on Seed Security in Malawi

It has been shown in this study that the high costs associated with production of certified seed result into high selling prices. As the result smallholder seed producer's products are not competitive enough to get adequate profits and sustain the business. On the other hand a very small percentage of farmers used improved and certified seed whether OPV or hybrids. A lot of farmers continue to use their farm saved seed. This further implies

that current demand for OPVs produced by the ASSMAG and other commercial small-scale producer, may not represent the true demand because once the government phases out, not all the TIP programmes beneficiaries will use certified seed. The adoption rate may be low due to financial constraints.

Capabilities of seed certification and quality control services are overstretched. The seed industry in the country is currently facing a shortage of seed inspectors to ensure timely monitoring and inspection of seed crops in the country. The implication is that once the team's training and monitoring capacities are reduced, low quality seed may be produced and made available to farmers.

14.1.6 Limited Scope of Seed Companies

Although the review of seed policy and liberalization of the economy has seen other seed companies opening up in the country their scope is still limited to maize hybrid seeds. There are other food crops important to the country whose certified seed is imported. The case of vegetables and some crops is not available at all so that farmers are forced to use own saved seed. The seed companies or farmers associations need to diversify in their seed production for vegetables as well.

14.1.7 Marketing Structures

The current marketing structure for small-scale seed producers is not well developed. The Seed Marketing Action Groups (SMAG), need to be empowered with marketing skills.

15.0 SUMMARY AND RECOMMENDATIONS

15.1 Seed policy review

The review of the seed policy has had a very good impact on the seed security of the country. What may be required is to have an evaluation done on the impact of the policy, assess the weaknesses that have shown up in the process of its implementation. The evaluation results will be valuable for future reviews of the same.

15.2 Liberalization of the economy

Malawi has a liberalized business sector. Anyone can open up a business anywhere in the country as long as there is no contravention of the Business Act of Malawi. The seed sector has therefore benefited by having a number of seed companies opening up in the country as well as smallholder farmers associations getting in the seed sector business. This is expected to induce competition that will result in increased seed availability, accessibility and stable prices.

15.3 Seed production standards

Quality control is recognized as fundamental to seed production and marketing. The MoAI has the seed services unit and with the other internal quality control systems of the commercial seed companies do undertake all necessary work to ensure that only high quality seed is marketed. The seed services Unit does provide the seed companies certification and smallholder seed multiplication systems services in accordance with the "Seed Act of 1988".

The smallholder seed producers and associations are currently facing financial resource constraints to ensure production of high quality seed, processing and packaging. The government and NGOs, need to gradually phase out support to these farmers until they are independent. During this gradual phasing out of the support, the farmers should receive adequate training on group dynamics, Management of cooperation or associations, marketing and

advertising skills as well as exposure, where possible, to similar projects in the neighboring countries.

15.4 Village Seed Banks

The seed saving projects that are aimed at setting up village seed banks are effective in ensuring seed availability within the communities. Such projects are effective in wide adoption of new crop varieties. These are also promoting the food crop diversification in the country. Since the projects are not aimed at producing certified seed but for diffusion of the crop, they should multiply seed of self-pollinated crops and vegetatively propagated ones to ensure maintenance of genetic integrity.

15.5 Sustainability of Smallholder farmer Seed saving systems

There are arguments that the objective of bringing seed of improved varieties (i.e. OPVs) at affordable prices to smallholder households is not the same and not consistent with the strategy to establish sustainable seed supply systems for improved varieties. A balance has to be reached between improvement of households' food security and dietary, versus that of cash income. The improvement of household incomes must aim at the most efficient and cost effective way of producing, processing, packaging and marketing of seed either household security or for supplying the commercial farmers. Although the two objectives can be complementary, both deserve a radically different approach in terms of funding and expected output and sustainability.

15.6 Linkages between Seed Producers Associations and Commercial oriented Associations

There are farmers associations such as NASFAM that are commercially oriented. They are aimed at empowering smallholder farmers in selling their produce. The availability of quality seed of improved varieties is a key to meet farm produce specifications. NASFAM has been training smallholder farmers in rice seed production and are reported to have plans to invest in expanded grain legume production for potential markets. NASFAM is also running agricultural input shops. Therefore the smallholder seed producers such as ASSMAG should be encouraged to link up with NASFAM.

15.7 Marketing of smallholder farmers seed

The main market for ASSMAG has been the government TIP and "starter pack" programmes. However this is not a sustainable market as these programmes phase out. The seed producers associations need to be well organized for the sake of seed processing, packaging and distribution as well as marketing intelligence. Strategies should be made to retain the market (farmers) who have been beneficiaries of the TIP and "starter pack" programmes. This entails that their seed prices should also be competitive against the imported seed and low enough to attract those farmers who may opt to use own farm save seed when the government pulls out its TIP support.

LITERATURE CITED

DEA (1994). National Environmental Action Plan, Department of Research and Environmental Affairs, Malawi, Volume 1: The Action Plan.

GOM (2002a). Malawi Poverty Reduction Strategy Paper (MPSRP), Ministry of Finance and Economic Planning: 1-30.

GOM (2002b) Chitedze Agricultural Research: Station Guide April, 2002. Ministry of Agriculture and Irrigation, Lilongwe, Malawi.

GOM (2002c) National Environmental Action Plan. Environmental Affairs Department, Ministry of Natural Resources and Environmental Affairs: 3-209

GOM. (2001a) State of Environment Report. Environmental Affairs Department, Ministry of Natural Resources and Environmental Affairs. 1st Edition: 32-135.

GOM (2001b) Malawi's National Forestry Programme – Priorities for improving forestry and livelihoods. Department of Forestry. Ministry of Natural Resources and Environmental Affairs: 7-51.

GOM (1998) Vision 2020: National long-term perspective study. Vol 1: 55

GOM (1999) Final Report of The Presidential Commission of Inquiry on Land Policy Reform. Vol III: Technical Studies.

GOM (1994) Priority research themes. Department of agricultural research, Ministry of Agriculture and Irrigation, Malawi: 8-10.

ICRISAT (2001) ICRISAT Medium Term Plan 2002-2004 - People First: 1-55.

Maliro, M.F.A., Mphopo, M.M.A., Lameck, G., Nalivata, P.C., Kaunda, E., Bokosi, J.M. Chibwana, A. and Lwanda, M. (2002) Status of agricultural production in Khombedza and Mwansambo extension planning areas (EPAs) of Salima Agricultural Development Division (ADD).

MASIP (undated) Priorities Framework for Agriculture (unpublished)

NRCM. 1999. Malawi Agricultural and Natural Resources Research Master Plan. National Research Council of Malawi: 1-105

ZMM-GT (2000). Expanded Country Profiles for Zambia, Malawi and Mozambique: Prepared for The Inception Meeting of The ZMM-GT. Lilongwe-Malawi. (Draft Report):

Maideni, F.W. 2001. Seed certification and Quality Control Services in Malawi, Phiri, I.M.G, Saka A.R. and Chilembwe, E.H.C. (eds) 2001 Agricultural Technologies for Sustainable Development in Malawi. Department of Agricultural Research and Technical Services (DARTS) Annual Scientific Proceedings No. 1 Lilongwe PP 236-240.

Daudi, A.T. and Maganga, J.L. 2001. Produce Inspection and Quarantine Services in Malawi.

Phiri, I.M.G., Saka A.R. and Chilebwe, E.H.C. (Eds), 2001: Agricultural Technologies for Sustainable Development in Malawi. Department of Agricultural Research and Technical Services (DARTS) Annual Scientific No. 1 Lilongwe pp 241-246

Nsapato L., 2001 : Some International Agreements Relating to Food and Agriculture with Reference to Genetically Modified Organisms.

Phiri, I.M.G., Saka A.R. and Chilebwe E.H.C. (Eds) 2001: Agricultural Technologies for Sustainable Development in Malawi. Department of Agricultural Research and Technical Services (DARTS) Annual Scientific proceedings No. 1, Lilongwe pp 247-251

Nsapato` L and Chiwona` E.A. 2001 : Plant Genetic Resources Conservation and Utilization in Malawi.

Phiri, I.M.G, Saka, A.R. and Chilebwe E.H.C (Eds) 2001 Agricultural Technologies for Sustainable Development in Malawi. Department of Agricultural Research and Technical Services (DARTS) Annual Scientific Proceedings No. 1, Lilongwe PP 252-256

NASFAM Titukulane . National Smallholder Farmers Association of Malawi – Newsletter

ICRISAT, 2001. ICRISAT Medium-term Plan 2002-2004. People First. Patancheru 502 324 Andhra Pradesh, India

SHDI, 2001. Self Help Development International – Conservation Based Integrated Rural Development Project – Chiradzulu – Malawi Ref: S12.49083. B1999/5. Half year report August 2001 – January 2001.

Mloza Banda, H.R., 1988, Seed Science and Technology Laboratory Manual. Crop Science Department – Bunda College of Agriculture, Lilongwe. 88 pages

Appendix 1: SCHEDULE AND LIST OF ORGANISATIONS CONSULTED

Date	Name of Organization	Names of people to meet	Contact Number
13 th March 2003	(1) ASSMAG – Association of Smallholder Seed Multiplication Action Group (2) PROSCARP – Lilongwe Old Town (3) NASFAM – Lilongwe City Centre (4) Care International – Lilongwe City Centre - Arwa House	Mr. A.H. Banda (Board Chairman) Mr. Mathews Kalizulu Or Mr. Warren or Mrs. Kamalizeni Mrs. Sophie Chitedze	08 898 136 01 755 650 01 772 866 01 772 637 01 775 740
14 th March	(5) Chitedze Research Station (i) Seed Services Station (ii) Plant Genetic Resource Centre (iii) Chitedze Library (iv) CIAT (v) ICRISAT	Mrs. Mtambo Mr. Nsapato DR. Chirwa (Team Manager) Dr. Chiyembekeza or Dr. Subramanyan	08 855 782
17 th March	(6) National Seed Company (MONSATO) – Kanengo (7) SEED Co. – Kanengo (8) PANNAR SEED (9) Rural Income Enhancement Project, P.O. Box 197, Lilongwe, Likuni Road, Bwemba Area next to MDI	Charles Kanyinji (APM)	
18 th March	(10) Salima SSMAG (11) Lifuwu Rice Seed Farmers Cooperative	Mr. Kanyuwire (Kanyuwire Bakery) Lifuwu Research Station	01 262 485
20 th March	Liwonde SSMAG	Mr. Muhamba	ADD Guest House 01 542 283
21 st March	Traveling to Mzuzu		
22 nd March	Ekwendeni SSMAG	Mr. Lwanja, B.K.	01 339 437
23 rd March	Traveling to Lilongwe		
24 to 26 th March	Compilation of the report and submission		

Appendix 2: CHECKLIST

Background information of organizations

1. Name and Address of organization/company
2. Geographical location of head office
3. Name of persons interviewed and his position in the organization
4. Date of interview
5. Profit making or non- profit making organization

QUESTIONNAIRE

Seed security Programme

5. What seed security programmes is the organization involved in? (seed multiplication, storage, research/breeding, distribution, farmers training, marketing, research, etc)
6. What are the main goals of your seed security programmes?
7. What are the goals of your seed security programme(s)/projects? What was your rationale for going into this project
8. Who are the target/beneficiaries of the programme/projects?
9. What is the length of the project period? When did you start the project/programme and when do you intend to phase out?
10. What is the coverage of the project? (specify the impact areas and number of people involved), are they involved as individual farmers or associations?
11. Which crops are covered in your activities?
12. Why did you select these crops?
13. How much of each crop do you produce?
14. What is the main role of your organization in this project?
15. How much of each crop seed do you produce?
16. Which other organizations are involved in the project or do you collaborate with?
17. What is the role of those other organizations in the project?
18. What is your organization structure in relation to your target group/beneficiaries of your seed security programmes?
19. What are the successes of your seed security programme/projects?
20. What are or have been constraints or challenges to your project activities?
21. Any seed security project activities/initiative failed and why?
22. Any redesigning of the failed project activity or initiative?
23. Source of funding of the programmes
24. Are the sources sustainable?

Policy on Seed Security for government

25. What is the policy of the government on seed security in Malawi?
26. What is the level of awareness among stakeholders about the policy?
27. Has the policy ever been revised or not? If not is it still relevant with the current needs of the seed industry of the country today?
28. What supporting government services are available for stakeholders in seed industry in Malawi?
29. Are these effective if not what needs to be done to improve their effectiveness?
30. How is the seed industry organized?
31. What are the standard practices in seed production in Malawi?
32. Is there any weakness with these practices?
33. How can these be improved?

34. Any other comment on the seed industry in Malawi?

Farmer groups involved in seed multiplication

35. When was the group formed?
36. What activities of seed security is the group involved in? Seed multiplication, processing, marketing, etc?
37. List the crop that the group is concerned with.
38. For seed producers – give the quantities produced annually?
39. Reasons for choosing the crop
40. How is the group organized?
41. Who provides the basic seed and other production inputs?
42. What are the criteria for membership of the seed producer's group/Association?
43. What practices in seed production do follow?
44. How is the seed processed?
45. How is the seed marketed?
46. How much (tonnage) of seed of each crop do you produce? Give quota for each crop?
47. Are there problems/constraints to your seed production?
48. What do you need to be done to improve your seed production?
49. Are there problems with marketing of the seed? List them.
50. Is there any supporting service that you receive by whom or which organization?
51. What other supporting services do you need?
52. Any other comment on seed multiplication?

Seed quality and Assurance and Maintenance

53. What seed production practices do you follow to ensure high quality of the seed?
54. What problems do you meet that do comprise with seed quality?
55. How do you process the seed/
56. How is the seed packaged for sale?
57. Have your customers ever complained of poor quality of your seed?
58. Any other comment on seed quality?

Appendix 3: Potential Seed Demand in Malawi

Input Type Selected Crops	Recom. Appli. Rate	Estim. HA Cultivated	Estim. Required AMTS
	(KG.HA)		(MT)
Hybrid Maize	25	354,921	8,873
Local Maize	25	912,751	22,819
Composite Maize	25	24,997	625
Sorghum	4	67,937	272
Finder Millet	7	35,165	246
Wheat	80	2,483	199
Phaseolus Beans	100	171,663	17,166
Soya beans	90	40,829	3,675
Sunflower	3	3,898	12
Rice	63	41,770	2,632
Groundnuts			
Chalimbana	90	123,241	11,092
Chatembana	100	2,279	228
CG7	90	2,351	212
Malimba	35	8,227	288
Manipita	70	2,807	196
Mawanga	70	1,842	129

IFDC – The Malawi Agricultural Input Markets (AIMS) Development Project
 Potential Seed Demand Based On Recommended Rates & Hectarage

Appendix 4: Seed Actually Sold in 2002

Type of seed.	Opening Season Stocks in (Mt)	Production For Season (Mt)	Imports Received (Mt)	Stocks Sold	Available Stock (Mt)	Stock in Transit (mt) Dec 10			Confirmed Orders (mt) Period	
						Ex – RSA (Mt)	Ex - Zim (Mt)	Ex - Zambia (Mt)	Ex - RSA (Mt)	Ex - Zim
OPV Maize	1256			1256	0	300				
Hybrid Maize	4550	805	4242	8792	805	1500	5420			
G/Nuts	2526			2526	0					
Beans	1129				9		1500			
Soybeans	31				0		307			
Pigeon Peas	37				0					
Cowpeas	5				5					
Rice	129				129					
Sorghum										

Note: Almost 73% of the seed went straight to TIP

This has affected the commercial channels, as the dealers who get their suppliers from the producers have not received their requirements this season. They are out of this business this season.

Appendix 5: A list of member farmers of Bwankhosa ASSMAG present during the group interviews

Name	EPA (Extension Planning Area)
1. Fideles Scott Mazia	Lifidzi
2. Mbendera, P.M.	Kamuona/Thavite
3. A.A. Chayaka	Chitala
4. K. Muombo	Kamuona/Thavite
5. G. Nazombe	Kamuona/Thavite
6. S.S. Chikulo	Kamuona/Tavite
7. E. Kafanikhale	Khombedza
8. Z. Jasoni	Chitala
9. L.D. Saidi	Khombedza
10. N.A. Chayaka	Chitala
11. J. Eneya	Kamuona
12. M.M. Kasuzumira	Chinguluwe
13. G. Mnjerema	Chinguluwe
14. J.K. Saidi	Kamuona O.F.O./Thavite
15. H.S. Kapalamula	Kamuona
16. R.S. Mangulenje	Makion Salima
17. A. Zamangwe	Kamuona/Thavite
18. J.Mwale	Khombedza
19. M.S. Mtosa	Khombedza
20. L.M. Kanyuwire	Box 212, Salima (Chairperson)
21. Rev. Sankhani	Khombedza

Note: The meeting was held on 18th March 2003 at Mwambiya Towers Building ASSMAG office.

Members of Lifuwu ASSMAG present during the discussion

1. Mrs. E. Gama - Treasurer
2. Mr. Steven Nkhoma - (Boma – Secretary)

Note: Contact Address
Lifuwu SMAG, P.O. B0x 102, Salima

The meeting was held on 18th March 2003 at Mrs. Gama's compound.

Appendix 6: The Seed Act

GOVERNMENT NOTICE NO.....

SEED ACT

(NO. OF 1988)

SEED REGULATIONS, 1994

IN EXERCISE of the powers conferred by section 71 of the Act, 1988. I
....., Minister of Agriculture and livestock Development, make the
following Regulations:-

PART I – PRELIMINARY

- CITATION** 1. These Regulations may be cited as the Seed Regulations, 1994
- INTERPRETATION** 2. In these Regulations, unless the context otherwise requires:-

PART II – MINIMUM STANDARDS FOR PRESCRIBED SEED

- Minimum levels of Purity and Germination for Prescribed seed** 3. No person shall sell or otherwise supply any prescribed seed of any crop variety unless the prescribed seed conforms to the minimum level of purity and germination standards specified in the First Schedule.

PART III – SEED CERTIFICATION

- Seed certification** 4. No person shall sell or otherwise supply any prescribed Seed specified in Part II of the Second Schedule unless the prescribed seed has been certified through official certification, and meet the requirements specified in Part II of the Second Schedule

PART IV - LABELLING

- Particulars and Manner of Labeling** 5. (1) The particulars specified in the Third Schedule are prescribed as additional particulars for purposes of section 35 of the Act.
- (2) The particulars of a label, including the particulars specified in the sub paragraph (1), shall appear on be attached to each container in conspicuous place, and where practicable a label containing those particulars shall also be put inside the container.
- Label not to contain device, misleading** 6. The label shall not contain any statement, false or name abbreviation which is false or misleading, likely to

- statement** be misleading, in respect of any particulars concerning the prescribed seed contained in the container.
- Label not Contradict Act Regulations** 7. The label shall not contain any reference to the Act or these Regulations or any comment on the or explanation or any of particulars or declaration required by the Act or these Regulations which directly or indirectly contradicts qualifies or modifies such particulars.
- Prohibition against denial of or labels etc** 8. Nothing shall appear on the label or in any advertisement pertaining to any prescribed seed which denies or permits responsibility or liability for any statement or particulars required by or under the Act or these Regulations to appear on such label or advertisement.

PART V

SEED TESTERS AND SEED INSPECTORS

- Qualifications of Seeds Testers** 9. A person shall not be qualified for appointment as Seed Tester unless he or she
- (a) has attended training as a seed tester and has passed such examinations as the Controller of Seeds may consider appropriate;
 - (b) has had a minimum working experience of one year in seed testing
- Duties of a Seed Tester** 10. A seed Tester shall-
- (a) analyse the sample in accordance with the procedure laid down by the International Seed Testing Association as amended from time to time
 - (b) perform such other duties as may be sustained to him or her by the Controller of Seeds.
- Qualifications of Seed Inspectors** 11. A person shall not be qualified for appointment as Seed Inspector unless he or she
- (a) has attended a training as a Seed Inspector and has passed such examination as the Controller of Seeds may consider appropriate;
 - (b) has had a minimum working experience of one year in seed inspection.

Duties of a Seed Inspector

12. In addition to the duties specified by the Act, a Seed inspector shall-
- (a) in respect as frequent as may be required by the Controller of Seeds all places used for growing, cleaning, storage, transporting or sale of any prescribed seed;
 - (b) ensure that the conditions of registration of license specified under the Act are being observed;
 - (c) procure? And send for analysis, if necessary samples of any prescribed seed which he has reason to believe is being produced, stock, sold, exhibited, or transported for sale in contravention of the provisions of the Act of these Regulations;
 - (d) investigate any complaint which may be made to him or her in writing in respect of any contravention of the provisions of the Act.
 - (e) maintain a record of all inspections made and actions taken by him or her in the performance of his or her duties, including the taking of samples and i.e. seizure of stocks and submit copies of such records to contraventions of seeds.
 - (f) when so authorized by the controller of Seeds, detain imported containers which he or she has reason to believe contain restricted seeds, imports of which is prohibited under section 37 of the Act.
 - (g) perform such other duties as may be entrusted by the Controller of Seeds.

PART V

SAMPLING OF PRESCRIBED SEEDS

Sampling of prescribed seed for laboratory test

13. sampling of prescribed seed for laboratory tests shall be in accordance with procedures laid down, from time to time, in the International Rules of Seed Testing published by International Seed Testing Association

PART VI RETURN AND RECORD

Furnishing of returns

14. Every registered seed producer, seed cleaner, seed seller and seed importer shall furnish to the Controller of

Seed quarterly returns in the prescribed form of the prescribed seed produced cleaned, sold or imported.

Maintaining of Records	15	Every seed producer, seed cleaner, seed seller and seed importer shall keep for a period of three years a complete record of each lot of prescribed seed produced, cleaned sold or imported, as the case may be, from the time the last stock of that seed lot, was disposed of.
-------------------------------	----	--

FIRST SCHEDULE (REG.3)

**MINIMUM STANDARDS OF PURITY AND GERMINATION FOR
PRESCRIBED SEED**

Scientific Name	English Name	Purity %	Germination %
CEREALS			
<u>Flausine cacacara</u>	Finger millet	97	70
<u>Hordeum vulgare L.</u>	Barley	98	80
<u>Oryza sativa</u>	Rice	97	75
<u>Sorghum bicolor L.</u>	Sorghum	98	70
<u>Triticum aestivum</u>	Wheat	98	80
<u>Zea mays L.</u>	Maize	99	90
PULSES			
<u>Cajanus cajan L.</u>	Pigeon peas	98	75
<u>Glyceline max L.</u>	Soya beans	98	70
<u>Phaseolus vulgaris</u>	Beans	98	75
<u>Pisum sativum L.</u>	Peas	98	75
<u>Vigna unguiculata</u>	Cowpeas	98	75
OIL SEED			
<u>Arachis hypogaea L.</u>	Groundnuts	95	80
<u>Helianthus annus L.</u>	Sunflower	97	70

VEGETABLES

<u>Allium cepa L.</u>	Onion	98	60
<u>Amaranthus spp.</u>	Amaranth pigweed	97	60
<u>Apium graveolena. L.</u>	Celery	98	65
<u>Beta vulgaris</u>	Swisschard	98	70
<u>Brassica chinensis L.</u>	Chinese Cabbage	98	70
<u>Brassica juncea</u>	Mustard	98	70
<u>Brassica napua L.</u>	Cauliflower	97	60
<u>Brassicaa dieracea L.</u>	Cabbage	98	75
<u>Brassica rape L.</u>	Rape	98	70
<u>Capsicum spp.</u>	Pepper chilli	98	55
<u>Citrullus lanatus</u>	Watermelon	98	75
Cucurbits pepo			
<u>Duch</u>	Squash	98	75
<u>Cucumis melo L.</u>	Melon	-	-
<u>Cucumis sativus L.</u>	Cucumber	95	55
<u>Daucas carota L</u>	Carrot	98	75
<u>Hibscus esculentus L.</u>	Okra	95	50
<u>Lactuca sativa L</u>	Lettuce	98	75
<u>Lycopersican lycopersicum</u>	Tomato	98	75
<u>Raphanus sativus L.</u>	Radish	98	75
<u>Solunum melongena L</u>	Eggplant	98	75
<u>Spinach oleracea L.</u>	Spinach	96	60

- (a) Lands intended for the production of certified seed shall be 360 metres away from other tobacco crops and at least 100 metres from building where leaf tobacco is handled.
- (b) Those lands shall also be 50 metres away from any lands which carried tobacco last season and must not be situated in the direction of run-off from such lands.

PLANT REQUIREMENTS

- (a) The grower shall within five weeks of transplanting, remove progressively; the leaves of the lower third of the plant including the seed bed leaves.
- (b) Suckers shall not be allowed to grow more than 5 cm in length
- (c) Off-types and diseased plants shall be removed.
- (d) All compact areas of poor growth shall be excluded for the purpose of seed production.
- (e) Any plant which flowers prematurely shall be topped.
- (f) When the plants come into full flower the five leaves below the seed head greater than 15 cm in length shall be removed.
- (g) There shall be nil incidence of anthracnose at any inspection and nil incidence of off-type plants at flowering.

HARVESTING

- (a) Harvested seed heads shall be dried in sheds or barns which are at least 50 metres away from any curing barns, grading sheds, or any other source of possible contamination.
- (b) should the seed to use any of the structures listed in paragraph (b) arise, such structure shall first be whitewashed and the floor, walls, tiers etc disinfect with recommended disinfectant.

SEED STANDARD

Prior to being offered for certification the seed shall be treated with a recommended seed treatment.

B. SPECIFIC REQUIREMENTS RELATING TO MAIZE (*Zea mays*)

1. LAND REQUIREMENTS

- (a) A piece of land may be registered as a unit of any species of Zea mays have been established thereon for seed production during the growing season preceding the registration thereof.

2. PLANTING REQUIREMENTS

- (a) Plants shall be established in rows
- (b) Gap-filling shall not be allowed;
- (c) Where seed of a hybrid is to be produced-
 - (i) the plants of the seed parent and those of the pollen parent shall be established in different rows and
 - (ii) rows containing the plants of the pollen parent shall be clearly marked.

3. ISOLATION REQUIREMENTS

- (a) A unit shall be surrounded by an isolation area which
- (i) in the case of the intended production of basic seed inbred line, shall be 720 metres wide.
 - (ii) in the case of the intended production of a certified hybrid variety shall be 360 metres wide
 - (iii) in the case of the intended production of basic seed of an open-pollinated variety shall be 400 metres wide.
 - (iv) and in the case of certified open pollinated variety shall be 200 metres wide.
- (b) An isolation area shall be free of plants of any variety or species of *Zea* which shed pollen at the stage on which the plants on the unit concerned show pollen-susceptible silks, unless.
- (i) in the case of the intended production of basic seed, they have been established from breeder seed of the same variety, and
 - (ii) in the case of the intended production of certified seed, they have been established from basic seed of the same variety.

STIMULANTS

<u>Nicotiana tabacum L</u>	Tobacco		
	Burleys	99	85
	Flues	99	85

FIBRE CROPS

<u>Gossypium hirsutum L</u>	Cotton	95	70
	Cotton (Acid Delinted)	98	80

PASTURE LEGUMES

<u>Oesmodium spp</u>	Green leaf; Silver leaf	97	50
<u>Leucaena leucocephala</u>	Leucaena	98	60

Macroptilium

<u>Atropurpeum</u>	Siratro	97	50
<u>Stylosanthes ssp</u>	Style	97	60

PASTURE GRASSES

<u>Cenclirus ciliaris L</u>	Buffel grass	15	PLSC %
-----------------------------	--------------	----	--------

<u>Chloris glyana</u> L	Rhodes grass	15
<u>Eragrostis curvula</u>	Love grass	75
<u>Panicum maximum</u>	Guinea grass	15

SECOND SCHEDULE (reg 4)

PART – I

SEED CROPS FOR COMPULSORY CERTIFICATION

Nicotiana tabacum (tobacco)

Zea mays (maize)

PART II

A. SPECIFIC REQUIREMENTS RELATING TO TOBACCO (Nicotiana Tabacum)

1. NURSERY MANAGEMENT

- (a) Source of seed only breeder or basic seed shall be sown on nurseries intended for the production of tobacco certified seed.
- (b) **Land Requirements:** nurseries shall be established on land which has not carried any tobacco crop for the past three years
- (c) **Isolation:** nurseries shall be established 50 metres away from any other tobacco plants or any building where tobacco is handled

2. GENERAL HYGIENE

- (a) A regular spraying programme using recommended chemicals against dangerous seed – borne diseases and pests shall be followed.
- (b) Washing of hands and footwear in an approved detergent by anybody entering the nursery shall be enforced.
- (c) No smoking or snuffing of any type of tobacco shall be allowed within the enclosed nursery site.

4. FIELD MANAGEMENT

5. Land requirements:

- (a) Lands intended for the production of certified seed shall not have carried any tobacco crop in the previous three years.

- (c) In the case of inadequate isolation distance the planning of a minimum number of border rows. (as detailed in appendix E) shall be permissible provided that-
- (i) in the case of the intended production of seed or a hybrid, a minimum isolation distance of 150m shall be met;
 - (ii) in the case of the intended production of seed of an open-pollinated variety a minimum isolation distance of 100m shall be met
 - (iii) border rows shall be planted either parallel or at right angle to the rows of the crop and pathway 2 metres wide shall be left between the border rows and the crop;
 - (iv) only breeders or basic seed shall be used for planting the border rows;
 - (v) natural or physical barriers shall not be recognised as a means of isolation.

4. REQUIREMENTS FOR PLANTS

- (a) The number of deviating plants in either male or female parent in a unit Shall not exceed 0.1 per cent at commencement of pollination
- (b) The number of pollen shedding plants of the seed parent at the stage at Which 5 per cent of the seed parent shows pollen – susceptible silks shall not and provide that the cumulative total for the three consecutive inspections shall not exceed 0.25 per cent.
- (c) Any part of the tassel which is 5 cm long or more and is found to be Shedding pollen shall be counted as full tassel.

5. SEPARATIONS OF FIELD

- (a) Units of land separated by the required isolation distance or by a Maximum difference in time of planting of 21 days between inbred lines and 28 days between hybrids shall be treated as separated crops for the purposes of inspections.
- (b) Units of land separated by less than the isolation distance required or Less than the required number of days in planting time shall be treated as separated crops for the purpose of inspection.

Provided that-

- (i) should one crop be rejected on the basis of poor detasselling, then the rejected crop plus the neighbouring crop to the following distance must be destroyed.
- (ii) if the fault is x2 but less than x3 the acceptance standard is 1/20th of the isolation distance

- (iii) If the fault is x3 but less than x4 the acceptance standard is 1/10 th of the isolation distance;
- (iv) If the fault is greater than x4 the acceptance standard is 1/5th of the isolation distance
- (v) If the grower refuses to destroy the rejected crops then the full isolation distance must be met.

6. REMOVAL OF POLLEN PARENT

- (a) Plants of the pollen parents shall be removed from the units soon after pollination is over or not later than 30 May in each year.
 - (b) The seed parent shall not be harvested before an inspection is made to check the removal of the plants of the pollen parent and a written confirmation by a government seed inspector has been issued to the grower
7. The seed grower shall pick and dehusk the seed parent cobs and shell them after removing any off-colour, rotten and insect damaged grains;

Provided that in the case of a single cross hybrid and any inbred lines-

- (a) those cobs shall not be shelled before they have been inspected by a government seed inspector and a written authorization to sell has been issued to the grower;
- (b) The seed cobs referred in 7a shall not contain more than 0.1 per cent deviating cobs.
- (c) Deadline for cob selection shall be 15 September in each year.

GOVERNMENT NOTICE NO

SEED ACT

(NO.5 OF 1988)

NOTICE TO COMMENCEMENT

IN EXERCISE of the powers conferred by section 1 of the Seed Act, 1988, I ,
....., Minister of Agriculture and Livestock
Development , hereby appoint_, 1994, as the date upon which
the Act shall come into operation.

MINISTER OF AGRICULTURE AND LIVESTOCK DEVELOPMENT

(File No)

Annex IV

**LIST OF RELEASED CROP VARIETIES IN MALAWI AS AT
DECEMBER, 2002**

CROP	VARIETY
MAIZE (Zea mays) Chitedze Composite A(CCA)	Ukiriguru Composite A (UCA) Malawi Hybrid 12 (MH12) Malawi Hybrid 15 (MH15) Malawi Hybrid 16 (MH16) Tuxpeno 1 (population 210 NSCM41 Malawi Hybrid 17 (MH17) Malawi Hybrid 18 (MH18) Chitedze Composite C (CCC) Chitedze Composite D (CCD) MH 19 (LA 9001) MH 20 (LA 9006) MH 21 (LA 9104) MH 22 (LA 9105) PAN 6195 PAN 6479 NSCM 51 (Chitute) Masika (Synthetic C) Kafumba (AR 804) Mchotsanjala (AR 809) Kakhomera (Population 92) Sundwe (AR 805) Chitibu (AR 808) Matindiri (White Pool) Sensako 2265 Sensako 2151 DK 8031 DK 8
RICE (Oryza sativa)	Faya 14 – M – 69 Blue Bonnet Senga (IET 4094)

Changu (IR 1561 – 250- 2-2)

WHEAT (*triticum aestivum*)

Kenyan Nyati
Torim 73
Limpopo
Jupateco 73
Lourie
Gamtoos

SORGHUM (*Sorghum bicolor*)

PN3
Pirira 1 (SPV 351)
Pirira 2 (SPV 475)

**PEARL MILLET
(*pennisetum typhoides*)**

Nigeria Composite
Nyankhombo (Okashana-1)
Tupatupa (SDMV 89005)

BARLEY (*Hordeum iregulare*)

Catrin
Triumph
CA 737606
CA 710404

GRAIN LEGUMES AND OIL SEEDS

**GROUNDNUTS
(*Arachis hypogae*)**

Chalimbana
Mani Pintar
Malimba
RG1
Chitembana
Mawanga
Chitedze Groundnut 7 (CG7)
JGL 24

**GUAR BEANS
(*Cyamopsis psoralloides*)**

Khanpur Local

COTTON (*Gossypium hirsutum*)

A637 MB3 – (1967/68 – 1976/77)
Makoka 72 (1973/74 – 1980/81)
Makoka 78(AL 54)1978/79-1985/86
Rasam 17
Ezam 6
IRM 81

BEANS (*Phaseolus vulgaris*)

Nasaka (253/1)
Bwenzilawana (373)
Kamtsiro (4991/1)
Saperekedwa (600/1)
Kanzama (97/1)
Namajengo (336)
Kalima (PVA 692)

Chimbamba (25 – 2x8 – 7)
Bunda 93 (21 – 5)
Napilira (CAL 143)
Maluwa (CAL113)
Nagaga (A 197)
Sapatsika (DRK 57)
Mkhalira (A 344)
Kambidzi (A 286)

COWPEAS

SUNFLOWERS
(Helianthus annuus)

SOS 323
PNR 7232
S430
S430
S530

PIGEON PEAS (Cajanus cajan)

ICP 9145
ICEAP 00040

SOYA BEANS (Soyabeans)

Davis
Bossier
Impala
Kudu
Santarosa
427/5/7
501/4/12
491/6/7
Ocepara – 4
Duocrop

TOBACCO (Nicotiana tabacum)

Flue-cured tobacco
Kutsaga E – 1
Kutsaga 51E
Kutsaga 110
Coker 347
Speight G –28
MTRA 88
MTRA 92

BURLEY TOBACCO

Banket A-1
Barnett`s Special
Burleys 37
Harwin
KBM 20 (Kandiya Burley Mammoth)
KBM 33 (Kandiya Burley Mammoth)
Fire-cure/sun air-cured tobacco

FIRE-CURED/SUM
AIR-CURED TOBACCO

Malawi Western

ORIENTAL TOBACCO

Samsun

ROOT CROPS

CASSAVA (*Manihot esculenta*)

Chitembwere
Mbundumali/Manyokola
Nyasungwi
Gomani
Maunjili (TMS 91934)
Mkondezi (MK91/478)
Silira (TMS 60142B)

SWEET POTATO (*Ipomea batatas*)

Kamchiputu
Babache
Kenya
Lunyangwa (LRS 407)
Kakoma (TIS 3017)
Semusa (Cemsa 74-228)
Mugamba (Magamba)
Tainoni (Tainon 57)