

**AN IMPACT ASSESSMENT OF THE FARM SEED MULTIPLICATION PROJECT IN  
MUMBWA DISTRICT**

**A Research Report Presented to the Department of Agricultural Economics and Extension  
Education of the University of Zambia**

**By**

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## **DEDICATION**

This work is dedicated to my parents: father Mr. Nelson Kabamba Phiri and mother Ms *Margret Mweenda Malupande*. My husband Mr Stanley Kaoma Malauni and my children Nkole and Mweenda.

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## **LIST OF ABBREVIATIONS**

|      |                                            |
|------|--------------------------------------------|
| ASP  | Agricultural Support Program               |
| FAO  | Food and Agricultural Organisation         |
| GRZ  | Government of the republic of Zambia       |
| LDC  | Least Developed Country                    |
| MAFF | Ministry of Agriculture Food and Fisheries |
| MACO | Ministry of Agriculture and Co-operatives  |
| NAP  | National Agricultural Policy               |
| NGO  | Non Governmental Organisation              |
| NSP  | National Seeds Policy                      |
| OFSM | On Farm Seed Multiplication                |
| QDs  | Quality Declared Seed                      |
| SCCI | Seed Control and Certification Institute   |
| UNDP | United Nations Development Program         |

## **ABSTRACT**

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**Supervisor**  
**Dr. Thompson Kalinda**

This study was an impact assessment of the ASP Farm Seed Multiplication (FSM) Project on target beneficiary farmers of Mumbwa District in the Central Province of Zambia. The reason why Mumbwa District was chosen was because it was the nearest one of the successful districts in which the ASP – OFSM project was operating from.

The broader objective of the study was to assess the impact of the ASP- OFSM project on target beneficiaries of operational camps of Chibila, Kabwanga, Kapyanga, Makombwe, Mamvule, Martin Luther, Matala, Milandu, Mumba scheme, Muona, and Shimbizhi. In all these Eighty Five (85) participating farmers were interviewed. Purposive sampling was used to select all ASP participating small scale seed growers.

Data collection was conducted using a structured questionnaires. The data was coded, captured and analysed using Statistical Package for Social Scientist (SPSS) software to generate descriptive statistics.

The findings from the study showed that there was some percentage of change in the livelihood of small scale seed growers. This was evidenced by Majority of the beneficiary house holds were now more food secured than before. This is seen from the period when most farmers started seed multiplication under the ASP project. There was also an increase in their incomes as seen from increased acquisition of assets like bicycles, motor bikes, vehicles, tractors, livestock, house hold goods (televisions, radios), Livestock, houses (building materials), and meeting other family living expenses (groceries and money for maize milling) have been some of the clear indicators that their welfare has improved due to seed multiplication.

Despite the project success, the study also found that farmers had a major challenge in terms of marketing of their seed crop. It is therefore recommended that seed growers should consider programmed alternating of growing seed per season. Government should consider too purchasing seed from the small scale farmers in case of subsidised seed. Farmers also should be helped to establish a simple standard of record keeping instead of depending on the recall system.

MACO through SCCI and ZARI should ensure that there is always high Quality parent materials for seed multiplication failure to which the small scale seed growers will in future just be multiplying grain as seed. In the same vein Govt should increase funding to SCCI Local authorities to consider giving titles to land used for seed production so as to enable farmers observe husbandry practices such as crop rotation and seed crop isolation recommendations. An ex post evaluation study should be carried out as this would be very helpful in establishing a long term impact and sustainability of the project

## **CHAPTER ONE**

### **BACK GROUND**

#### **1.1 Introduction**

Mumbwa District despite being positioned in Zambia's food basket with farming as main-stay of the local economy still faces problems of accessing certified seed for seasonal planting requirements. Seed is the initial basic input whose potential all other crop production inputs exploit to produce the desired yield. Many small scale farmers either seldomly or do not purchase it because they perceive it be very expensive (Cromwell and Wiggins 1993, Muliokela 2001, Muzungwe 2008). In cases where they afford to buy, certified seed may not be accessible in the right quantities, quality, and appropriate varieties in a timely manner. This seed insecure situation if not addressed, can lead to perpetual food insecurity as more than 70% of the food produced in Zambia is produced by small scale farmer (MACO, 2007). This is not a very good scenario for the country working towards reducing the high poverty levels as high as 68% at national level (CSO, 2007).

It is with this background that measures have been made by the Zambian government to mitigate the situation so as to increase the use of certified seed in a sustainable manner by the small scale farming community so as to enhance food security. With this background the Zambian government with the aid of FAO in the early 1990s, came up with policy measures by instituting the concept of on-farm seed multiplication. To go with this program, quality declared seed standards were also formulated and incorporated in the existing seed regulations to serve as a much more flexible quality control system for the small scale farming community.

In view of the above scenario Ministry of Agriculture and Cooperatives (MACO) is executing on-farm seed multiplication program in conjunction with non-governmental organisations among them are: Oxfam, Plan Zambia, Women for Change and Agricultural Support Program (ASP).

ASP is a major Agricultural Support program which is being implemented under the auspices of the Ministry of Agriculture and Co-operatives (MACO). The overall goal of the ASP is to contribute towards the national effort to reduce poverty from the 1998 level of 73% to 50% by the year 2015 (ASP, 2007). In particular ASP seeks to improve

the livelihoods for its target households though its two inter-related overall objectives: increased incomes and improved food and nutrition security (ASP, 2007). The Program's primary target group consists of the 44,000 small scale farm households interested in taking up 'farming as a business'. The seed out grower scheme is one of the components of the ASP program. The seeds OGS comprise small scale farmers who have been trained in on farm seed multiplication by either ASP or other related programs such as the FAO or MACO.

Agricultural Support Program (ASP) has been facilitating the development of small scale on farm seed multiplication out grower scheme (OGS) in its operational areas since 2003. Mumbwa district which is one of the program areas ASP on farm seed out grower schemes are operating in Twelve agricultural camps namely Chibila, Chikanda, Chiwena, Kapyanga, Makombwe, Martin Luther, Matala, Mumba scheme, Mupona, and Shimbizhi. From all these camps there are a total of 130 households who are participating members in the on farm seed multiplication program.

This study was an impact assessment of the ASP On Farm Seed Multiplication (OFSM) Project on target beneficiary farmers of Mumbwa District in the Central Province of Zambia. The reason why Mumbwa District was chosen was because it was the nearest one of the successful districts in which the ASP – OFSM project was operating from. (Appendix 4 is a list of districts in which the ASP On Farm Seed Multiplication program was operating in Zambia.)

The term out grower is often used interchangeably with contract farming" (MACO, 2004). The out grower managers of the schemes which ASP promotes are small scale farmers who are in level 4 or 5 of the business development. These are farmers who have appreciated the concept of farming as a business and are doing some form of business. The out grower managers enter into contracts with several small scale farmers.

The main focus of the ASP on farm seed multiplication program agricultural is that of providing inputs: parent seed, fertilizer, training and extension services to contracted farmers who in most cases cannot afford buying the inputs on their own. The service goes further to provide access to product markets and market linkages for the contracted

product, access to new technologies and extension services and high income through the production of high value products.

This study concentrated on assessing the seed out grower scheme in Mumbwa District and the impact on the income levels of out grower seed growers.

## **1.2 Problem Statement**

Since the ASP on-farm seed multiplication program commenced operations in Mumbwa District in 2004, there has not been enough information regarding to the performance of this project in terms of its impact and profitability. This knowledge gap therefore needs to be investigated so as to ascertain the impact, project's viability and sustainability when the funding agency ASP project comes to an end.

The challenge today is to provide knowledge regarding impact as well as profitability of this small scale seeds program as a way so as to assess the schemes viability without external funding to the participants. This is so because, it is only when small scale seed growers run on-farm seed multiplication as profitable ventures that small scale seed growers would be able to assess prescribed quality certified seed for themselves and their community. It is important to mention that efforts be directed in this direction because taking Mumbwa as a District, On-farm seed multiplication program is one such technique which is promising to be a panacea to current erratic availability of quality certified seed. This has been manifested by:

- Unavailability of good quality certified seed to small scale farmers at the right time in right
- Quantities and at the affordable prices.
- Lack of accessibility to certified seed by small scale farmers due to poor physical infrastructure.
- Poor institutional infra structure to protect the small scale farmers from exploitation in terms of the legal framework when it comes to seed marketing issues.
- Poor marketing channels and pricing inefficiency.
- Presence of illegal seed sales on the markets.

### **1.3 Scope of study**

It is a fact that small scale farmers even as could be beneficiaries of the project social change occurring in their lives could be attributed both to the project wholly or it could as well be due to other factors that could have taken place in the project area. Since the inception of the ASP project in 2003, many economic changes have occurred which might have affected beneficiaries in terms of prices of inputs, and output. The project might have achieved its goals, but due to dynamics of agriculture, the food security situation and incomes levels also have changed drastically due to economic environment prevailing in the country. The study was limited to smallholder farmers who participated in the OFSM project and resources available to undertake the study.

### **1.4 Rationale**

The majority of the people in Mumbwa District depend either directly or indirectly on agriculture for their livelihoods and the district is lying in Zambia's food basket. The sector has therefore the largest potential to reduce poverty among rural households in the district when resources allocated to the activity are effectively utilized. Unavailability of quality seed has been identified as one of the major contributing factor to low levels of crop yields not only in Mumbwa but in Zambia as a whole (Moonga, 2005). Therefore information on programs involved in such projects should be availed to all stakeholders and this research worked towards doing that.

### **1.5 Statement of Objectives**

#### **1.5.1 General Objective**

The general objective of this study is to determine the impact of the on farm seed multiplication out grower scheme to the livelihood of the participating small scale farmers.

#### **1.5.2 Specific Objectives**

- i. To assess the impact of the seed out grower schemes on household food accessibility.

- ii. To determine the gross margins for the on farm produced seed for the small scale farmers.

When small scale farmers have invested all their hard earned scarce resources into a farming venture and no significant yield comes their way, seed quality should be checked among other causes of the failure. This usually traces back to planting of poor quality seed and or inappropriate seed materials. This is even more so for maize as the use of certified seed cannot be over emphasised due to its biological nature as a cross pollinated crop predisposes it to a higher chance of being contaminated. On farm seed multiplication has of late been found to be an alternative way to provide this much needed input apart from the contemporary commercial seed sector whose prices and marketing channels become prohibiting to the small scale farmers. On farm seed multiplication provides seed to the seed grower for his or her own seasonal needs and the community in which they live. This however can only be sustainable in the long term if the participating farmers' livelihoods are improving due to their involvement in the program. It is therefore important that on farm seed production is done in a commercial manner to enhance self sufficiency in seed needs and to the community as a whole. The forward and back ward linkages that are potentially involved in the sub sector can be significant in enhancing social and economic well being of the people in the district.

The study will therefore endeavour to evaluate the performance of the ASP funded on farm seed multiplication out grower scheme, its contribution to poverty reduction through income generation being one of the Poverty reduction program (PRP) intervention by MACO. Effort will be made to suggest recommendations on how well on farm seed multiplication program can be organised to ensure a sustained seed production system among small scale farmers.

## **1.6 Hypothesis**

The researcher hypothesised that a well organized On Farm Seed Multiplication program is capable of improving incomes and food security.

### **1.7 Beneficiaries of the Study**

This study intends to benefit not only the researcher but all the stakeholders to the ASP On Farm Seed Multiplication Program who can be listed as follows:

- MACO is the line ministry under which the program falls.
- SCCI is the department charged with the responsibility of controller of seeds in the republic of Zambia.
- UNZA a public research institution.
- The seed growers will be helped by letting them know their performance of the program.

### **1.8 Limitations of the Study**

The study was carried out on assumption that baseline data was going to be accessed. Unfortunately it turned out that this did not happen at a time when the researcher had already left the study site. The situation would have been different had the researcher either been availed baseline data or collected data from the control group. Therefore as one reads this report this limitation should be taken into account as caution.

### **1.9 Organisation of the Report**

This report comprises five chapters outlined in the following manner. Chapter one discusses the introduction as the background to ASP Farm Seed Multiplication Program and the FSM concept as a whole in the Zambian context. It also contains the problem statement, scope of the study, statement of objectives, and rationale for research and the beneficiaries to the study. Chapter two contains Literature review both empirical and the conceptual framework containing theories and definitions of concepts relevant to the study topic.

Chapter three presents methods and procedures: Data collection procedures, study sites, sample collection, types of data collected and methods of data analysis while Chapters four and five presents the study findings and conclusion respectively.

## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **2.1 Introduction**

This chapter reviews the relevant literature pertaining to the impact assessment of the project on the livelihood of smallholder farmers. Definitions of key terms used in the study are presented last in the conceptual framework, General Seed industry studies, Out grower and contract farming or out grower schemes, Significance of using Improved Seed and Planting materials, Extension services, Seed Associations, is the content of literature review discussion.

#### **2.2 The Seed Industry in Zambia**

A seed industry in the Zambian context cannot be described in a single sentence as it is a complex and integrated organisational concept which in its design includes a number of measures to be implemented including activities that should be carried out to secure a timely production and supply of seed of prescribed quality in the required quantity, delivered to the farmer at the required time (Zulu, 1996).

##### **2.2.1 Components of the Seed Industry in Zambia**

The Zambia seed industry consists of both the formal and the informal seed sector. In view of the above the author identified and discusses the following as major players in the Zambia seed industry:

##### **a) The Formal Seed Sector**

The formal sector has a well organized and structured system of seed production, distribution and marketing involving private seed companies, research and quality control (MAFF, 2000). This sector has undergone significant transformation since the country's political independence in 1964. For a long time now, since independence the formal seed sector comprising the seed companies, seed stockists and retailers has been the conventional way of supplying seed to the farmers both large scale commercial and the small-scale throughout the country (Zulu, 1996).

### **i. Germplasm Conservation (Plant Genetic Resource Centres)**

These are the sources of the genetic materials that are used for breeding new or improving existing varieties. There is a Zambia National Gene Bank housed at the national Plant gene Resources Centre at Mt. Makulu in Chilanga. Zambia is also privileged to house the SADC Regional Gene Bank located in Chalimbana near Lusaka (MACO, 2008).

### **ii. Researchers and Breeders.**

These include the public research programmes under the Zambia Agricultural Research Institute (ZARI) of the Ministry of Agriculture and Cooperatives. Private seed companies have their own research and development programmes. Institutions such as the University of Zambia, the Golden Valley Agricultural Research Trust (GART), Cotton Development Trust (CDT) and Tobacco Board of Zambia are also involved in seed crop research. Private individuals may also get involved.

### **iii. Seed Companies.**

Apart from research and development, seed companies take a leading responsibility in the production, marketing and supply of seed to farmers in the country and outside.

### **iv. The Seed Control and Certification**

This Seed Control and Certification institute under the Ministry of Agriculture and Cooperatives is responsible for external quality control and certification. Its activities include variety testing and registration, seed field inspections, laboratory seed testing, seed training, facilitation of seed importation and exportation and development of the informal seed sector. The seed testing laboratory at SCCI is accredited to the International Seed Testing Association (ISTA). As far as FSM is concerned the role of SCCI is that of coordination of the sector, provide training and quality control.

#### **v. The Zambia Seed Trade Association (ZASTA).**

Established in 1999, ZASTA aims at promoting use of improved quality seed but also provides a national forum for exchange of ideas and experience within the Zambia Seed Industry. The association guides and recommends to government and other stakeholders seed policy issues and other seed related matters of interest. The Association also facilitates settlement of disputes within the seed industry.

#### **vi. Extension and Education Service.**

The SCCI is a major player in the area of seed education while the extension service of the department of agriculture under the Ministry of Agriculture and Cooperatives plays a major role in disseminating information on varieties and other innovations in the seed industry. SCCI plays this role both with own resources and also stakeholders especially NGOs and donors.

#### **vii. The Farmers.**

The end user of any farming technology and innovations is the farmer. Ordinary farmer saved seed is the main source of planting seed for many smallholder farmers. Seed production and supply under this system is based on inherited traditional seed selection, conditioning and preservation techniques (Mwansa, 2009).

#### **viii. Seed Production**

Seed production in Zambia both in the formal and informal seed industry usually is done so under contract or out grower schemes. This is so because of the possible deterioration of seed in terms of vigour and germination as time passes by (Mwansa, 2005).

#### **b.) The Informal Seed Sector**

The informal seed sector is characterized by localized seed production and distribution using various delivery systems and with minimum quality control. This sector as it stands has a lot of room development. More than half of Zambia's population depends

on Agriculture for its livelihood of which it is the main economic occupation of the people in the rural areas. However what is of much concern is the low productivity. Low agricultural productivity has been largely due to non availability of inputs such as fertilizer, improved seed or planting materials especially among small scale farmers. They contribute to as much as 75 % of Zambia's farming community and their contribution could even be more significant if the problem of input availability is addressed (MACO, 2008).

Although Zambia has a very developed formal sector for seed provision, accessibility of improved seeds by small scale farmers is rather low. Currently about 85% of Zambia's Seed demand is met by the informal seed sector but these seeds are genetically inferior and give very poor returns.

In realising the importance of improving the productivity of the small farmers, the government, through various co-operating partners (Donors and NGOs ) have initiated production of improved in rural areas to increase availability of genetically superior varieties that could lead to improved yields. This could significantly improve household food security in the country. The SCCI coordinates all rural seed initiatives in the country in an effort to develop a sustainable rural seed provision. (MACO, 2008). According to Kalinda and Mwala (2007) seed from the informal seed sector is certified as Quality Declared Seed (QDs) which has lower standards than that from the formal sector. This would be a sustainable way providing seed to small scale farmers.

The seed industry therefore has a lot of opportunities for expansion both for small and large scale farmers. (Mwansa, 2009)

Seed varieties are classified as either open pollinated or hybrids. Most of the high yielding varieties are hybrids that cannot be recycled for planting unless done so under desperate situations. Maize is Zambia's staple food. As a plant it is highly cross pollinated. The above description justifies why according to the Plant Varieties and Agricultural Seeds Act of 1995 Prescribes crops such as maize seed is classified as a compulsory certified crop; meaning only certified seed is supposed to be offered for sale in Zambia to the farming community. Even a highly sophisticated seed production or quality control system for instance is of no benefit to the small-scale farmers especially if the marketing channels are unable deliver timely deliver the seed to them

(Zulu 1996). The status of the Zambian seed industry as already described above is that seed is produced by commercial seed companies which are availed to the small scale farming community at large through the formal process from the seed companies through their stockists and retailers. This poses a greater challenge to the small scale farmers who are located all over the country being especially in the remotest areas with poor infrastructure making the availability of quality certified seed not always possible. It is with this background that the Zambian government with the financial support of the Food and Agricultural organisation (FAO) came up with quantity declared seed control system with On-farm seed multiplication as one of the components which is one of the present measures that have been instituted to mitigate the situation.

### **2.3. National Seed Policies and Small Scale Seed Production with Breeders Rights**

A formal National Seed Policy (NSP) is very important to provide for measures that would enhance the level of sustainable seed supply. This framework can only be provided in the NSP failure to which it would be very difficult to negotiate and agree on regional seed security programs. A NSP is also quite necessary to respond to situations of disaster either within the country or with its neighbours. This is so because in many African countries and Zambia inclusive Governments have to deal with impacts of disaster in the region due to refugees.

With the advent of plant breeders rights it is should therefore be emphasised that National program is instituted that would include addressing Plant improvement and Variety development while ensuring both Genetical and Analytical Quality. Seed quality is a major challenge especially with cross pollinated crops such as Maize. However care should also be taken when dealing with self pollinated crops such as Sorghum, millet and Food legumes (Miti, 2001).

### **2.4. Significance of Using Improved Seed and On Farm Seed Multiplication**

To improve food security and the livelihood of small holder farmers in rural areas, there is need to initiate On Farm Seed Multiplication and storage activities throughout the country. In order to increase yields by smallholder farmers the government through

Ministry of Agriculture and Cooperatives have embarked on PRP mitigative measures and awareness campaigns on the advantages of using improved seeds and certified seeds planting materials among smallholder farmers.

According to the IFAD Evaluation Study Report (1989), which was conducted in Liberia on Smallholder Rice Seed Production Project, it had targeted 91,000 Households' rice seed growers, revealed that seed production from out grower schemes rose from 170 tons to 765 tons in 1984. The project used certified seed that was provided on credit basis to smallholder rice seed growers. Seed, especially that of improved varieties, is an essential input for increasing crop productivity. Thus, a reliable source of competitively-priced, locally-adapted, improved varieties, coupled with appropriate inputs and management practices, can greatly increase and sustain agricultural efficiency, productivity, and profitability, (World Bank Report, USA, 2003, page1).

Currently, less than 10 percent of land managed by smallholder farmers in Sub-Saharan Africa (SSA) is planted with improved varieties and several factors limit farmers' access to quality seed. In 60 percent of Africa's countries, governments completely control the seed industry, even though parastatal seed production and distribution has usually proven to be an ineffective system of seed supply. State involvement in seed trade has declined in many countries, but a viable commercial market is not yet filling the gap. In some cases, commercial monopolies have replaced the parastatals (World Bank Report, 2003, page1). Farmer-to-farmer seed exchange and Local Seed markets function throughout Africa but are not adequately linked into systems for improved seed. This isolation has aggravated seed supply crises, in turn often requiring disaster relief efforts. And these efforts have not led to the development of sustainable seed systems.

Louwaars (1991) looked at local operating institutions, such as NGOs, Extension services, and Farmers associations, play a leading role in improving farmers' access to quality seed, minimizing the risk of seed supply crises. If given an appropriate enabling legal framework, such organizations could help to link farmers to other farmer seed producers, research institutions, and, importantly, Small Commercial Seed companies working in similar agro-ecosystems locally, regionally, nationally, and/or internationally. Often a major constraint is national legislation that limits entry of improved varieties, constrains competition, restricts multinational involvement in

African seed systems, and inhibits development of domestic seed companies. Restricting commercial development has also inhibited the formation of seed trade associations, which could provide substantial benefits to the African Seed Sector. Seed Associations open to public and private seed company membership serve to lobby and influence governments, exchange information, and generally to ease barriers to efficient seed production and marketing and to the effective transfer of improved varieties. The three major challenges in establishing sustainable and efficient seed systems in Africa are to: improve local seed production systems, develop regionally competitive seed industries, and reform governmental seed sector support programs (World Bank Report, USA, 2003, page 2).

And, finally, established linkages between the formal and informal seed sectors can help re-build seed stocks following disasters or crop failures and thus reduce dependence on external relief programs (WB Report, USA, 2003, page 4). Farmer seed producers can be quite efficient and some will have potential to expand as specialized, small or medium-sized seed companies. Seed Trade Associations, Government Agribusiness promotion programs, and, especially, NGOs have a potential role in promoting improvements in production, marketing, and distribution systems for traditional farmer seed producers. This may involve an array of activities, including training in seed production and handling, establishing linkages to sources of foundation seed, developing marketing skills and approaches, and promoting the transformation into commercial seed companies. For these interventions to be sustainable, they must be based on training and market development and not on direct subsidies (World Bank Report, USA, 2003, page 5). Population is a good indicator of the potential size of seed markets.

Only three countries in Sub-Saharan Africa - Nigeria, South Africa, and Zaire -have more than 40 million people, while the average country in Sub-Saharan Africa has only 15 million people. In contrast, the largest and most competitive seed markets - each with hundreds of seed companies - are in the US, with 250 million people, the European Union, with 3 5 0 million people, and India, with nearly a billion people. Taken together, Sub-Saharan Africa, with more than 600 million, offers a large potential market, but individual national markets are too small to support efficient, competitive seed enterprises, (UNDP Progress Report, 1999). Regionalization of seed industries and markets means that companies operate in two or more regional countries, selling seeds in markets defined by agro-climatic zones and cropping practices, not political

boundaries. Government seed programs have in the past been largely focused on seed production and distribution. These often involved subsidies-either direct or indirect and in practice served to inhibit emergence of private seed enterprises. The focus on distribution, as opposed to marketing, did not force these programs to respond to producer demands. Operating under government regulations restricted program flexibility and efficiency and led to high costs and operating losses.

Frequently, government funding of subsidized services (Processing, Distribution, Certification, etc.) was inadequate and insufficiently flexible to enable the programs to meet farmer demand for seed (UNDP Progress Report, 1999). Sustainable, competitive seed systems will require substantial re-orientation of government philosophies and programs involving seed. Rather than attempting to directly supply seed to farmers, government programs will need to provide support services that allow private seed enterprises to respond to market (farmer) demand for seed. This essentially seeks to offer farmers a greater range of choice in terms of varieties and sources of seed. Indirect subsidies may still be important, but should minimize market distortions and ensure a "level-playing field" for competitive enterprises (UNDP Progress Report, 1999).

## **2.5 Impact and Sustainability of on Farm Seed Programs**

Government objectives will likely best be served by policies that limit government controls and intervention in seed trade. The government's role remains critical in: developing and providing open access to foundation seed of improved varieties and to improved genetic resources; providing training and information on seed production, processing, and marketing; providing extension information on improved seed and varieties; providing for optional varietals registration and seed certification; and monitoring seed sector developments (UNDP Progress Report, 1999). Government programs and NGOs may focus efforts on the development of the informal seed sector linking farmer seed producers to sources of improved foundation seed and helping to expand (where appropriate) marketing systems for farmer-produced seed. Programs will need to be vigilant in eliminating subsidized seed production, distribution, or import programs that restrict local development of sustainable commercial seed trade. Key to success in strengthening informal seed systems will be improving farmer and seed producer access to information on product and seed prices and market options. As regional seed industries develop, seed-growers and seed traders in the informal sector may join the formal sector by starting new companies or contracting with other formal

seed companies. At the same time, the informal seed sector continues, enriched by a steady and expanded supply of new cultivars for local and informal multiplication.

From Evaluation Study Report, (Zulu, 2001), the Small Holder Seed Production project funded by UNDP, its objective were to raise incomes levels of small holder farmers and ensuring food security at both household and national levels. The findings of the report reveals that seed yields increased to 75 tons and the gross margins for the target beneficiaries had increased to over 55% and 18,000 households have been involved in seed production. The SPHFSP Seed Multiplication component IFAD funded project reviews the contribution of the project in terms of farmer's adoption. The project had involved about 23,000 households, covering crops such as maize, cowpeas, sunflower, sorghum, beans, cassava, sweet potato and sun hemp. The report reveals that the objectives of the program were to increase food security and incomes of smallholder farmers, placing the emphasis on developing a capacity for production among farmers to produce their own seeds and planting materials on farm within each locality. Seed multiplication activities increased from 3 districts to 10 districts with seed yields increased from 99 tons in 1988 to 110 tons of seed grains in 1999, (Lukwesa, 2002).

Miti (1999) looks at the performance of the Small Holder Seed production in rural areas. He said that seed programs/projects have increased seed availability in rural areas especially in the district where seed were being multiplied. He concluded by stating that these seed activities have increased use of improved and certified seeds by smallholder farmers. He said that some beneficiaries have achieved over K2 million from a Lima of seed. Further, the study reveals that the project managed to form 10 rice seed associations and managed to distribute about 1600 tons of upland and swamp seed. In addition, the project beneficiaries' incomes increased by 11% after participating in the project. The findings of the report reveals that seed yields increased to 75 tons and the gross margins for the target beneficiaries had increased to over 55% and 18,000 Households have been involved in Seed production. Some growers recorded a number of tangible achievements from seed sales, which included procurement of their own inputs such as fertilizers, replacing their thatched houses with iron sheets, solar panels, and animal draught power implements such as the magoye ripper. Further, the report reveals that one of the project beneficiary managed to make K4, 112,000 from seed groundnuts sales in 1999 and even at the end of the project had sold seed worth over K12, 300,000 from groundnuts and beans, (Zulu, 2001, page 4).

According to earlier studies conducted at Bunda College of Agriculture reveals that the programme had embarked on increasing Beans Breeder Seed to ensure availability of seed to Smallholder Beans Seed Growers in Malawi. The program was called Malawi Small Holder Seed Development Project. In 1992 when there was a flood disaster, 1.1 million households benefited from 3000 relief seed issues. The objective of the project was to develop low mechanisms which were to improve and sustain availability and accessibility of appropriate, improved seed to resource poor farmers in participating communities, secondly, to establish sustainable self motivating community based which was meant to manage seed multiplication and distribution in the community and thirdly, to train selected extension staff and participating community groups in production, Seed quality control, On farm selection, Storage and Community participatory methodologies, (Mukandawire, et al., 2000).

NGO's have recorded commendable success in complementing government efforts to increase availability and accessibility to quality seed. However, the sustainability of small-scale seed multiplication and dissemination calls for concerted efforts from all parties concerned with food security, including the state, the public sector, the private sector, and NGO's.

There is a need to facilitate effective flow of breeder – basic/foundation – certified seed to reach farmers who are multiplying seed. Farmers should be given access to credit facilities. By promoting linkages to lending institutions, farmers will gain access to capital funding for investing in their seed enterprise. And finally, the seed industry should offer various seed varieties for multiplication and farmers should be given the opportunity to choose the varieties that best fit their varying interests. Chibambo, Msiska (2008).

Certified seed use in Zambia is largely, restricted to maize and to a certain extent, improved vegetables. For other crops, the majority of small-scale farmers use farmer saved seed, and the use of improved is correspondingly limited. According to Muliokela, he said the reasons for low sales of improved seed include high cost (both real and perceived) of seed and associated inputs and unreliability of returns. More importantly, administrative or institutional inadequacies limit both production and sale of improved seed. Furthermore, he said that there is need to enhance information

exchange among different farmers in the country on the performance and potential suitability of newly developed and in certain cases even local farmer developed varieties, (Muliokela, 2000).

According to a study on the impact of cotton and tobacco out grower schemes in Zambia, conducted by the Catholic Commission for Justice and Development Program in 2005 issues raised were that out grower households pointed to several factors that hinder poverty reduction. Some of these factors were not limited to or entirely due to out grower schemes. However, the factors that cause poverty indicate the failure of out grower schemes to address some of the fundamental processes and structures that perpetuate rural poverty.

Some of the factors identified to cause poverty included unfair product and input pricing mechanisms by out grower managers, hunger, climatic conditions (droughts), unfair credit and loan structures by out grower companies, lack of produce, lack of opportunities for alternative livelihoods, poor infrastructure such as roads and lack of knowledge and farmer participatory channels.

It was also noted that the similarities of identified causes of poverty among out growers across and location signified that the constraints are systematic and structural in nature. The problems being systematic make it difficult for a single out grower scheme to address. If a systematic approach to rural poverty reduction is adopted it was suggested that government development programs can be harmonised to foster to support to rural livelihoods improvement including the role of out grower schemes.

The report emphasised that a prerequisite for rural poverty reduction should be a well thought and comprehensive rural development frame work in which out grower schemes should be a component that is systematically linked to and guided by rural support mechanisms ( CCJDP 2005).

The major problems specific to out grower schemes that were identified included the following:

1. Unpredictable and low producer prices. The unfair market processes practiced by contracting companies can be divided into two broad categories:

- a. Market practices that result from the nature of the market i.e. the setting of domestic buying.
  - b. Practices by out grower companies that essentially constitute market manipulation and under evaluation of out grower produce. A case the seed out grower schemes stands to be overcoming because all seed inspections are offered by ASP under the supervision of the Seed Control and Certification Institute (SCCI – GRZ institution).
2. The loan structure in Cotton and Tobacco schemes is unfavourable to farmers and advantages the out grower companies. The inputs that the farmers obtain on loan from the out grower companies are priced commercially with a seasonal interest charge.
- The fundamental problems for the farmers are that while producer prices rarely rise, out grower companies increase the price of inputs every year. The higher cost of inputs obtained on credit coupled with low producer prices leads to defaults on credit payments among out growers.
3. Under- grading of produce, unscrupulous practices of buyers and the manipulation weight scales. These practices combined reduce the out growers disposable income and therefore capacity for livelihoods improvement. Late payments for the produce also adversely affect the out growers income due to currency depreciation between the time of sales and time of payment.

Out growers income is highly variable across and within scheme, it is also highly seasonal, with a peak between July and August and reduces off by September.

Expenditure patterns are similar across out grower schemes. The highest proportion of the out grower income is spent on acquiring food for the households. Expenditure on food accounted for 29% of the total expenditure. It was noted that more than two thirds of the income is spent on consumption related items such as food, education and payment of debts accumulated off the income peak period.

On average income lasts only for a maximum of four (4) months in the year, meaning that for the remaining eight (8) months households have to adopt particular livelihood strategies. The coping strategies vary with location. Across all out schemes, 4 livelihood strategies were identified;

1. Nature based livelihoods include activities that are directly based on using natural products as a source of livelihood.
2. Labour based on employment in either permanent or temporal work arrangements.
3. Business livelihoods are primarily based on selling different products and services as a means of substance.
4. Antisocial based livelihoods include activities that constitute illegally according to the prevailing laws.

Causes of food insecurity among out grower can either be out grower specific or non out grower specific .Non out grower specific causes of food insecurity are factors that are external to the operation of out grower schemes,

Some of which include expensive inputs for maize (the staple food in Zambia), lack of markets for their produce, late input delivery.

Out grower specific causes of food insecurity can be divided into categories: The first being directly related to the operations of out grower schemes that reduce the farmer incomes. Reduction of farmer incomes lead to inability to purchase seed and consequently to household food insecurity. The income deductions, biased buyers, low price of products, expensive and often inadequate inputs and lack of extension services by out grower companies. The second category of causes of food insecurity referring to the induced out grower behaviour consequent upon out grower schemes. Out growers tend to concentrate more on the 'cash' crop than 'food' crops. The relative negligence of food crops lead to food insecurity. Easier accessibility to the credit are the determining factor that influence the decision to concentrate on out grower crops rather than maize which is the staple food crop for Zambia. The participation of out growers in out grower schemes can be assessed at two levels namely the design level, the out grower program is a product of Poverty Reduction Strategy Paper (PRSP) and thus inherit its formulated process.

Participation at this stage is concerned with out grower involvement in the initial design of the program and whether comprehensive institutional and policy arrangements exist to inform the operations of the out grower schemes. At the implementation level out grower participation is concerned with channels through which out growers can influence decisions about the operations of the out grower schemes. Participation

requires structures that empower out growers to assume prominence in shaping the out grower schemes. Participation calls for structure and processes that realign power between out grower managers and out grower in favour (CCJDP 2005).

The seed availability is usually not due to the high cost as an input but also due to problems in the supply system (Mulimbika, 1994)

The need for quality seed of the right varieties at the right time to the small scale farmers in the agriculture as a business cannot be over emphasised. This is so because all the other inputs of labour and fertilizer.

## **2.6 Seed Security**

In traditional agriculture seed security has been met by the farmer through production of his own seed. Each season he sets aside a part of his regular production for planting during the season. Today small scale farmers mostly follow the practice not by choice but because they are usually unable to participate in the contemporary commercial seed sector. The remoteness in many cases of the small holder farmer coupled with poor roads and other infrastructure, poor marketing and seed distribution systems, unsuitable varieties, and sometimes seed prices considered high by small scale farmers keep them further away from participating in the seed formal sector. This has resulted in depressing the food production. It is estimated that 70% of the food production in Zambia is done by small-scale farmers.

## **2.7 Quality Seed**

Refers to seed that has met minimum quality standards according to the Zambian Plant Variety and Seeds Act of 1995.

## **2.8 Seed Variety or Cultivar**

An assemblage of cultivated plants which is clearly distinguished by various characters (morphology, cytological, chemical among others) and which when reproduced (sexually or asexually retains its distinguishing characters.

## **2.9 Seed Multiplication**

The concept of seed multiplication is the practice of a farmer multiplying his or her own seed of prescribed quality. This seed can be used to meet the farmers own seasonal planting needs and or be sold to the community around them.

## **2.10 Certified Seed**

The progeny of pre basic seed, basic or certified seed of previous generations, produced and handled so as to maintain satisfactory genetic identity and purity, and certified by a certifying authority or agency. It is normally produced by specialized growers.

## **2.11 Controller of Seeds**

A public officer responsible for the administration of the Zambia Plant and Varieties Act Cap (256), currently is the Director of SCCI.

## **2.12 Field Inspection**

An inspection of the seed field usually is part of the seed certification program. Checks are carried out to ascertain correct crop rotation, isolation distance, weeding, de-tasselling, male elimination etc as prescribed by the Seeds Act.

## **2.13 Quality Declared Seed System**

A seed certification system with standards that are specifically designed for the small scale on farm seed multiplication scheme.

## **2.14 Contract or Out Grower Schemes**

Mostly seed production is done under contract or out grower arrangements. In principle the program of out grower schemes has been used as a means of enhancing the development of livelihoods of the participating farmers. It is therefore in the hope increasing household income levels that farmers participate in such programs. This is so that in the end their poverty levels can be reduced.

## **2.15 Impact Assessment**

Rooney, (2000) described impact assessment as a form of ex-post evaluation that attempts to determine the extent to which programs and projects have contributed to larger development goals, such as increased farm production, improved food security, or increased farm income. An impact assessment is directed at establishing, with certainty, whether or not an intervention is producing its intended effect. An impact assessment is more oriented to target beneficiaries. Data for these studies are collected from baseline surveys, actual surveys, interviews and participant observation. An impact is defined as the outcome of project effects it is an expression of the results actually produced at the level of broader long-range objectives. An Impact Assessment goes beyond direct evaluation to look at the results of project, both intended and unintended, and the differences, positive and negative on the society that has been affected by the intervention. Typically, these are designed as an in depth studies of the impact of an intervention and, usually done 5-10 years after the completion of its funded implementation.

These studies are conducted because, firstly the lasting impact may not be visible at the time the project has come to an end. And secondly, such impacts as it is detected at the time of Terminal evaluation, such impact might prove transitory. The basic purpose of the impact assessment is to assess the achievement of overall results of the project in terms of efficiency, outputs, effects and impact as well as to learn lessons for future planning. Because an Impact Assessment or Ex-post evaluation focuses on the impact, the following main topics are examined: Farming Systems, Income levels, Living standards, Economic inequalities, Gender based stratification, Institutional building and Environment. An impact assessment or Ex- post evaluation involves measuring

elements of success and failure of the project. An independent Evaluation team usually does Ex-post evaluation or Impact Assessment of the project.

## **2.16 Assessment of the Seeds out Grower Scheme**

The need for assessing the contribution of the small scale seed out grower schemes to the house hold income generation can therefore not be over emphasised. “An assessment includes all activities one uses for the purpose of determining whether there is a problem or a need and its nature. It also helps to determine the current state of a program or project”. (Roy Clark et al., 1985).

The on farm seed multiplication out grower scheme concerns itself with the provision of seed production inputs namely Parent seed materials, fertilizers, seed inspection and testing costs, product markets and extension services with new technologies leading to contracted farmers to earn high income through production of high value products.

The seed out grower program is organised in such a manner because seed production is highly technical and specialized making it more expensive than ordinary cereals. This scenario entails that most small scale find difficulties to access ready cash to meet the cost of seed production inputs. Training in seed production, extension services and seed certification costs are all met by ASP. As for those who are able to grow seed on their own find it very difficult to sell their seed crops as they can't find a ready market which is very critical in the seed chain.

## **2.17 Household**

A household is a dwelling in which at least one member carries out some agricultural activity on the holding belonging to the named households.

## **2.18 Poverty**

May be cited as a state or condition of not meeting the basic needs of life, such as decent housing, clothing balanced diets access to health facilities and education.

Income generation empowers households to access the basic needs as it enhances their power.

## **2.19 Food Security**

Is a situation of whether households are able to meet all the food requirements, the standard in Zambia is for households to have three meals in a day that should comprise energy giving, body building, and protective food components.

Households with good access to timely supply of farming inputs and success to adequate product markets are expected to be food secure and the opposite may be true. By timely supply of farming inputs for the purpose of this study we mean availability of inputs at least at the time when farmers need them or even throughout the year. These can help farmers to access the inputs at the time they need to use them or throughout the year. This can help farmers to access the input at the time they need to use them.

## **2.20 Availability of Seed Market**

Services imply seed growers are able to sell seed of appropriate varieties, good quality seed at the right time and receive their payments in the shortest possible time after selling.

## **CHAPTER THREE**

### **METHODS AND PROCEDURES**

#### **3.1 Introduction**

This section presents the research design and procedures that were used in this study.

#### **3.2 Study Site and Population**

The study was carried in out Mumbwa District, located 148 km found in the Central Province of Zambia. The respondents will be ASP small scale seed growers located in the participating camps of Chibila, Kabwanga, Kapyanga, Martin Luther, Makombwe, Mamvule, Matala, Mumba Scheme, Mupona, and Shimbizhi agricultural camps. These are seed growers who have been identified by ASP as interested in taking seed production as a business and trained in the same. The seed crops grown are Maize, Beans, and Cow peas.

#### **3.3 Data Collection**

The type of data collected was mainly primary data from the own survey. This data was collected using structured questionnaire.

Secondary data was also collected from MACO and implementing ASP staff on the ground.

#### **3.4 Sampling**

The seed out grower scheme is being implemented in the three camps of Mumbwa District. A total One Hundred and Twenty Seven (127) farmers will be interviewed comprising all participants in the seed out grower scheme. Farmers will be sampled randomly from the target groups.

### **3.5 Data Collection Methods**

The information was collected using structured questionnaires so as ensure uniformity in the type of data collected. Questionnaires were structured in such a way as to capture all the information that would help the researcher achieve the stated objectives. Questionnaires were administered after fully explaining to the farmers as to what the use of this research would all about meaning the interview only proceeded with direct consent of the respondent. Respondents were identified but confidentiality of the data revealed to the interviewer was assured.

### **3.6 Data Limitations**

The Researcher encountered the following limitations with regard to Data Collection:

- Some farmers had difficulties in recalling past data about: the yields sales and expenditures, the periods in which they had the respective seed yields, seed sales, and other figures.
- The researcher also failed to find base line data for the status of the beneficiaries before the project. This therefore made it difficult to assess the real impact that could be attributed to the beneficiaries.

### **3.7 Data Analysis**

Descriptive statistical analysis was used on qualitative data and mean comparisons were made. Quantitative data was analysed using statistical packages for social sciences (SPSS) and MS excel. Gross Margin Analysis was used to determine the profitability of the seed out grower scheme. Data was transferred SPSS to MS Excel to generate graphs and tables.

## **CHAPTER FOUR**

### **STUDY FINDINGS AND DISCUSSION OF RESULTS**

#### **4.1 Introduction**

This chapter presents the findings and discussion of the same results. These are: Demographic characteristics: gender, age, educational level and land tenure. The second part consisted of

#### **4.2 Demographic Characteristics**

In order for anyone to gain a good understanding of the study site it is important to have a good understanding of the demographic characteristics of the area. In the same vein the researcher commences the presentation of the findings with the demographic characteristics. The sample of Households was from Chibila, Kabwanga, Kapyanga, Makombwe, Mamvule, Martin Luther, Matala, Milandu, Mumba scheme, Mupona, and Shimbizhi of Mumbwa District and Respondents were interviewed about the Demographic characteristics. This section will discuss gender, age distribution, marital status, education and land tenure of the beneficiaries.

##### **4.2.1 Study Site**

The distribution among the camps were as follows: Chibila and Makombwe accounted for 16.5 each, Kabwanga 18.8%, Kapyanga and Mamvule each accounting for 7.1%, Martin Luther 3.5%, Matala , Milandu, and Mumba Scheme 4.7% each and 9.4% for Shimbizhi Agricultural Camps in Mumbwa District. The significance of the data on distribution of the small scale seed growers cannot be over emphasised. Seed production needs inspection at strategic stages of production therefore finding about the distribution comes in handy for the sake of planning by the stake holders.

##### **4.2.2 Gender Disaggregation**

It is a usual phenomenon that in most populations in Zambia, most household heads are male and also that most female headed households are usually poor especially in terms of assets such farming implements. In this study there was almost an equal number of male and female in that 50.6% of the respondents were male just slightly more than their female counter parts making up 49.4%. This is illustrated in the table below:

**Table 1: Gender Disaggregation**

| Characteristic | Number    | Percent      |
|----------------|-----------|--------------|
| Male           | 43        | 50.6         |
| Female         | 42        | 49.4         |
| <b>Total</b>   | <b>85</b> | <b>100.0</b> |

Source: Own survey Data (2008)

#### 4.2.3 Age of Respondents

Age as a parameter is important in that usually the older the farmer lesser the interest in adopting new innovations. The findings of the study revealed that majority of the farmers thus 52.5% were in the age group 41 to 50 years, followed by 33.8% above 50 years while the minority 12.5% and 1.2% were 31 to 40 and 20 to 30 respectively.

#### 4.2.4 Marital Status

In the rural setting married adults especially are more respected than their single counterparts especially for the female gender. Married women also do not usually have access to assets of their own such as land and agricultural implements. The table below shows findings of the marital status.

**Table 2: Marital Status of Beneficiaries**

| Marital Status | Number    | Percent    |
|----------------|-----------|------------|
| Single         | 03        | 3.5        |
| Married        | 76        | 89.4       |
| Widow          | 04        | 4.7        |
| Divorced       | 02        | 2.4        |
| Widower        | 04        | 5.0        |
| <b>Total</b>   | <b>85</b> | <b>100</b> |

Source: Own Survey Data (2008)

#### 4.2.5 Education Level

The level of education for the respondents is another important factor in that seed is a specialised crop hence it would be important to know the levels of education as this would of help as technical services are being packaged. The study therefore revealed

that majority of the respondents attained Secondary Education level (42.4%), 22.4% attained Primary Education level, 15.3% attained Tertiary Education while 11.8% attended Adult Literacy.

**Table 3: Educational Level**

| Level of Education | Number    | Percent      |
|--------------------|-----------|--------------|
| Illiterate         | 05        | 6.2          |
| Adult literacy     | 13        | 16.3         |
| Primary            | 26        | 32.5         |
| Secondary          | 28        | 35.0         |
| Tertiary           | 08        | 10.0         |
| <b>Total</b>       | <b>85</b> | <b>100.0</b> |

Source: Own Survey Data (2008)

#### 4.2.7 Land Tenure

Land tenure was another variable that was looked at. Most of the small scale farmers in Zambia are settled on traditional land without any title to their land. Therefore it was also important that land tenure system be established. This is because agricultural production as a business and seed in particular calls for both short term and long term planning as far as land management is use is concerned. The study revealed that 91.8% of the respondents were on traditional untitled land with 8.2% with title deeds to their land. As illustrated in the table below.

**Table 4: Land Tenure of Beneficiaries**

| Tenure System | Number    | Percent    |
|---------------|-----------|------------|
| Traditional   | 78        | 91.8       |
| Titled        | 7         | 8.2        |
| <b>Total</b>  | <b>85</b> | <b>100</b> |

Source: Own Survey Data (2008)

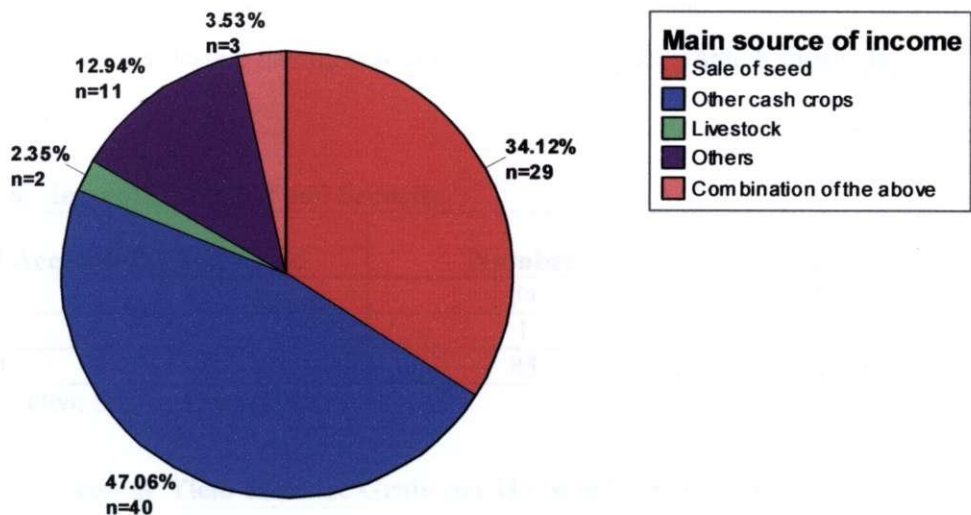
#### 4.3. Social Economic Status

Most farmers in Zambia are known to be having a number of enterprises on their farms as their sources of incomes. Other farm families are even engaged in off farm employment as a source of income. Below were the findings on the same from the study.

4.3.1 Enterprises on the Farm and Sources of Household Income

The beneficiaries had a variety of enterprises which serve as main sources of income as follows: The majority 47.1% had other cash crops as their main source of income followed by 34.1% having seed sales as their main income source, 2.5% had livestock while 3.5 had a combination and 12.9% had other enterprises and even off farm employment.

Figure 1: Main Source of Income



Source: Own Survey Data (2008)

4.3.2 Food Security

Zambia just like in many other Least Developed Countries (LDCs), consumption food security requirements are met or satisfied through self sufficiency. Therefore, it is imperative that small scale farmers’ annual yield should be enough to see them from one season to another in order to declare their households as food secure. The study revealed that the food availability among the beneficiaries was that 97.6% had enough to eat up the next harvest while 2.4% did not. 17.6% had yields of less than 1 tonne, 54.1% were the majority with yields ranging 1- 1.9 tons, 16.5% yield 2- 4 tones while 2.4% recorded yields of 4.0 – 5.9 and 8-10 tons each and 7.1% yielded above 10 tones.

It was also learnt that 98.8% had their food security status improved since they joined the ASP OFSM project while 1.2% did not.

**Table 5: Food Security in Terms of Food Stocks per Household**

| Food Stocks                                | Number    | Percent      |
|--------------------------------------------|-----------|--------------|
| HH with enough to eat up to next season    | 83        | 97.6         |
| HH without enough to eat up to next season | 2         | 2.4          |
| <b>Total</b>                               | <b>85</b> | <b>100.0</b> |

Source: Own survey Data (2008)

**Improvement in Food Security**

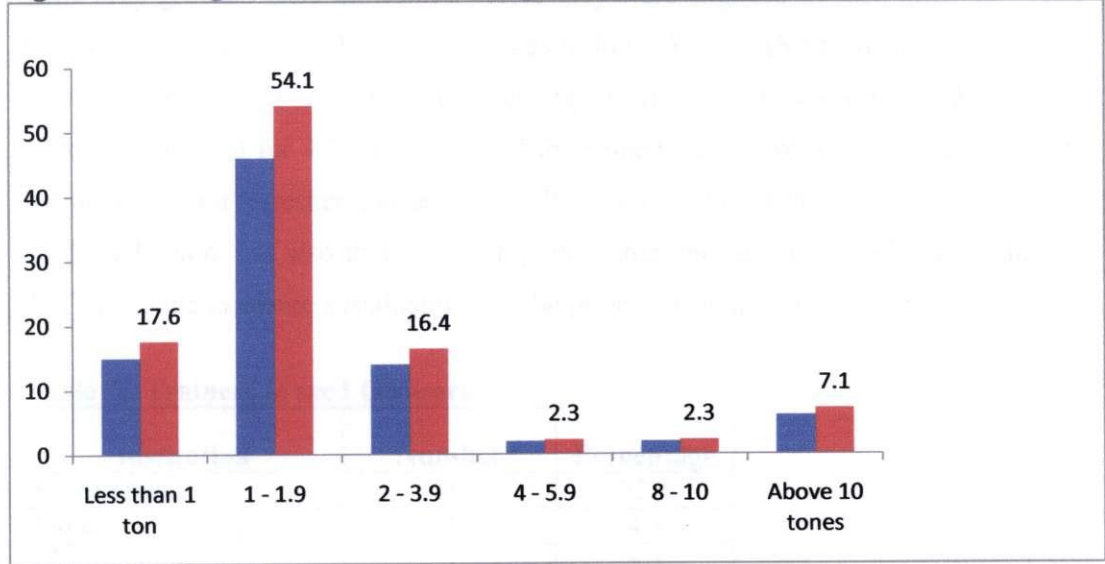
It was found that 98.8% had their food status improved since the inception of the ASP while 1.2% did not despite having benefited from the project. Table 6 shows the distribution.

**Table 6: Improvement in Food Security**

| Food Accessibility Improved | Number    | Percent      |
|-----------------------------|-----------|--------------|
| Yes                         | 84        | 98.8         |
| No                          | 1         | 1.2          |
| <b>Total</b>                | <b>85</b> | <b>100.0</b> |

Source: Own Survey Data (2008)

**Figure 2: Average Yield of maize Grain per Household by Percent.**



Source: Own Survey Data (2008)

### 4.3.3 Significance of Using Improved Seed.

The issues of food security cannot be discussed without touching seed security. The significance of using improved seed in food production is therefore indispensable. The survey revealed that even before the project, 100% of the respondents were already using improved seed for maize and cotton. For food legumes: beans, cowpeas and groundnuts were not usually used. The reasons for not using improved seed were that the seed was not easily available and even when it was available it was not affordable. It was for this reason that they decided to use their meagre resources only on certified seed for maize and simply use local recycled grain for these other crops like food legumes. With the introduction of on farm seed now they were able to plant certified seed for all their maize and legume crops because seed was now available and that they could now afford.

### 4.3.4 Trainers of Seed Producers

Seed production is a highly technical business venture compared to the production of ordinary commercial crops. It is for this reason that before being recruited as seed growers farmers are trained in on farm seed production. The study found that Small scale seed growers were all trained before they were engaged as seed growers. They were trained by number of organizations as follows: 89.5% ASP facilitated the training in collaboration with Government, other organizations such as FAO and Women for Change facilitated for 4.7 while 3.5% of the respondents were trained firstly by FAO but under went a refresher course with ASP. The contents of the course were not only seed production, but also included entrepreneurship and marketing. This according to ASP was done to ensure sustainability of the project even after its implementation.

**Table 7: Trainers of seed Growers**

| <b>Institution</b> | <b>Number</b> | <b>Percentage</b> |
|--------------------|---------------|-------------------|
| Government         | 70            | 82.4              |
| Others             | 4             | 4.7               |
| Combination        | 3             | 3.5               |
| <b>Total</b>       | <b>85</b>     | <b>100.0</b>      |

Source: Own Survey Data (2008)

#### 4.3.5 Area under Seed Production

The study revealed that the respondents produced seed with areas ranging from 0.5 to 10 hectares comprising: 1.2% cultivating 0.5 – 1Ha, 5.9% having between 1.0 and 2.0 ha, and 30.6% grew 2.0 to 4.0 ha, 23.5 having 4.0 to 5ha and lastly but not the least 38.8% cultivating 5 to 10 ha. A summary is illustrated in the table below:

**Table 8: Area under Seed Production**

| Area Cultivated (Ha) | Number    | Percentage   |
|----------------------|-----------|--------------|
| 0.5 - 1.0            | 1         | 1.2          |
| 1.0 - 2.0            | 5         | 5.9          |
| 2.0 - 4.0            | 26        | 30.6         |
| 4.0 - 5.0            | 20        | 23.5         |
| 5.0 - 10             | 33        | 38.8         |
| <b>Total</b>         | <b>85</b> | <b>100.0</b> |

Source: Own Survey Data (2008)

The study also learnt that farmers invested amounts in seed production varying from amounts less than K1 million to K10 million respectively. The distribution is as illustrated in the table below:

**Table 9: Amount Invested in Seed Production (ZMK)**

| Amount ( ZMK Million) | Number    | Percentage   |
|-----------------------|-----------|--------------|
| < 1.0                 | 2         | 28.2         |
| 1.0 - 1.9             | 36        | 42.4         |
| 2.0 - 2.9             | 11        | 12.9         |
| 3.0 - 3.9             | 5         | 5.9          |
| 4.0 - 4.9             | 2         | 2.4          |
| 5.0 - 5.9             | 2         | 2.4          |
| 6.0 - 7.9             | 3         | 3.5          |
| 8.0 - 8.9             | 1         | 1.2          |
| 9.0 - 10.0            | 1         | 1.2          |
| <b>Total</b>          | <b>85</b> | <b>100.0</b> |

Source: Own Survey Data (2008)

From these varying levels of investments the seed growers obtained used inputs such as seed, fertilizer, chemicals, Tillage and labour from which they realised varying levels of from less than K1 m to above K30 million.

### 4.3.6 Types of Seed Crops Grown

It is a common practice that most small scale farmers produce a range of crops on their farms. The study also found that respondents grew seed crops namely: maize (cereal), Beans, Cowpea and Groundnuts (food legumes). These were grown in different combinations of either maize alone, maize with a legume or food legumes combined altogether as illustrated in the table below.

**Table 10 : Types of Seed Crops Grown**

| Crop                   | Number    | Percentage   |
|------------------------|-----------|--------------|
| Maize                  | 35        | 41.2         |
| Beans                  | 11        | 12.9         |
| Groundnuts             | 15        | 17.6         |
| Cowpeas                | 6         | 7.1          |
| Maize and Beans        | 3         | 3.5          |
| Maize and Groundnuts   | 1         | 1.2          |
| Maize and cowpeas      | 1         | 1.2          |
| Maize and Food legumes | 11        | 12.9         |
| Combination of legumes | 2         | 2.4          |
| <b>Total</b>           | <b>85</b> | <b>100.0</b> |

Source: Own Survey Data (2008)

### 4.3.7 Seed Quality Assurance

According to the Seed and Plant Varieties Act Cap 256 of the Laws of Zambia only a seed lot that has been produced according to prescribed conditions and certified as such is what is legalised to sell as seed. In the field, the seed crop is inspected at three critical stages thus Vegetative, Maturity and pre harvesting stages. Processed seed is tested for Analytical Purity and Germination capacity before being certified for sale. Below are two figures to illustrate a purity and germination tests in the seed testing laboratory at SCCI.

### 4.3.8 Seed Production Gross Margins

ASP as a project was working with Farmers who appreciate and practice farming as a business. Just like in any business venture one can only ascertain the viability of their venture if through means such as the Gross margin Analysis is. This section therefore presents and discusses the beneficiaries' performance in seed production in terms of

gross margins of their seed enterprises in the particular years under study. The gross margins comprise both cash sales and seed used for planting in their fields. Comparison has also been made in terms of collective average performance across the four seasons.

Formula for Gross margin:

$$\text{Gross Margin} = \text{Total Revenue} - \text{Variable Costs}$$

### Computation of Gross Margins of Seed Enterprises

#### A. REVENUE

- Seed sales
- Value of seed on the farm
- Total Revenue (a)**

#### B.VARIABLE COSTS

**Total Variable Costs**

#### C.GROSS MARGIN

$$C = (a - b)$$

In the 2007/2008 season, most of the seed producers (21%) had seed production margins ranging between ZMK 2,000,000 and ZMK 3, 900,000. Presented in table 11 is the distribution of gross margins among the seed producers interviewed.

**Table 4 Seed Production Gross Margin for 2007/8 Season**

| Amount in Million ZMK | Number    | Percent      |
|-----------------------|-----------|--------------|
| < 1.0                 | 14        | 16.5         |
| 1.0 - 1.9             | 13        | 15.3         |
| 2.0 - 3.9             | 18        | 21.2         |
| 4.0 - 5.9             | 7         | 8.2          |
| 6.0 - 7.9             | 3         | 3.5          |
| 8.0 - 9.9             | 1         | 1.2          |
| 10.0 - 14.9           | 3         | 3.5          |
| 15.0 - 19.9           | 1         | 1.2          |
| 25 – 30               | 1         | 1.2          |
| Total                 | 61        | 71.8         |
| Did not grow          | 24        | 28.2         |
| <b>Total</b>          | <b>85</b> | <b>100.0</b> |

Source: Own Survey Data (2008)

In the 2006/7 season, most of the seed producers (20%) had seed production margins of less than ZMK1, 000,000. Presented in table 12 is the distribution of gross margins among the seed producers interviewed

**Table 12: Seed Production Gross Margin 2006/7 Season**

| Gross Margin | Number    | Percent      |
|--------------|-----------|--------------|
| < 1.0        | 17        | 20.0         |
| 1.0 - 1.9    | 16        | 18.8         |
| 2.0 - 3.9    | 12        | 14.1         |
| 4.0 - 5.9    | 8         | 9.4          |
| 6.0 - 7.9    | 5         | 5.9          |
| 8.0 - 9.9    | 3         | 3.5          |
| 10.0 - 14.9  | 3         | 3.5          |
| 20.0 - 24.9  | 1         | 1.2          |
| K25- K30 M   | 2         | 2.4          |
| Above K30 M  | 2         | 2.4          |
| Total        | 69        | 81.2         |
| Did not grow | 16        | 18.8         |
| <b>Total</b> | <b>85</b> | <b>100.0</b> |

Source: Own Survey Data 2008

In the 2006/7 season, most of the seed producers (21%) had seed production margins of less than ZMK1, 000,000. Presented in table 12 is the distribution of gross margins among the seed producers interviewed

**Table 13: Seed Production Gross Margin 2005/6 Season**

| Gross Margin range | Number    | Percent      |
|--------------------|-----------|--------------|
| < 1.0              | 18        | 21.2         |
| 1.0 - 1.9          | 12        | 14.1         |
| 2.0 - 3.9          | 11        | 12.9         |
| 4.0 - 5.9          | 9         | 10.6         |
| 6.0 - 7.9          | 3         | 3.5          |
| 7.9 - 9.9          | 3         | 3.5          |
| 10.0 - 14.9        | 2         | 2.4          |
| 15.0 - 19.9        | 1         | 1.2          |
| above K30M         | 1         | 1.2          |
| Total              | 60        | 70.6         |
| Did not grow       | 25        | 29.4         |
| <b>Total</b>       | <b>85</b> | <b>100.0</b> |

Source: Own Survey Data (2008)

In 2004/5 season most seed producers ha their gross margins less than ZMK1, 000,000 (21%). Table 13 presents the distribution.

**Table 5: Seed Production Gross Margin 2004/2005 Season**

| Amount in ZMK Million | Number    | Percent      |
|-----------------------|-----------|--------------|
| < 1.0                 | 18        | 21.2         |
| 1.0 - 1.9             | 10        | 11.8         |
| 2.0 - 3.9             | 6         | 7.1          |
| 4.0 - 5.9             | 3         | 3.5          |
| 8.0 - 9.9             | 2         | 2.4          |
| 10.0 - 14.9           | 2         | 2.4          |
| 15.0 - 19.9           | 1         | 1.2          |
| Above K30M            | 1         | 1.2          |
| Total                 | 43        | 50.6         |
| Did not grow          | 42        | 49.4         |
| <b>Total</b>          | <b>85</b> | <b>100.0</b> |

Source: Own Survey Data (2008)

#### 4.3.9 Summary of the Gross Margins

From the vertical analysis of the period 2004/5 to 2007/8 season the number of farmers growing seed has been fluctuating as follows: 2004/5 season 50.6% grew seed, 2005/6 season 70.6%, while 81.2% 71.8% grew seed during 2006/7 and 2007/8 seasons respectively. The fluctuations in the trends was explained by reasons mainly lack of market for the seed. An analysis was also done to assess the median performance of the farmers and the findings were as follows over the four years. The median showed that at least half of the farmers had their gross margins from seed production lying between K2.0m to K4.0 million. From 2004/5 to 2006/7 season majority of the farmers had gross margins less than K1 million.

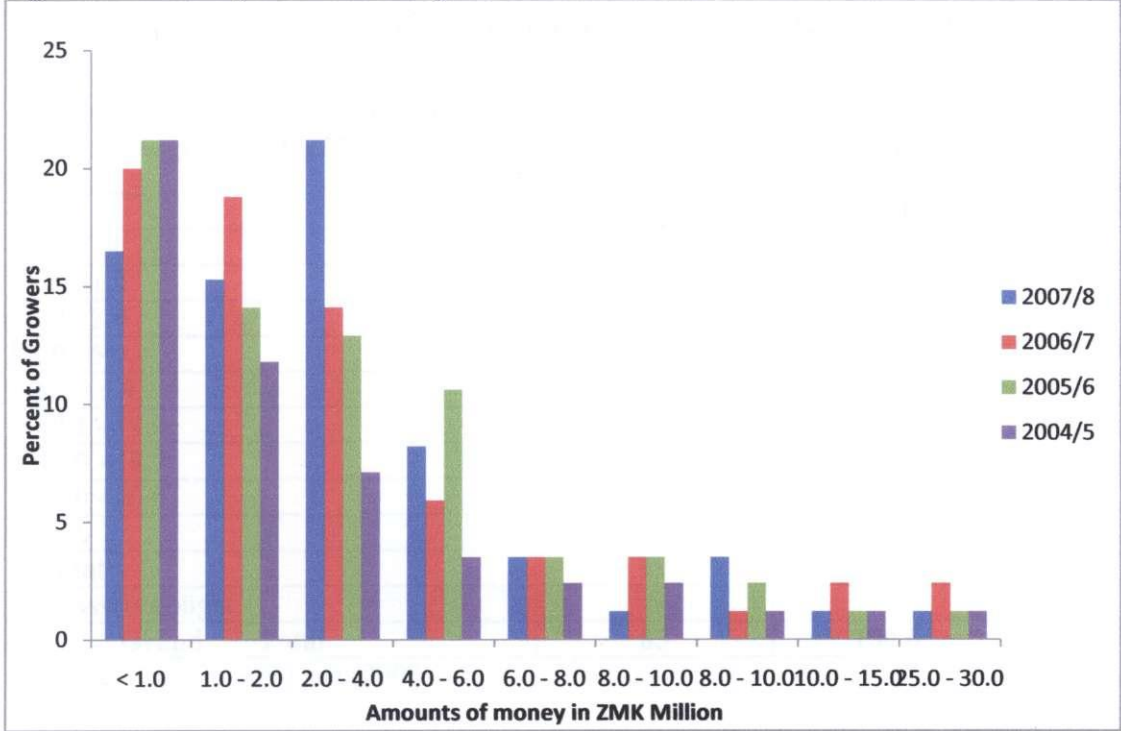
**Table 6 Median and Model Classes for Gross Margins**

| Season | Percent of seed growers | Median Class of Gross margins ZMK Million | Model class    |
|--------|-------------------------|-------------------------------------------|----------------|
| 2007/8 | 71.8                    | 2.0 – 3.9                                 | 2.0 – 3.9      |
| 2006/7 | 81.2                    | 2.0 – 3.9                                 | Less than K1 m |
| 2005/6 | 70.6                    | 2.0 – 3.9                                 | Less than K1 m |
| 2004/5 | 50.6                    | 2.0 – 3.9                                 | Less than K1 m |

Source: Own Survey Data (2008)

At least half of the farmers had their gross margins from seed production lying between K2.0m to K4.0 million. From 2004/5 to 2006/7 season majority of the farmers had gross margins less than K1 million.

Figure 3: Summary of Gross Margins for 2004/5 - 2007/8 Seasons



Source: Own Survey Data

4.3.10 Expenditure

It is a standard practice that when farmers sale their farm produce, the money is spent on various items such as meeting family living expenses, and assets such as farming implements among others. In the same manner, money realized from seed sales just like any other income is usually used to meet the whole range living expenses. In the same vein the research found that the income from seed sales were was used for meeting part of the family living expenses, paying school fees and acquiring different types of assets.

Table 16 shows the distribution of accumulated assets.

Table 16: Types of Assets Accumulated

| Type of Assets                  | Number | Percentage |
|---------------------------------|--------|------------|
| Did not buy assets              | 6      | 7.1        |
| Farming Implements              | 4      | 4.7        |
| Bicycle, motorbike              | 1      | 1.2        |
| Vehicles, tractor               | 11     | 12.9       |
| Household goods                 | 5      | 5.9        |
| Livestock                       | 10     | 11.8       |
| House (building materials       | 3      | 3.5        |
| Combination of above categories | 45     | 52.9       |
| Total                           | 85     | 100.0      |

Source: Own Survey Data (2008)

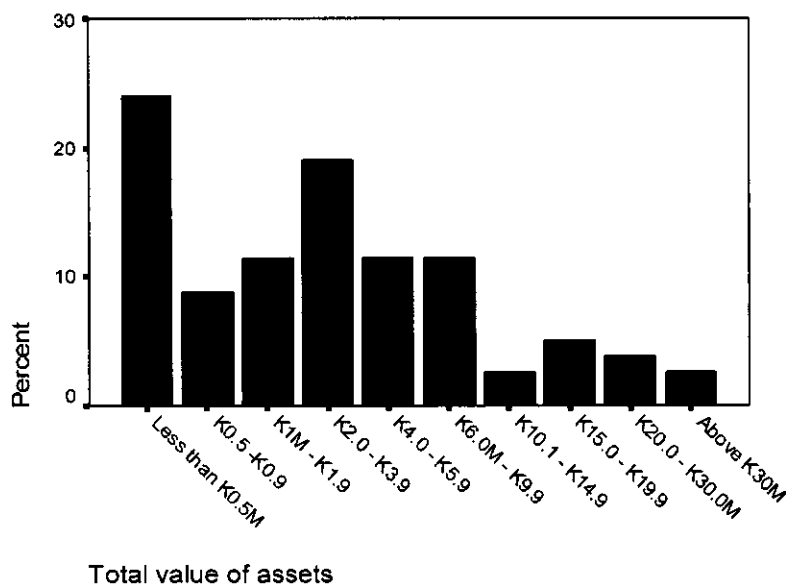
Assets accumulated were of different values in total. Table 16 presents the distribution.

**Table 17: Total Values of Assets**

| Gross Margin (ZMK) Million | Number    | Percent      |
|----------------------------|-----------|--------------|
| < 0.5                      | 19        | 22.4         |
| 0.5 -0.9                   | 7         | 8.2          |
| 1.0 - 1.9                  | 9         | 10.6         |
| 2.0 - 3.9                  | 15        | 17.6         |
| 4.0 - 5.9                  | 9         | 10.6         |
| 6.0 - 9.9                  | 9         | 10.6         |
| 10.1 - 14.9                | 2         | 2.4          |
| 15.0 - 19.9                | 4         | 4.7          |
| 20.0 - 30.0                | 3         | 3.5          |
| < 30                       | 2         | 2.4          |
| <b>Total</b>               | <b>79</b> | <b>92.9</b>  |
| No assets bought           | 6         | 7.1          |
| <b>Grand Total</b>         | <b>85</b> | <b>100.0</b> |

Source: Own Survey Data (2008)

**Figure 3: Total Value of Accumulated per Household**



**4.4.11 Membership to Seed Associations, Technical Support and Local Institutions**

Farmers do not just do everything as individuals; they belong to associations such as seed associations and cooperatives. All the members belonged to the seed associations in their respective agricultural camps. It is through these associations that they are usually linked to support services such as training and marketing. It was also learnt that

farmers obtained agricultural information from a variety of sources namely: Newspapers, public extension services, NGOs and fellow farmers while the major provider of extension service is the public extension by the government doing so by 89.4% while NGOs and Private companies provide 7.1% and 3.5% respectively.

#### **4.4.12 Challenges**

Small scale seed production just like any other business venture is not all rosy meaning it also has its own challenges. The major challenges being faced by most farmers are marketing of the seed. This is so serious a problem that some farmers in some hardly sold anything from their seed crop. A few farmers also highlighted the lack of title to their land as being hindrance to long term planning of their seed enterprises hence making it difficult to follow certain recommendations such as crop rotation and isolation distances.

## **CHAPTER FIVE**

### **CONCLUSION AND RECOMMENDATIONS**

#### **5.1 Introduction**

This chapter focuses on the main conclusions and of the study. This answers the question: “Is the on farm seed multiplication a panacea to food security and low incomes facing small scale farmers?” This has been answered through assessing how the OFSM project has impacted on the beneficiary households in the project area. Included also are suggested recommendations to help mitigate some problems encountered.

#### **5.2 Conclusions**

- The findings from the study showed that there was some percentage of change in the livelihood of small scale seed growers. This is as evidenced in below:
- Majority of the beneficiary households were now more food secured than before. This is seen from the period when most farmers started seed multiplication under the ASP project.
- Increased acquisition of assets like bicycles, motor bikes, vehicles, tractors, livestock, house hold goods (televisions, radios), Livestock, houses ( building materials), and meeting other family living expenses (groceries and money for maize milling) have been some of the clear indicators that their welfare has improved due to seed multiplication.
- Most of them joined cooperatives and paid for subsidized fertilizers through the income from seed sales.
- Sustainability of the project is assured in the fact that almost all of them would like to continue with seed production even when the project comes to an end is a clear indication that they benefited from the positive effects of the project and would like to continue.

### 5.3 Recommendations

To the seed producers:

- The fact that marketing presents to be the major challenge to the seed producers. I recommend that they draw a Programme that will allow them to alternate their seed production so that their community only produces quantities that can easily be disposed off.
- Seed producers should also organise themselves and seek advice from the area extension staff or farm management officer to train them in simple record keeping.

To Government:

Government should consider buying seed from the local seed producers and not buying from large seed companies. This is because Government is the major market for seed especially for staples like maize.

- Government through SCCI and ZARI should ensure that there always high quality parent materials for multiplication. Failure to doing so will lead to small scale seed producers will just be multiplying seed that is not genetically pure. In the same vein Government should increase funding to Seed Control and Certification Department so that the Department can step up coordination, back stopping, monitoring and quality control activities.
- Local authorities to consider giving titles to land used for seed production so as to enable farmers observe husbandry practices such as crop rotation and seed crop isolation recommendations. This is because if farmers have land of their own they can easily follow recommended isolation distances as well as crop rotation.
- I recommend that five or ten years later, further studies such as an expost evaluation should be conducted in the surveyed district as well as all other districts where similar programmes were undertaken throughout the country. Such studies will help to assess the sustainability of the benefit stream accruing to the beneficiaries not only in Mumbwa but also give a national wide picture of the impact of the on farm seed multiplication projects.

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## APPENDICES

## Appendix 1: Survey Questionnaire for ASP Project Participants

### Survey Questionnaire for ASP Project Participants Questionnaire Number

#### A. Demographic Data

|    |                              |                                                                                                                                                                        |                          |
|----|------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|
|    | Name of respondent           |                                                                                                                                                                        |                          |
| 1  | Agricultural Camp?           | 1. Chibila<br>2. Kabwanga<br>3. Kapyanga<br>4. Makombwe<br>5. Mamvule<br>6. Martin Luthur<br>7. Matala<br>8. Milandu<br>9. Mumba scheme<br>10. Mupona<br>11. Shimbizhi | <b>Official use only</b> |
| 2. | Gender of respondent         | 1. Male<br><br>2. Female                                                                                                                                               |                          |
| 3. | Age of Household?            | 1. below 30<br>2. 31 – 40<br>3. 41 – 50<br>4. 51 and above                                                                                                             |                          |
| 4. | Size of the Household        | 1. 1-4<br>2. 5-9<br>3. Above 10                                                                                                                                        |                          |
| 5. | Marital Status of respondent | 1. Single<br>2. Married<br>3. Widow<br>4. Divorced<br>5. Widower                                                                                                       |                          |
| 6. | Farming experience in years? | 1. 1 – 5<br>2. 5 – 10<br>3. 10 – 15<br>4. 15 – 20<br>5. Above 20                                                                                                       |                          |
| 7. | Area of land cultivated?     | 1. 0.5-1.0 ha<br>2. 1.0-2.0ha<br>3. 2.0- 4.0ha<br>4. 4.0- 5.0ha<br>5. Above 5ha                                                                                        |                          |

8. What is the highest level of education attained?

1. Illiterate
2. Adult literate
3. Primary

4. Secondary
5. Tertiary

9. What is the main source of household cash income?

1. Sale of seed
2. Sale other cash crops
3. Livestock
4. Other (specify)

#### **B. SEED PRODUCTION**

|     |                                                                   |                                                                                                           |  |
|-----|-------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|--|
| 12. | What was the main reason for joining the ASP project?             | 1. Access improved seed<br>2. Improve farm revenue<br>3. Access loans<br>4. Other(Specify)                |  |
| 13. | How do you acquire seed from the ASP project?                     | 1. Loan<br>2. Cash<br>3. Pay in kind<br>4. Grant                                                          |  |
| 14. | What type of seed where you using before?                         | 1. Local<br>2. Improved<br>3. Both                                                                        |  |
| 15. | If you were not using improved varieties, what is the reason(s)?  | 1. could not afford to buy improved varieties<br>2. No benefit<br>3. Improved varieties are not available |  |
| 16. | If you were using improved varieties, what are the other sources? | 1. Govt subsidised<br>2. Own purchase from seed companies<br>3. Grant<br>4. Other specify                 |  |
| 17. | Who provided the training for seed multiplication?                | 1. ASP<br>2. FAO<br>3. Government<br>4. Others (Specify)                                                  |  |
| 18. | What are the terms of Parent seed for ?                           | 1. Loan<br>2. Grant<br>3. Other(Specify)                                                                  |  |
| 19. | What type of seed crops do you grow?                              | 1. Maize<br>2. Beans<br>3. Groundnuts<br>4. Cow peas                                                      |  |
| 21  | What other cash crops do you to grow now?                         |                                                                                                           |  |

**C. DETAILS OF INPUTS**

| Seed         | Tillage | Fertilizer | Chemicals | Labour | Certification | Total |
|--------------|---------|------------|-----------|--------|---------------|-------|
| Maize        |         |            |           |        |               |       |
| Groundnuts   |         |            |           |        |               |       |
| Beans        |         |            |           |        |               |       |
| Cowpeas      |         |            |           |        |               |       |
| <b>TOTAL</b> |         |            |           |        |               |       |

**D. DETAILS OF SEED PRODUCTION**

| Crop         | Area Planted (ha) | Yield kgs | Quantity sold | Price | Amount from Seed Sales | Quantity Retained | Value of Retained Seed (ZMK) |
|--------------|-------------------|-----------|---------------|-------|------------------------|-------------------|------------------------------|
| Maize        |                   |           |               |       |                        |                   |                              |
| Groundnuts   |                   |           |               |       |                        |                   |                              |
| Beans        |                   |           |               |       |                        |                   |                              |
| Cow peas     |                   |           |               |       |                        |                   |                              |
| <b>TOTAL</b> |                   |           |               |       |                        |                   |                              |

**E. FOOD SECURITY BEFORE AND AFTER BEING A PROJECT MEMBER**

| Food Crop  | Quantity of Food Before | Quantity of Food After | Remarks (increase/ decrease) |
|------------|-------------------------|------------------------|------------------------------|
| Maize      |                         |                        |                              |
| Groundnuts |                         |                        |                              |
| Beans      |                         |                        |                              |
| Cowpeas    |                         |                        |                              |

**F. ASSET ACCUMULATION**

What assets have you bought as result of seed production?

| Item | Value |
|------|-------|
|      |       |
|      |       |
|      |       |
|      |       |

**C. Access to Extension Services**

30. What is the source of Agricultural information in your area?

1. Radio
2. Television
3. Newspaper

4. Public extension service
5. Private extension
6. NGOs
7. Other (specify)

31. Who is the most important supplier of the Extension Services in this area?

1. Farmer
2. Government
3. NGO/Project
4. Private/firms
5. Farmer/organizations
6. Other (specify)

4. Which areas of service provision do you receive the technical advice or information?

1. Crop production
2. Business development
3. Quality control
4. Market discovery and information
5. Credit services
6. Other (specify)

35. How do you receive the extension service?

- (1). Informal
- (2). Radio
- (3). Field day
- (4) Demonstrations
- (5) Training workshop
- (6) Other (specify)

### G. Small Holder Seed Associations

|     |                                                                                          |                                                                              |  |
|-----|------------------------------------------------------------------------------------------|------------------------------------------------------------------------------|--|
| 37. | Are you member of any seed association?<br>If yes go to Q38/39                           | 1. Yes<br>2. No                                                              |  |
| 38. | When was the seed association formed?                                                    |                                                                              |  |
| 39. | Who facilitated the formation of seed associations in this area?                         | 1. Local farmers<br>2. ASP<br>3. MACO/EXT<br>4. Chiefs<br>5. Other (Specify) |  |
| 40. | How many seed associations have been formed under ASP in this area?                      |                                                                              |  |
| 42. | In your view do you think that seed associations are beneficial to the farming business? | 1. Yes<br>2. No                                                              |  |
| 43. | What are the reasons for your answer in Q42?                                             | 1. Access loans<br>2. Markets<br>3. Training                                 |  |

**E. CROP DIVERSIFICATION**

46. What other types of enterprises do you have on your farm?  
.....  
.....  
.....

47. If the project ends are you still going to continue growing seed? 1. Yes      2. No

48. What problems did you experience when you were under ASP project?  
.....

THANK YOU FOR ANSWERING MY QUESTIONNAIRE

## **Appendix 2:**

### **Districts with ASP Farm Seed Multiplication Projects in Zambia**

|    | <b>District</b> | <b>Province</b> |
|----|-----------------|-----------------|
| 1  | Chibombo        | Central         |
| 2  | Kapiri Mposhi   | Central         |
| 3  | Mkushi          | Central         |
| 4  | Mumbwa          | Central         |
| 5  | Serenje         | Central         |
| 6  | Katete          | Eastern         |
| 7  | Mambwe          | Eastern         |
| 8  | Petauke         | Easter          |
| 9  | Mpika           | Northern        |
| 10 | Mazabuka        | Southern        |
| 11 | Monze           | Southern        |
| 12 | Choma Namwala   | Southern        |

Source: MACO-SCCI (2008) Data

### **Appendix 3:**

#### **List of NGOs Involved In Farm Seed Multiplication**

1. Agricultral Support Program
2. Care International
3. Catholic Relief Services
4. Germany Techical Assistant to Zambia
5. Keeper Foundation
6. Harvest Help
7. Henhood Foundation
8. Program Against Manufacturing
9. People's Participation Service
10. Plan Zambia
11. Rafen organ
12. Women For Change
13. World Vision

Source: MACO – SCCI (2008)