

Constraints, Challenges, and Opportunities in Groundnut Production and Marketing in Malawi

Report No. 4



INTERNATIONAL CROPS RESEARCH INSTITUTE FOR THE SEMI-ARID TROPICS
Science with a human face



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1.0. INTRODUCTION

1.1. Malawi: Macroeconomic overview

Malawi is a landlocked country in southern Africa bordered by Tanzania, Mozambique, and Zambia and covers an area of about 118,000 km². The country is a member of the Southern African Development Community (SADC) and the Common Market for Eastern and Southern Africa (COMESA) communities in addition to being part of the African Union (AU). It has a population of approximately 14 million people of which 51% are women. The country has one of the highest population densities in Africa and a population growth rate of about 2.4% (GoM 2005a).

Malawi's progress towards achieving the Millennium Development Goals (MDGs) has been limited by the spread of HIV/AIDS and the inadequacy of the structural adjustment programs implemented in the 1980s and 1990s to create the conditions for broad-based economic growth. To learn from past mistakes and achieve meaningful poverty reduction, the government launched the Malawi Growth and Development Strategy (MGDS) in 2006. The five central pillars of the strategy are: sustainable economic growth, social development, infrastructure development, protection for the most vulnerable, and good governance.

Malawi's economy is dependent on agriculture as the country has very few exploitable mineral resources. Agriculture, representing 39% of the Gross Domestic Product (GDP), accounts for more than 80% of the labor force and about 80% of all exports (USAID 2007). The current GDP per capita is about US\$170 and the latest human development index is 0.388, showing that close to two thirds of the population live in poverty, the majority of whom are women. According to the Integrated Household Survey of 2004/05 (GoM 2005a), the current status of poverty shows that 52.4% of the population lives below the poverty line; ie, about 6.3 million Malawians are poor, with the poorest people living in the southern region and with rural areas poorer than urban (where poverty rates are at 25%). The socioeconomic indicators of the poor are low, with food security being a continuing threat to better life. Income inequality as measured by the Gini coefficient stands at 0.52 for urban areas and 0.37 for rural areas, meaning that income inequality is very high (GoM 2007).

The Government of Malawi defines national food security in terms of people's access to maize, the staple food. Measured against the minimum maize requirement of 185 kg per capita, Malawi was self-sufficient in maize production in the 1960s and 1970s during which time domestic production was above the minimum requirement. However, Msukwa (1994) notes that with the increase in the population since the mid-1980s, poor weather conditions, and low maize productivity, Malawi moved from a situation of national self-sufficiency in food production to recurring food deficits. Good rains and generous government subsidies for agricultural inputs led to bumper harvests in the late 1990s. However, delayed rains, cutbacks in government subsidies and the prior sale of the country's strategic grain reserves resulted in a huge shortfall in the 2000/01 growing season, creating famine conditions by early 2002.

The levels of malnutrition in Malawi remain high. The United Nations Children's Fund (UNICEF) estimates that 22% of children under 5 years of age are underweight and 48% suffer from stunting (UNDP-Malawi 2005). The Food and Agriculture Organization of the United Nations (FAO) has estimated that 33% of the total population does not have an adequate calorific intake in their diet. The HIV/AIDS pandemic is undermining Malawi's prospects for economic growth and poverty reduction. Valuable resources are being directed from productive use to the care of the sick, irreplaceable human capital is being lost, and hundreds of thousands of children are being left destitute (Verheijen and Minde 2007). However, in spite of the catastrophic scale of the crisis, there are a few encouraging signs. According to the United Nations Joint Programme on HIV/AIDS (UNAIDS), there is strong evidence that HIV prevalence for adults has stabilized over the past 5–7 years at about 14% (MDHS 2006).

According to Chirwa (2008), the performance of the economy has, over the years, been highly driven by the agricultural sector. Table 1 presents the trends in the levels and growth in per capita output. GDP per capita shows a declining trend from MK 122 per capita in the 1970s to MK 113 per capita in the 2000s. The trend in agricultural GDP per capita is similar to that of GDP per capita, the only difference being that in the former the declining trend was reversed in the period after major policy reforms were completed. This is shown during the period 1995–99 after the completion of the structural adjustment program, which started in early 1980s as a result

of the economic crisis experienced between 1979 and 1981. The positive growth from 1995 to 1999 is also due to some extent to the change of the political system in 1994 which registered a more democratic path as opposed to the former President Banda's regime.

The growth rates in GDP per capita and agricultural GDP per capita were generally negative during the period of economic reform, with some improvements in the period after reforms particularly in the late 1990s. The late 1990s actually registered higher growth rates in GDP per capita and agricultural GDP per capita than the positive growth rates witnessed in the 1970s. Generally, the performance of the agricultural sector was impressive in the 1960s and early 1970s, as was the performance of many sectors in the economy, but stagnated in the late 1970s and early 1980s through to early 1990s with only marginal improvements since 1995.

Table 1. Malawi: Trends in agriculture sector output, 1970–2005

Indicator	Pre-reform	Reform period			Post-reform	
	1970–79	1980–84	1985–89	1990–94	1995–99	2000–05
Levels (MK 1978 prices)						
GDP per capita	122.12	118.44	116.89	113.87	113.20	113.31
Agricultural GDP per capita	48.41	44.10	41.94	38.16	46.94	56.17.
Growth Rates (percent)						
GDP per capita	2.40	-2.08	-0.20	-2.66	3.17	-0.28
Agricultural GDP per capita	1.90	-2.70	-1.89	-1.19	11.55	0.36

Source: Adapted with modifications from Chirwa et al. 2007

With regard to the environment, soil erosion and degradation, deforestation, depletion of water resources and fish stocks, declining biodiversity, and the degradation of human habitat are all serious concerns. The government launched the National Environmental Policy in 1996 to increase awareness of environmental issues and establish community-based natural resource management. However, environmental degradation continues, with an estimated 3% of forest cover disappearing each year as 93% of the population remains dependent on wood fuel (Minde et al. 2001). At the same time, the overexploitation of fisheries in Lake Malawi has led to a decline in fish production of nearly 40%, which is particularly significant since fish contributes 60–70% of the total animal protein consumption.

1.2. Agricultural sector performance in Malawi

1.2.1. Duality of the agriculture sector

The country's agricultural sector is characterized by a dualistic structure – a high input/high productivity estate sector and a low input/low productivity smallholder sector. The estate sector comprises a small number of large-scale farmers, occupying about 60% of the fertile land and producing almost entirely for the market (domestic and export). Out of the 2.7 million ha cultivated in Malawi during the past 5 years, 1 million ha is held in some 30,000 estates with an average farm size ranging between 10 and 500 ha. The smallholder sub-sector comprises a very large number of farmers growing mainly food crops for their own consumption. The smallholder farmers cultivate a total of 1.7 million ha. Some 55% of the smallholder farmers own an average farm of less than 0.5 ha and more than 75% cultivate less than one ha of land (GoM 2005a). It is also reported by the National Statistics Office (NSO) that smallholder agriculture accounts for more than 85% of production, which meets the country's demand for food staples and provides some export surplus (NSO 2004). It should be noted here that the bulk of Malawi's agriculture exports come from tobacco, the main earner of foreign exchange and an engine of growth for the country's development. The estates contribute 12% of total agricultural production but account for nearly 70% of all agricultural exports.

In addition to crops, livestock contributes about one fifth of Malawi's total value of agricultural production. This sector produces about 20,000 metric tons of red meat annually, which is about half its requirement, 12,000 metric tons of chicken meat, and 20,000 metric tons of milk. The most marked production is from a small number of large-scale commercial enterprises located near major urban centers producing mainly poultry meat, eggs, and pork. The government's key objective stipulated in its master plan is to integrate livestock production more closely with rainfed and irrigated crop production both on smallholder farms and on estates.

1.2.2. Performance of key agricultural commodities

The agricultural sector's growth performance has been erratic over the past decade as a result of adverse weather, declining soil fertility and reduced access to inputs, weakening market opportunities and terms of trade, and

the negative impact of HIV/AIDS on the sector's labor availability. Since 1998, the sector's performance has been dominated by droughts and food shortages, the retraction of public service delivery, and contraction in access to inputs and farm credit due to the high cost of borrowing. Between 1995 and 2001 the annual growth rate in value added was 6.7%, average annual exports were US\$387 million, the average area under cultivation was 2.7 million ha and the average annual food production was 3,135 kcal/cap/day (FAO 2005). However, the volume of exports of most agricultural commodities has been declining (Figure 1). This could be attributed to the rising cost of production due to the high prices of most inputs as a result of macroeconomic changes that emerged as the government was implementing the structural adjustment programs.

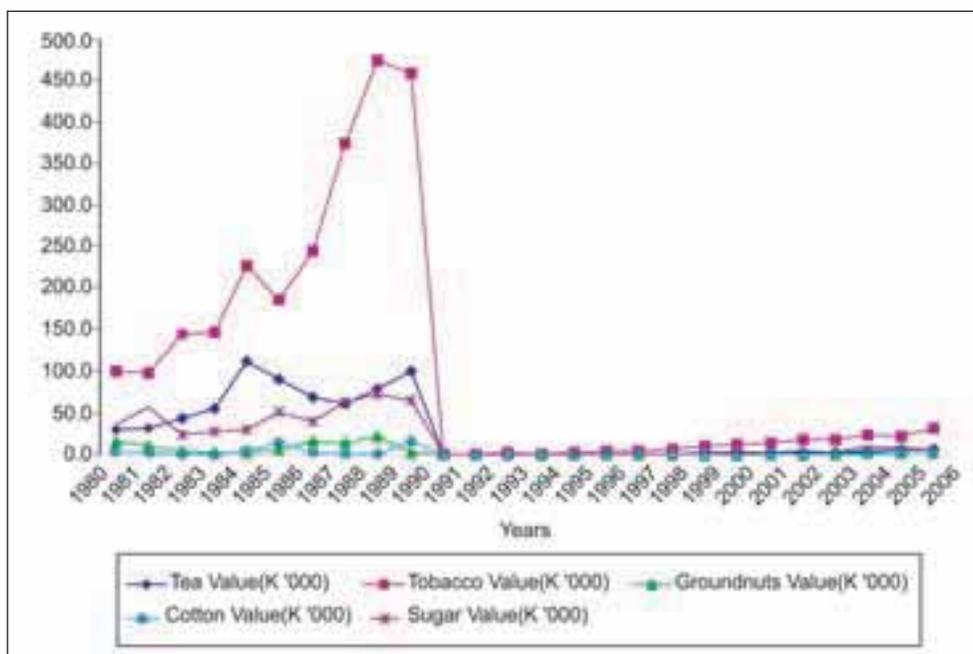


Figure 1. Trend of groundnut exports in Malawi in relation to other agricultural exports

Source: Compiled from NSO, Malawi (2006)

The NSO in 2004 reported that agriculture contributed more than 35% of the GDP and accounted for almost 85% of the country's export earnings. Thus, in 1997, for example, export earnings came from tobacco (59%), tea (19%), groundnuts (2%), and other crops (12%).

1.2.3. Export destinations of key agricultural commodities

Malawi is an original member of the World Trade Organization (WTO). It is also a signatory and beneficiary of a number of bilateral and multilateral trade agreements. These include the SADC Trade Protocol, COMESA, bilateral trade agreement between Malawi and Zimbabwe and Malawi and South Africa, the Cotonou Agreement between the European Union (EU) and the Africa, Caribbean, Pacific (ACP) countries, and the US–Africa Growth and Opportunity Act (AGOA) initiative for concessional exports to the US market. Malawi’s overlapping memberships, regional and bilateral arrangements with different geographical coverage, trade liberalization agendas, and trading rules make its trade regime quite complex (WTO 2002). Furthermore, as a developing country and a member of the WTO, Malawi is entitled to utilize the various Generalized System of Preferences (GSP) schemes offered by developed countries. Despite Malawi’s membership in these organizations, inter-regional trade has not been a strong component of Malawi’s exports (WTO 2002).

The bulk of Malawi’s agricultural exports are non-food crops and there has only been a slight diversification away from the traditional exports in recent years. Tobacco continues to be the dominant cash crop in the economy accounting for approximately 63% of the country’s total export earnings. Tea and sugar are other important cash crops accounting for 8% and 7% of export earnings, respectively. Other exports include cotton, coffee, peanuts, wood products, and apparel.

Malawi’s groundnut exports were erratic as indicated by the pattern during the period 1980 and 2005 (Figure 2). Groundnut exports declined in the early 1990s and the period between 2000 and 2002 largely because of the loss of traditional overseas markets and low production as a result of the poor weather conditions in those years.

In 2002, Malawi’s export partners included the United States (17.3%), Germany (13.6%), South Africa (10.2%), Egypt (6.2%), Japan (6.0%), the Netherlands (5.5%), Russia (4.8%), and the United Kingdom (4.3%). The total amount was, however, quite insignificant (Figure 2).

Currently, Malawi’s groundnut export markets are largely within the region with insignificant amounts being exported elsewhere (Figure 3). In terms of potential markets for groundnut and future expansion, the region offers

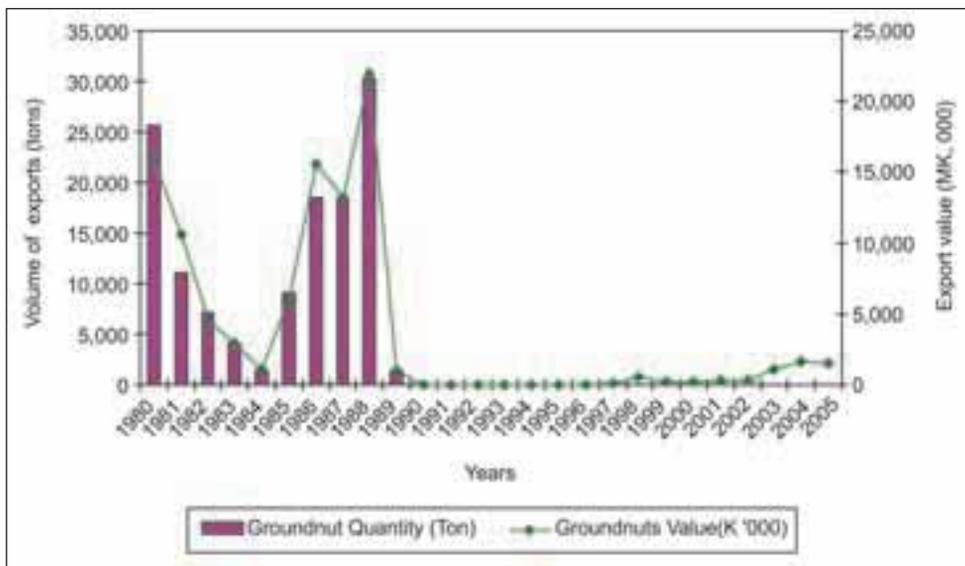


Figure 2. Trend of groundnut exports in Malawi (1980–2005)

Source: FAOSTAT (2005)

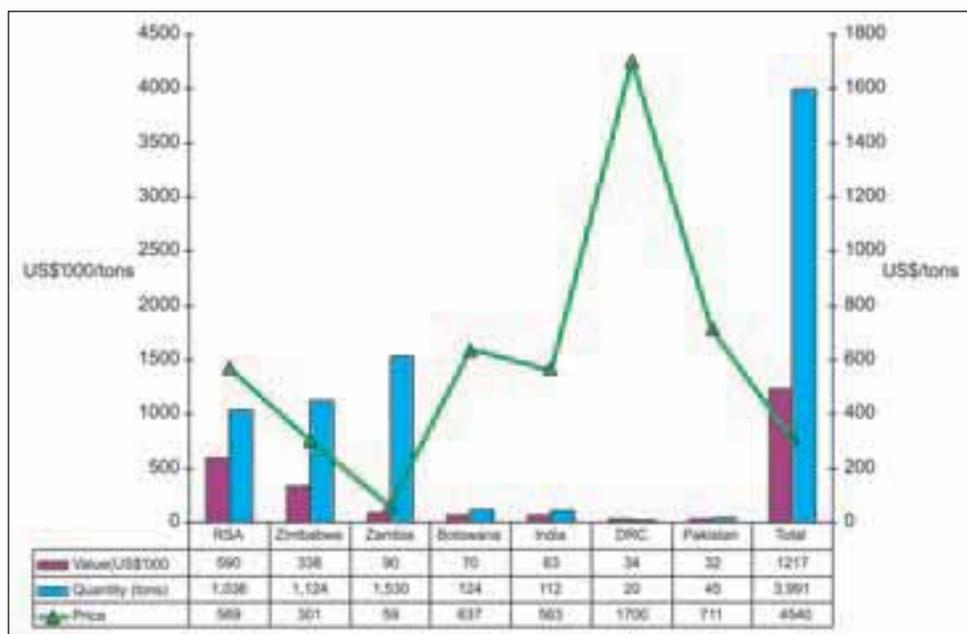


Figure 3. Groundnut export destinations, 2005

Source: FAOSTAT (2005)

the most opportunity. For instance, Malawi is the second largest supplier of groundnuts to South Africa, the first being China. Furthermore, Malawi is the largest supplier of groundnuts to Zimbabwe followed by South Africa, Mozambique, and Zambia (FAOSTAT 2005). However, despite being a small market, the Democratic Republic of Congo (DRC) offers better prices compared to other markets. In 2005, Malawi exported only 20 tons of groundnuts to DRC at US\$1,700 per ton after Cameroon which exported 109 tons.

1.3. Groundnut in the Malawi economy

Groundnut is an important food legume in smallholder agriculture in Malawi, providing approximately 25% of agricultural cash income. The seeds contain 25% digestible protein and 50% edible oil. The surplus is marketed and provides a much-needed cash income to the smallholder farmers. Groundnuts, being a leguminous crop, enrich the soil with nitrogen through biological nitrogen fixation and are therefore valuable in crop rotations and soil improvement. Groundnut hauls are also valuable as fodder for animals and fuel.

1.3.1. Area, production and yield trends

Groundnut area, production, and yields in Malawi have remained fairly stable between seasons in the period between 1983 and 1986 and sharply declined from 1987. The trend generally started increasing again from 1995 (Figure 4). The figure shows that the fluctuating trends of total area and production were closely linked. The steady trend in production between 1983 and 1986 could be attributed to the steady increase in the area of production that may have resulted from favorable rainfall patterns, good marketing arrangements where the entire amount of groundnut produced had a ready market through the Agriculture Development and Marketing Corporation (ADMARC). The declining trends in production and yield between 1987 and 1995 could be due to droughts and erratic rains as shown by the lowest point reached in 1992 when Malawi experienced a severe drought and again in the drought of 1994. Erratic rains lead to untimely planting as farmers keep waiting for good planting moisture. Late planting leads to low yield due to diseases and poor pod filling (Chiyembekeza et al. 1998). The increase in production and yield between

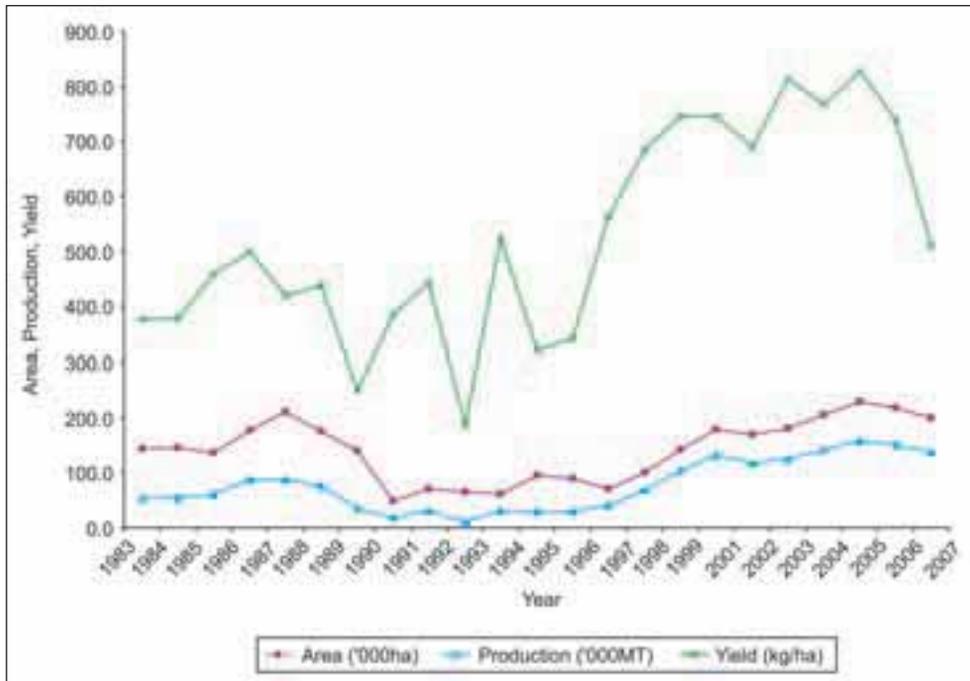


Figure 4. Groundnut production trends in Malawi

Source: Ministry of Agriculture Annual Reports: Various years (1985–2007)

1995 to the present could be attributed to the injection of improved adapted varieties and recommended practices into the system.

Other factors that affect production and productivity include poor pricing structure and lack of lucrative export markets. The poor price structure is a disincentive to increase production because groundnut is a labor-intensive crop and the low prices mean that farmers cannot make a profit and therefore cannot increase the area of production. The export market creates demand and hence drives the production.

Research plays an important role in determining production and yield trends. One reason that led to the decline in yield and production trends was that during the 1987–1995 period, the groundnut varieties that were being planted were the local varieties which had low yield potential compared to the improved varieties listed below (Table 2). It can be seen from the table that potential yields of CG 7 and ICGV SM 90704 (Nsinjiro) are higher than those of Chalimbana, a commonly grown local variety.

Table 2. Variety, type and potential yield of different groundnut varieties in Malawi

Variety	Type	Potential yield (kg/ha)
CG 7	Improved (Virginia)	2000
ICGV SM 90704	Improved (Virginia)	2000
Chalimbana	Local (Virginia)	1500
Gambia (Malimba)	Local (Spanish)	1000
JL 24	Improved (Spanish)	1500

Source: Chiyembekeza et al. (1998)

The improved varieties entered the production system in Malawi in 1990 when CG 7 was released. The yield trend may therefore be increasing as groundnut producers adopt more and more of the improved varieties and the associated production practices. From 1990 to date, the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) and the Malawi NARS have released five varieties namely CG 7, ICGV SM 90704 (Nsinjiro), JL 24 (Kakoma), ICG12991 (Baka), and ICGV SM 99568 (Chitala). CG 7 and JL 24 are commonly grown varieties in the plateau and lakeshore areas respectively. Sales data from the National Smallholder Farmers' Association of Malawi (NASFAM) for 2005 shows that there was more CG 7 sold than Chalimbana. It is estimated that more than half of the country's production is now comprised of the improved variety, CG 7, hence the increasing yield trend.

1.3.2. Description of groundnut-based farming systems in Malawi

Groundnut is mostly grown by resource-poor farmers, particularly women farmers. For this reason, groundnut is referred to as a woman's crop in Malawi (Ngulube et al. 2001). Farmers grow groundnut as a sole crop or in combination with cereals such as maize (*Zea mays*). Although farmers sometimes grow groundnut and maize together, the groundnuts often do not do well because this crop requires a lot of sunshine and the shading effect from the maize reduces yields. Therefore, the crop is mostly monocropped.

Groundnut grows well in the plateau areas with deep, well-drained sandy loamy soils (Chiyembekeza et al. 1998). The crop is mainly produced in

the Lilongwe-Kasungu plain, the Mchinji district in the central region of Malawi and some areas in Salima as well as along the lakeshore. Other areas of the country also grow groundnuts but the bulk of the crop, 70%, is produced from the central region (Ngulube et al. 2001). Generally, groundnut is grown in all areas where tobacco and maize are grown. This has implications in terms of competition for labor. The very same farmers who grow tobacco and maize also grow groundnut and because maize is the staple food and tobacco is the main cash crop in these areas, groundnut is frequently given the last priority and planting is done after tobacco and maize. It has been demonstrated through on-station and on-farm experiments that late planting results in low yield due to diseases and poor pod filling (Chiyembekeza et al. 1998).

1.3.3. Production constraints, challenges and opportunities

Hilderbrand (1995) identified the cost of credit and inputs, unattractive prices, and water scarcity as the most important constraints in groundnut production. Today, the list of sticking constraints may look quite different: competition with more lucrative cash crop, tobacco; poor access to improved seed and inadequate crop management practices. Many farmers in communal areas tend to grow only traditional varieties with mostly low yield potential. Although improved cultivars and management practices have been recommended to farmers, groundnut yields in Malawi are still very low.

The decline in productivity of groundnuts is due to several constraints that smallholder farmers encounter. These constraints include use of low yielding materials, declining soil fertility through poor crop management and low nutrient application, inadequate support services such as extension services and credit facilities, pests and diseases, and a clash in labor demand (Kumwenda and Madola, 2005). Groundnut yields are poor because of the low, unreliable rainfall, often with midseason drought. The planting season is prone to drought whereas irrigated land comprises only 25,000 ha (0.6% of total arable land). The average area planted to groundnuts cannot be significantly increased because of the small fragmented nature of land holding.

Groundnut production is labor intensive and additional labor is required especially for stripping, shelling and even grading. Results from a gross

margin experiment (Ngulube et al. 2001) reported that stripping and shelling were the major labor demanding activities in groundnut production and contributed to about 40% of the total production cost. Manual labor and hand-hoe technologies account for 85% of farm operations; only a few smallholder farmers use draft animal power.

Availability of seed is another major drawback because seed supply is seasonal and production is dependent on weather and price fluctuations. The private sector does not readily invest in seed production for a number of reasons – low multiplication factor, the recycling of seed planted by farmers as well as issuance of free seed by some institutions from time to time. Seed production is mainly in the hands of smallholder farmers. When a crisis arises, farmers often sell or consume what they would have originally put aside as seed.

Kumwenda and Modola (2005) reported that low producer prices were one of the major marketing constraints facing smallholder farmers. Grain prices tend to rise near planting time; farmers are able to get a higher price at that time than if they sell at harvest. The ability to store grain rather than producing superior quality grain earns a premium. Other challenges that were identified included: lack of information on high-value crops, difficulty in accessing finances for exporting, poor support and advisory services, and lack of expertise on marketing skills. Access to markets due to poor road networks in the rural areas was also identified as one of the problems. The dominance of smallholder farmers in groundnut production poses a great challenge to buyers in the sense that it is costly to assemble the commodity at one point if the trader is buying large quantities. This increases handling and transport costs as well as product losses. In the remote rural areas vendors operate in consent with transport providers in circuit markets, thus overcoming poor inter-regional arbitrage, one of the most significant obstacles to trade. Small traders have not, however, the financial means or storage capacity to engage in inter-seasonal arbitrage and thus are committed to a continuous cycle of buying and selling.

New breeding technologies have produced a range of improved varieties adopted to particular end users or to specific growing conditions. Several high-yielding varieties have been developed to address constraints such as pests, diseases, and drought. The notable varieties included JL 24, CG 7,

and Baka. Most of the progress so far has been made in breeding these cultivars, which are either high yielding under no stress situations or have resistance/tolerance to a single stress factor. Therefore, there is need to select for multiple resistance/tolerance to the host of biotic and abiotic constraints limiting groundnut production at the farm level. The selection process, however, should involve all stakeholders to verify the suitability and acceptability of the technologies. To achieve this, ICRISAT through the McKnight Foundation Project has introduced a component of participatory plant breeding. Farmers face difficult times when it comes to stripping groundnuts especially with Baka because of its small pod size. Shelling of CG 7 is also a labor demanding activity as one of the postharvest activities. Labor-saving technologies such as groundnut strippers and shellers have been developed to reduce the drudgery.

The establishment of NASFAM helped ease the marketing constraints facing rural farmers. These farmers formed associations where they sell their groundnuts without traveling long distances to reach the market. The liberalization of markets also allowed private traders to venture into groundnut trading, thereby increasing the market base while simultaneously improving producer prices. Certain innovations such as the groundnut-shelling machine invented by ICRISAT can promote the marketing of groundnuts in rural areas. With the use of the machine, most farmers will be able to process the nuts to oil thereby increasing their marketing opportunities.

2.0. STUDY OBJECTIVES AND METHODOLOGY

2.1. Objectives

2.1.1. Overall objective

The overall objective of this study is to find practical solutions to address the low food and nutrition security, and low incomes of smallholder farmers in Malawi through groundnut productivity and improved marketing arrangements. This is in tune with Theme 1 (sustainable economic growth) of the Malawi Agricultural Strategy and its sub-theme 3 on promoting food security.

2.1.2. Specific objectives

The specific objectives of the study were to:

1. identify and assess production and marketing constraints and challenges for groundnuts in Malawi
2. explore opportunities and options for more firmly linking groundnut farmers to input and product markets for sustained adoption and improved incomes

2.1.3. Research questions

The study aims at answering the following questions:

1. What are the productivity gaps in groundnuts among smallholder farmer groups in Malawi and what are the opportunities for closing those gaps?
2. To what extent are current research efforts tuning and tuned to the farmer and market preferences for groundnuts?
3. What are the key farm household characteristics driving the production of groundnuts in Malawi?
4. How much of the produced groundnuts are consumed by farm households and in what forms?
5. What are the main pathways and magnitudes of groundnut marketing in Malawi and who are the key marketing participants?
6. What are the factors determining the pricing of different types of groundnuts? Spatial and temporal dimensions? How can price volatility be minimized?
7. How can price efficiency be improved?
8. What are the export destinations of Malawian groundnuts and the factors determining the direction and magnitude of these groundnuts? And how have these trends fluctuated in the past 20 years?
9. What are the potentials for improved policy and institutional arrangements (formation of farmer groups, farmer associations, collective action enhancement, contracting, etc.) in improving the production and marketing of groundnuts?
10. What are the potentials for increased dialogue between farmers and processors and long distance exporters?

2.2. Study location

The study involved groundnut farmers and traders who are important stakeholders in groundnut production and marketing in Malawi.

The household survey was conducted in the lakeshore district of Salima, which is about 90 km from the capital city, Lilongwe (Figure 5). This district is in Salima Rural Development Project (RDP), which falls within Salima Agricultural Development Division (ADD). Salima district was selected because it is one of the major groundnut growing districts in Malawi, and, in addition, ICRISAT has been promoting new groundnut varieties in the district, mostly small-seeded varieties, and has established seed bank structures in selected villages to enhance uptake of these technologies. Salima district was also selected based on the fact that it does not have organized groundnut marketing systems like other districts and, therefore, the study would be able to establish the various marketing channels available to the farmers. The traders' survey was conducted in Kasungu, Karonga, Lilongwe, Mzimba, and Salima districts, which are some of the major groundnut growing districts in the country. This involved interviews with groundnut buyers in different locations in the districts.



Figure 5. Location of Salima district in Malawi.



Figure 6. Study sites in Salima district.

2.3. Study methodology

2.3.1. Sampling procedure

The survey was conducted in all the four extension planning areas (EPAs) in Salima RDP namely, Chipoka, Chinguluwe, Khombedza, and Tembwe (Figure 6). Within an EPA, a section where ICRISAT already had an intervention was purposely selected. The selected section was divided into two village clusters: one representing target villages for ICRISAT projects and the other representing non-target villages. One village was selected from each of the clusters and nine farmers were randomly selected from each village representing a total of 18 farmers per EPA, which resulted in a sample size of 72 households.

Respondents in the traders' survey were those that the team came across buying or selling groundnuts in different locations in the selected districts

at the time of the survey and 10 traders were targeted per district. The sampling procedure was mainly purposive but random sampling was used if there were many traders at one particular location. The team also interviewed known large-scale agricultural produce traders and processors across the country. At the end of the survey, 35 traders had been interviewed.

2.3.2. Data collection

The study employed both quantitative and qualitative methods of data collection. Two surveys were conducted to collect quantitative data from both the groundnut farmers and traders. The enumerators administered a questionnaire to the selected farmer households in Salima district and designed and administered a different questionnaire to the traders in the four selected districts.

In many instances, social researchers' heavy reliance on quantifiable variables has not served well in understanding the true dynamics of socioeconomic variables that influence a household's production and selling of products. In addition, the single respondent has often been a male member of the household who may or may not have a direct role in production and may provide biased information on the production system. In view of this, it was essential to complement quantitative data in selected aspects of the market and output for which separate sample surveys were done. Therefore, the research process applied complementary methods of qualitative participatory approaches, specifically, focussed group discussions (FGDs), where discussions were held with at least 15 farmers and other stakeholders in the study areas.

Prior to data collection, for both studies, the enumerators were first trained by the principal researchers on techniques of administering the questionnaire for collecting agronomic and socioeconomic data. This involved explaining all the questions to the enumerators in detail. This was done to ensure that the enumerators understood what each question was trying to elucidate and so that they would ask the same questions to the respondents, thereby minimizing enumerator bias and other errors. Pre-testing followed the training of enumerators. This was aimed at detecting problems in the wording of questions bearing in

mind that the questionnaire was written in English but administered in Chichewa. The pre-testing exercise also allowed the enumerators to be exposed to real field situations and get used to the questionnaire. After this, all the necessary changes were made on the questionnaire that was administered to the selected or sampled households in the villages and to the buyers.

2.3.3. Analytical techniques

The data was mostly subjected to descriptive statistical analyses to establish the groundnut production and marketing trends and also to establish relationships between different variables in order to explain certain key features in the groundnut industry.

3.0 FARM HOUSEHOLD CHARACTERISTICS AND THEIR INFLUENCE ON GROUNDNUT PRODUCTION

The focus of this chapter is to highlight the characteristics of the sampled households in Salima RDP and assess how they affect groundnut production (Table 3). Some of the important factors that influence production include age, household size, land availability, and education which have a bearing on labor availability, scale of production, and decision making in the process of production for any commodity.

The average age of household heads in Salima RDP is reported to be 44 years. The ages of respondents in the sample ranged from 20 to 80 years. Chinguluwe EPA had an average age of 46.5 years, the highest among the four EPAs. Chipoka registered the lowest average age of household heads (38.3). The mean household size was lowest in Tembwe EPA (5.7) and highest in Khombedza (7.1). The average age for all the EPAs that falls within the category of active individuals and the household sizes provide the basis to conclude that the population in Salima mostly comprises a young and active generation of people who could provide potential labor for the production of different commodities including groundnut.

Table 3. Characteristics of farm households in Salima

Description		Chinguluwe	Khombedza	Tembwe	Chipoka	Total
Respondent (number)		18	18	17	18	71
Respondent (%)	Male	77.8	88.9	76.5	66.7	77.5
	Female	22.2	11.1	23.5	33.3	22.5
Mean age of respondent		46.5	45.4	45.7	38.3	44.1
Mean household size		5.8	7.1	5.7	5.8	6.1
Mean years of farming		15.8	17.3	15.2	16.1	16.1
Education (%)	Illiterate	11.1	16.7	5.9	33.3	16.9
	Primary	77.8	72.2	88.2	61.1	74.6
	Secondary	11.1	11.1	5.9	5.6	8.5
Mean household income per year (MK)		27,328	46,254	54,635	48,450	50,575
Mean household expenditure per year (MK)		26,404	28,977	17,788	22,046	20,084

Source: ICRISAT survey data (2006)

The study also demonstrated that more than 75% of the respondents have gone through formal education and according to technology diffusion theory this means that technology uptake is likely to be high because of high levels of education. Education is generally regarded as an essential element in any development process. Educated farmers are believed to be in a better position to understand agricultural instructions, extension services, and technology adoption procedures than uneducated farmers and are therefore likely to be the first to utilize new technologies.

The survey highlights the fact that all the households sampled in Salima derive their livelihoods from agricultural activities. The bulk of their income is generated from the sale of agricultural commodities. The mean income of the households was highest in Tembwe EPA where it was found to be MK 54,635.00 per household per year. Compared to the other EPAs, Tembwe EPA is better off as can be seen from the statistics.

Some of the major crops grown in Salima are maize, groundnut, and cotton (Table 4). Maize is a staple food crop for the country, mostly grown to satisfy subsistence requirements for the majority of households. Groundnut is also a major crop that is gaining momentum after its production drastically

declined over the past few years due to shifts in policy priorities, mainly the liberalization of tobacco production which saw a number of farmers shifting from groundnut to the more profitable tobacco production. Due to increased efforts in research and extension services, many varieties have been developed and disseminated through different channels to farmers so that groundnut production continues to surge as it is now being purchased at improved prices due to the liberalization policies in the country and the opening up of many export markets. Cotton is one of the major cash crops for households in Salima district. Table 4 shows the average area in each EPA allocated to the three most important crops in Salima and the average yield realized. The result shows that among the three crops, groundnut has the least amount of land allocated to it. This could be attributed to problems of accessing groundnut seed, which is one of the reasons that farmers cited as a major cause for low production in Salima.

Table 4. Crop production by area allocated in the four EPAs studied

EPA	Maize		Groundnut		Cotton	
	Production (kg)	Area (ha)	Production (kg)	Area (ha)	Production (kg)	Area (ha)
Chinguluwe	702.5	0.70	1268.6	0.4	475.8	0.54
Khombedza	1100	0.83	1085.3	0.52	223.8	0.53
Tembwe	787.6	0.66	584.3	0.27	121.3	0.49
Chipoka	798.6	0.6	798.6	0.26	159.7	0.38
Average	791.1	0.7	633.4	0.37	236.9	0.48

Source: ICRISAT survey data (2006)

Income plays a very important role in any production process. In the case of agriculture, income is used to acquire inputs such as fertilizers, seed, etc. Farmers can also use the income from agriculture to rent land if the available land is inadequate to meet household production objectives. In some areas of Salima, land is a limitation and therefore in such circumstances, the household income differentials result in disparities in terms of agricultural output among households since those that do not have money cannot afford to rent land. Figure 7 demonstrates a relationship between groundnut yield and household income levels. The higher the income, the higher the yield per ha. The plausible explanation is that as a result of having more money, households are able to manage their fields better by hiring labor as well as applying yield-enhancing inputs such as fertilizer

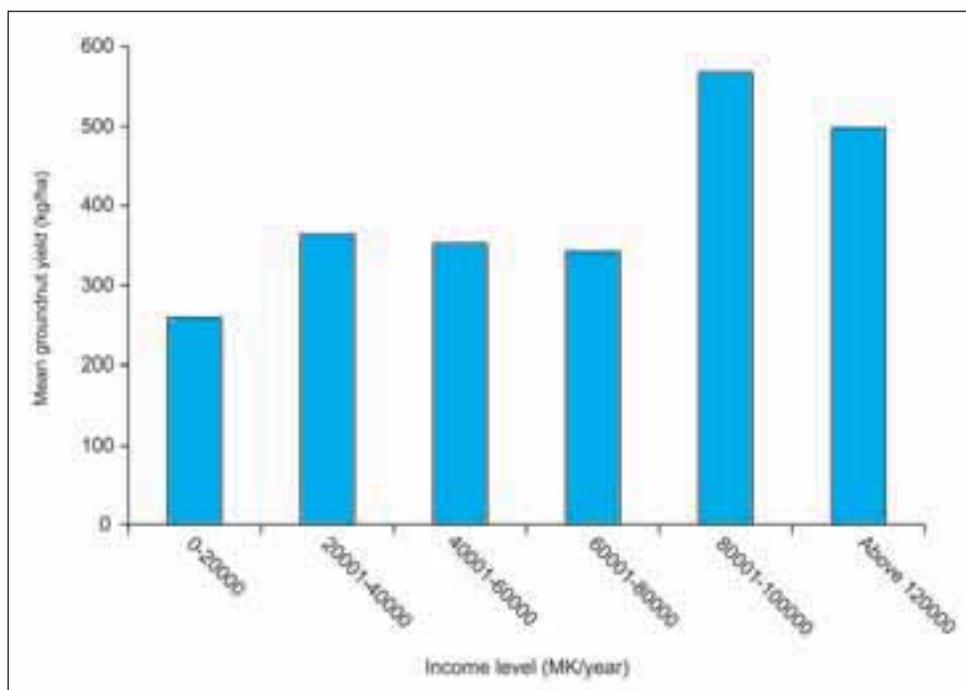


Figure 7. The relationship between household income and yield of groundnuts in Malawi

Source: ICRISAT survey data (2006)

and improved seed. In addition, the higher incomes enable households to buy high-yielding improved groundnut seeds, thus explaining the yield differentials among households with varying income levels.

Household labor is a function of many variables – one of which is household size. The assumption is that the greater the number of members in a given household, the more labor is available. The survey has demonstrated that households with more labor realized higher yields, perhaps confirming that labor is one of the crucial factors influencing the production of groundnuts (Table 5).

Table 5. Effect of household size on groundnut yield per ha

Household size	Proportion of households (%)	Mean groundnut yield (kg/ha)
1-3	11.3	179.0
4-6	49.3	309.9
7-9	32.4	452.5
Above 10	7.0	720.0

Source: ICRISAT survey data (2006)

3.1. Groundnut production technologies

From the 1980s, groundnut production in Malawi and the SADC region as a whole has declined. The decline is due to a number of constraints ranging from biotic (rosette epidemics) to abiotic (harsh weather), and marketing problems and poor pricing policies (Chiyembekeza 1999). In response to the declining trend, SADC Heads of State invited ICRISAT to start a groundnut project in 1982. ICRISAT was mandated to develop a groundnut breeding program to develop germplasm lines with characteristics that could help stabilize groundnut production in the region. With funding from GTZ, the legume improvement program was started and implemented for 15 years. During the period the project developed and distributed germplasm lines to SADC breeders.

3.1.1. Improved varieties

Groundnut production in the SADC region is constrained by a number of biotic and abiotic stresses such as insect pests, diseases, drought, and low soil fertility (Freeman 1999). Rosette epidemics and groundnut leaf spots frequently reduce groundnut yields. The germplasm lines bred by the SADC–ICRISAT groundnut project has led to the release of more than 20 improved groundnut varieties in the SADC region with different traits that provide solutions to a number of production constraints. These varieties are higher yielding than the local varieties in the countries of release. Five varieties have been released in Malawi alone (Table 6).

The varied characteristics provide a leeway to some of the major constraints and could therefore stabilize production if adopted by farmers. Rosette disease comes in 5-year cycles in Malawi. In drought years, it is more serious and yield losses can be as high as 100% depending on the stage of infection. Normally if rosette occurs at flowering, yield losses are very large. The early-maturing varieties provide farmers in areas with erratic rain an opportunity to escape the effects of drought. The varieties with higher yield potential provide an advantage of increased production per unit area in comparison with the local varieties.

Table 6. Varieties, year released, and other characteristics

Variety name	Year released	Potential yield (kg/ha)	Other characteristics
CG 7	1990	2500	Medium duration, wide adaptation, recommended for all plateau areas, with high oil content and medium seed size
Nsinjiro	2000	2500	Medium duration, wide adaptation, recommended for all plateau areas and resistant to rosette disease and with medium seed size
Kakoma	2000	1500	Early maturing, small seeded, susceptible to rosette, adapted to short season areas
Baka	2001	1500	Early maturing, small seeded, rosette resistant, adapted to short season areas
Chitala	2005	1500	Early maturing, rosette resistant, slightly small seed size, adapted to short season areas

Source: Chiyembekeza 1999

The varieties developed thus far match well with export requirements – some varieties such as Nsinjiro are in the confectionary category whereas CG 7 fits into the oil category. However, the export market requirements do not remain static. The challenge to ICRISAT’s breeding program is to therefore remain focused on the changing market environment while responding to farmer, consumer and weather factors.

3.1.2. Agronomy

Agronomic research for ICRISAT over the years has focused on plant population, time of planting and weeding. This work has resulted in a package of recommendations on plant populations for each type of variety.

3.1.3. Technology transfer

The package of recommendations drawn after the many years of research has been taken to farmers through strategic partnerships with NGOs and farmer associations. ICRISAT in collaboration with NARS in the region and Malawi NARS in particular as well as NASFAM have demonstrated

and continue to demonstrate the benefits of using the recommended groundnut production packages.

Seed systems – Legume seed availability is quite often a constraint to increasing production and groundnut is no exception. ICRISAT has developed a seed revolving fund and community seed banks to make groundnut seed readily available. The seed revolving fund makes seed available through contract seed production and the seed is sold to NGOs and the general public. The community seed banks make seed available to smallholder farmers through seed loans paid back in kind. The repayment rate is double the amount of seed taken. The seed banks in Salima have provided seed to many farmers in the target EPAs with funding from the Development Fund (DF) of Norway. The seed continues to increase annually at an exponential rate and over the years the seed banks have proved to be effective in the dissemination of new varieties. The spillover effect of JL 24 in Tembwe EPA's non-targeted areas is evidence that there is a high demand for these varieties. To date, seed bank groups have accumulated more than 15 tons of seed in the project area.

Processing, shelling, and quality control – Groundnut requires different processing technologies at the various stages in the production chain. There is need to have technologies for stripping, shelling, oil pressing and making peanut butter. In 2002 ICRISAT introduced small- and medium-size machines for stripping groundnuts as well as smaller machines for oil extraction and making peanut butter. The latter is aimed at enhancing consumption at the household level and supporting the development of small enterprises.

3.2. Quality assurance systems design in support of groundnut export trade

3.2.1. ICRISAT–NASFAM partnership

Quality assurance systems not only contribute to generating good quality produce for the market, but also ensure that farming communities are not exposed to the risks associated with the consumption of contaminated food products. ICRISAT has been using a hazard analysis and critical control point (HACCP)-based quality assurance approach to monitor and reduce

the risks of aflatoxin contamination in groundnut produced by farmers affiliated to NASFAM.

Realizing that groundnut exports to high-value markets in the EU are regulated by stringent food safety requirements designated as maximum allowable levels (MALs) of aflatoxin contamination, ICRISAT assisted NASFAM in ascertaining the levels of aflatoxin contamination of the groundnut consignments prior to shipment in order to reduce the risk of rejection at point of entry in the importing countries. Quality control helps to sustain a share on the international market. To do this, ICRISAT established an aflatoxin analysis laboratory at ICRISAT-Lilongwe in 2004.

3.2.2. Aflatoxin analysis, quantification and results

Through the ICRISAT–NASFAM partnership ICRISAT-Malawi provides technical support to NASFAM associations to produce groundnut that satisfies the requirement of international export markets. In order to verify farmers' adherence to process standards that reduce aflatoxin throughout the groundnut production and marketing chain, ICRISAT uses the ELISA technique to analyze groundnut samples drawn from farmers for aflatoxin contamination. Aflatoxin analysis and estimation acts as a tool for applying performance checks to complement the process standards in the groundnut production and marketing chain.

Of the 3945 groundnut samples analyzed, 57% of the groundnuts sampled from Malawi Small Farmers Association (MASFA) were aflatoxin-free. Seventeen percent of the remaining consignment had aflatoxin levels of the range 1.0–2.0 ppb and 12% of the groundnut samples registered aflatoxin levels between 2.1 and 4.0 ppb. The last 14% of the groundnut samples contained >4.0 ppb of aflatoxin (Figure 8; NASFAM Annual Report 2005).

These results show that at least 86% of the groundnut from NASFAM was fit for the export markets that allow up to 4 ppb aflatoxin. The 0 and 1–2 ppb aflatoxin levels are within the range of many buyers; hence NASFAM was able to sell even to Fair Trade markets in the UK where premium prices are offered. MASFA is now Fair Trade certified through the joint efforts of ICRISAT and NASFAM.

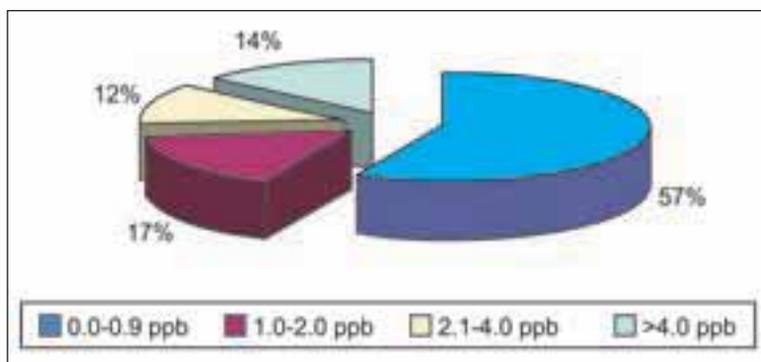


Figure 8. Prevalence of aflatoxin in groundnut produced by NASFAM farmers in Magawa during the 2004/05 season.

Source: NASFAM Annual Report 2005

3.3. Groundnut productivity across the EPAs

Groundnut yields were generally lower in Salima district in the 2005/06 season compared to the 2004/05 season except in Tembwe EPA (Table 7). The highest average yield was realized in Chinguluwe EPA (1056.3 kg/ha) whereas the lowest was at Tembwe EPA. Despite it being a good season, yield in the 2005/06 season was lower than those of the 2004/05 season.

Table 7. Groundnut yields by EPA in Salima district

EPA	Mean groundnut yield (kg ha ⁻¹)	
	2004/05 season	2005/06 season
Chinguluwe	1056.3	580.8
Khombedza	853.5	750.3
Tembwe	486.5	794.4
Chipoka	628.0	580.4

Source: ICRISAT survey data (2006)

3.4. Groundnut varieties and their yields in 2005/06 in Salima district

The study findings showed that CG 7, Gambia, and JL 24 were the most common varieties grown during the 2005/06 season. However, the

proportion of farmers growing these cultivars varied across EPAs. In Chipoka EPA, most farmers (77.8%) grew JL 24 whereas in Tembwe EPA the greatest proportion (about 65%) grew Gambia. In Khombedza EPA most farmers (56%) planted CG 7. In Chinguluwe EPA most farmers planted JL 24 (Table 8). The three varieties are common in Salima because CG 7 is a medium-duration variety whereas JL 24 and Gambia are short-duration varieties. Generally, the proportion of farmers who planted JL 24 (43.7%), Gambia (35.2%), and CG 7 (32.4%) were higher than the other varieties grown in the district. This was the case because ICRISAT has been promoting JL 24 and the government has been promoting these varieties in the district through seed banks and smallholder seed production through contracts respectively. Gambia has been there for a long time because it is the most adapted local variety for Salima. Nsinjiro is preferred because it resembles the local variety Chalimbana which many farmers and buyers like.

Table 8. Varieties cultivated across EPAs

EPA	Proportion of farmers who cultivated a specific variety (%)				
	Chalimbana	CG 7	Gambia	JL 24	Nsinjiro
Chinguluwe	n/a	33.3	11.1	50.0	n/a
Khombedza	n/a	55.6	44.4	16.7	n/a
Tembwe	5.9	23.5	64.7	29.4	n/a
Chipoka	n/a	16.7	22.2	77.8	16.7

Source: ICRISAT survey data (2006)

Groundnut yields varied greatly by variety in both seasons. The average yield of Chalimbana was 856 kg ha⁻¹, almost 50% of the potential yield. The drop in Chalimbana could be attributed to the fact that the variety is recommended in plateau areas of altitude of 1000 to 1500 m above sea level whereas the altitude for Salima is about 600 m above sea level which is characterized by short rain seasons that are erratic in nature. The average yield of CG 7 was 958 kg ha⁻¹ yet the potential yield could be more than 2000 kg ha⁻¹ if recommended practices were followed (Chiyembekeza et al. 1998).

These results are in support of the fact that growing local varieties that are typically of lower yield potential will result in reduced yield and production. As is visible in Figure 9, both Chalimbana and Gambia produced lower yields compared to CG 7, JL 24 and Nsinjiro, all of which are improved varieties.

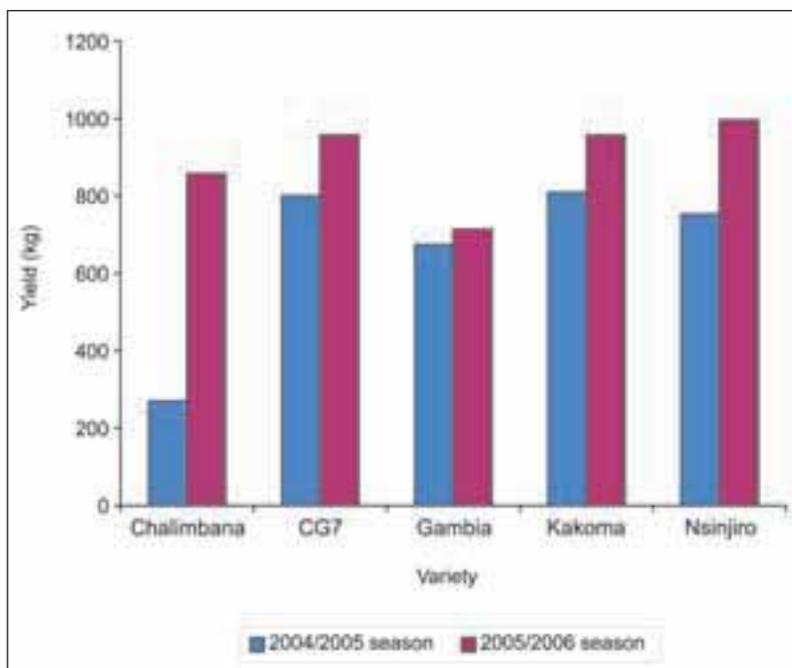


Figure 9. Average groundnut yield per hectare

Source: ICRISAT survey data (2006)

3.5. Groundnut consumption

Groundnuts are widely used as food. The kernel contains approximately 25% protein and 50% edible oil. Generally, farmers in Salima indicated that they consume the nuts as a relish in the form of boiled nuts like beans, as well as roasted nuts and in the raw form. There was not much variation among EPAs in the way they consume groundnut (Table 9).

Table 9. Consumption modes of groundnut

EPA	Proportion of households citing means of consumption (%)		
	Relish ingredient	Relish	Roasted nut
Chinguluwe	34.7	32.7	32.7
Khombedza	36.4	15.2	48.5
Tembwe	37.8	21.6	40.5
Chipoka	36.1	33.3	30.6

Source: ICRISAT survey data (2006)

4.0 GROUNDNUT MARKETING, CONSTRAINTS AND OPPORTUNITIES

4.1. Marketing channels for groundnuts

4.1.1. Marketing channels and types of buyers

Figure 10 describes the groundnut marketing channel in Malawi. The channel comprises producers, middlemen, traders, exporters, and processors. Farmers sell groundnuts to middlemen, traders and exporters. Traders are mainly large-scale buyers who purchase groundnut for retail and wholesale purposes whereas exporters are buyers who buy groundnut

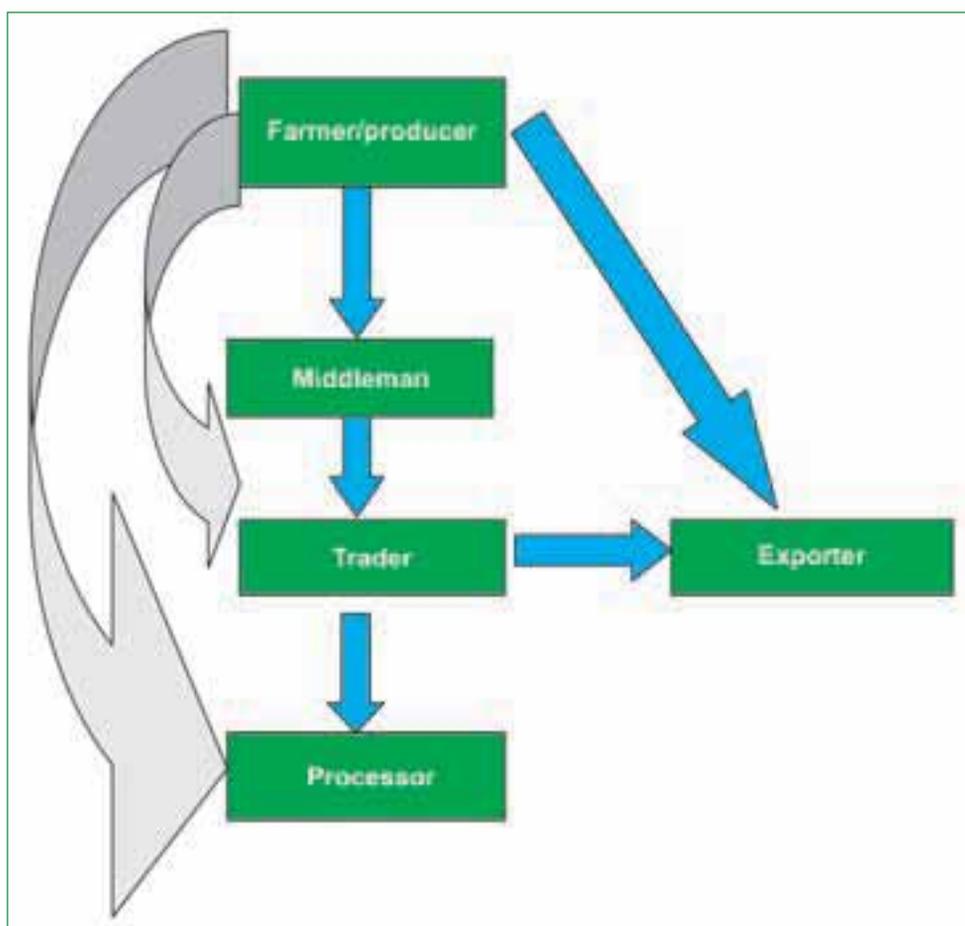


Figure 10. Various groundnut marketing channels

Source: ICRISAT survey data (2006)

mainly for export. The traders buy from farmers and middlemen and subsequently sell to processors and exporters. The main difference between traders and middlemen is in terms of scale of operation and connectivity. The traders are like middlemen but they operate on a larger scale and mostly come from the big cities or outside Malawi. They sometimes employ local people or buy from small middlemen within the community. The traders sell the groundnuts to exporters and processors, who can also buy groundnuts directly from the farmers. The exporters are buyers who are able to repackage (grading and packaging) whereas the processors are buyers who produce various groundnut products such as confectionery, peanut butter, cooking oil. They also have the opportunity to export these products or sell them in supermarkets.

4.1.2. Characteristics of groundnut buyers

Along the groundnut marketing channels the buyers are characterized according to their legal status and size. Using these categories groundnut buyers can be characterized as sole proprietors, partnerships, local private traders (Malawian), foreign traders (especially from Tanzania), and small-, medium-, and large-scale local consumers (local community). Most buyers (52.9%) were sole proprietors, whereas 41.2% were in a partnership, and only 2.9% each were corporations or associations (Table 10).

Table 10. Number and proportion of the various legal business status of traders

Status	Number of traders	Number of traders (%)
Sole proprietor	18	52.9
Partnership	14	41.2
Corporation	1	2.9
Association	1	2.9
Total	34	100

Source: ICRISAT survey data (2006)

The fact that most of the traders operate as sole proprietors dictates the size of the business. Most respondents (44.1%) were medium-sized traders whereas 35.2% of the respondents were small-scale traders (Table 11).

Table 11. Number and proportion of the size of business of groundnut traders

Size of business	Number of traders	Number of traders (%)
Small	12	35.3
Medium	16	47.1
Large	6	17.6
Total	34	100

Source: ICRISAT survey data (2006)

4.1.3. Business functions of buyers

Groundnut buyers perform different business functions according to their sizes. These functions are wholesale, retail, credit provision, local demand forecasting, storage, provision of advisory services and risk bearing. It was established that most of the large-scale traders did not provide credit to the producers and were not involved in the retail business as compared to the small- and medium-scale traders. All the large-scale traders performed wholesale functions and provided advisory services to the sellers. Only 50% of the small-scale traders store their groundnuts and most of them (12.5%) did not provide credit. It was the medium-scale traders who mostly provided credit (Table 12).

Table 12. The degree of buyer involvement in carrying out the business functions

Business function	Proportion of traders of identified sizes performing different functions (%)		
	Small	Medium	Large
Wholesale	80	92.9	100
Retail	81.8	57.1	40
Credit provision	12.5	50	20
Local demand forecast	50	70	80
Storage	50	72.7	80
Advisory services	87.5	88.9	100
Risk bearing	57.1	62.5	80.0

Source: ICRISAT survey data (2006)

4.2. Groundnut pricing

4.2.1. Price determination

There are different ways through which the price of groundnuts can be determined. In the past, the government, through ADMARC, determined the price of groundnuts. However, with liberalization, prices are now increasingly determined by the players in the market. This has resulted in spatial and temporal price variation. The price of groundnuts can be determined by the buyer, seller, or through agreements between the buyer and seller.

The study shows that the buying price is arrived at mainly through agreements between the farmer and the trader as shown by the largest proportion (53%) (Figure 11). It has also been established that the government plays a very minimal role as far as groundnut pricing is concerned (Figure 11). A large proportion of the farmers (35%) indicated that the buyers determined the price and 9% reported that they determined the price themselves.

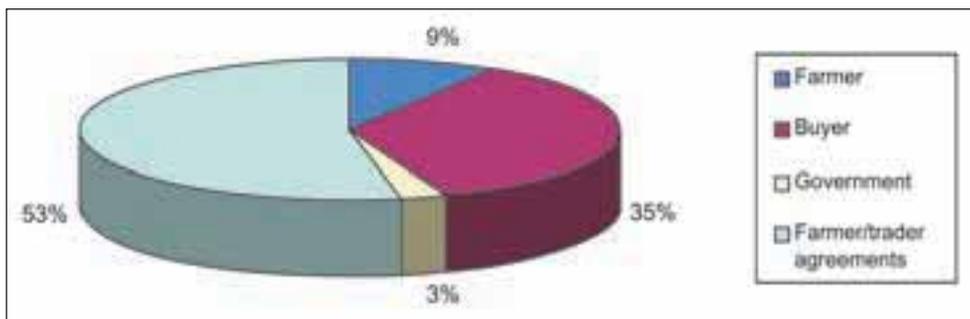


Figure 11. Proportion of farmers reporting determinants of price by category

Source: ICRISAT survey data (2006)

The aggregate figures show that in most cases the price is determined through agreements between the farmer and buyer but this is not the case in all the EPAs. The study shows that more farmers determine prices in Tembwe and Chipoka EPAs whereas in Chinguluwe and Khombedza the price is mostly determined by the buyers (Table 13). The differences between the EPAs are because there are more middlemen and traders operating in Khombedza and Chipoka since they produce more groundnuts.

Table 13. Spatial variation in price determination

EPA	Price determination (%)		
	Farmer	Buyer	Government
Chinguluwe	18.8	81.3	N/a
Khombedza	5.9	94.1	N/a
Tembwe	41.2	58.8	N/a
Chipoka	55.6	38.9	5.6

Source: ICRISAT survey data (2006)

Where farmers determined prices, three methods were used, namely cost of production method, price offered in the previous year, and prices from the neighboring markets (Table 14). The cost of production method involved farmers taking into consideration all costs incurred up to taking the produce to the selling point. Then the farmers added a desirable markup on the costs to act as profit. Only a small proportion (5.6%) of farmers used this method. The highest proportion of farmers in Tembwe EPA used prices that were offered during the previous year.

Table 14. Method of price determination by the farmers

EPA	Proportion of households indicating how prices were determined (%)			
	Cost of production	Price offered previous year	Price from neighboring markets	Other methods ^a
Chinguluwe	5.6	5.6	n/a	88.8
Khombedza	5.6	5.6	n/a	88.8
Tembwe	5.9	29.4	5.9	58.8
Chipoka	5.6	22.2	16.7	55.5

^a These probably include farmers who depend on the buyer to set the price
Source: ICRISAT survey data (2006)

4.2.2 Groundnut preferences and prices

Different prices were observed across the varieties and EPAs as well as during the various times of the year. Farmers mostly sold CG 7 (the highest quantity sold per farmer was 290 kg) because its price was among the highest (MK 24/kg) along with Chalimbana and Gambia which fetched

MK 25/kg. JL 24, which ICRISAT is promoting through the community seed banks, had the lowest price of MK 16/kg (Figure 12). The prices correspond to the variety prices discussed in Section 4.4 which indicate that buyers prefer Chalimbana and CG 7 (Figure 13). It might sound strange why the seed bank is not considering Chalimbana while this is the variety preferred by the industry. According to ICRISAT, JL 24 is being included in the seed bank as a drought avoidance strategy. In the event of rainfall failure, it will at least produce some appreciable yield as compared to the Chalimbana variety.

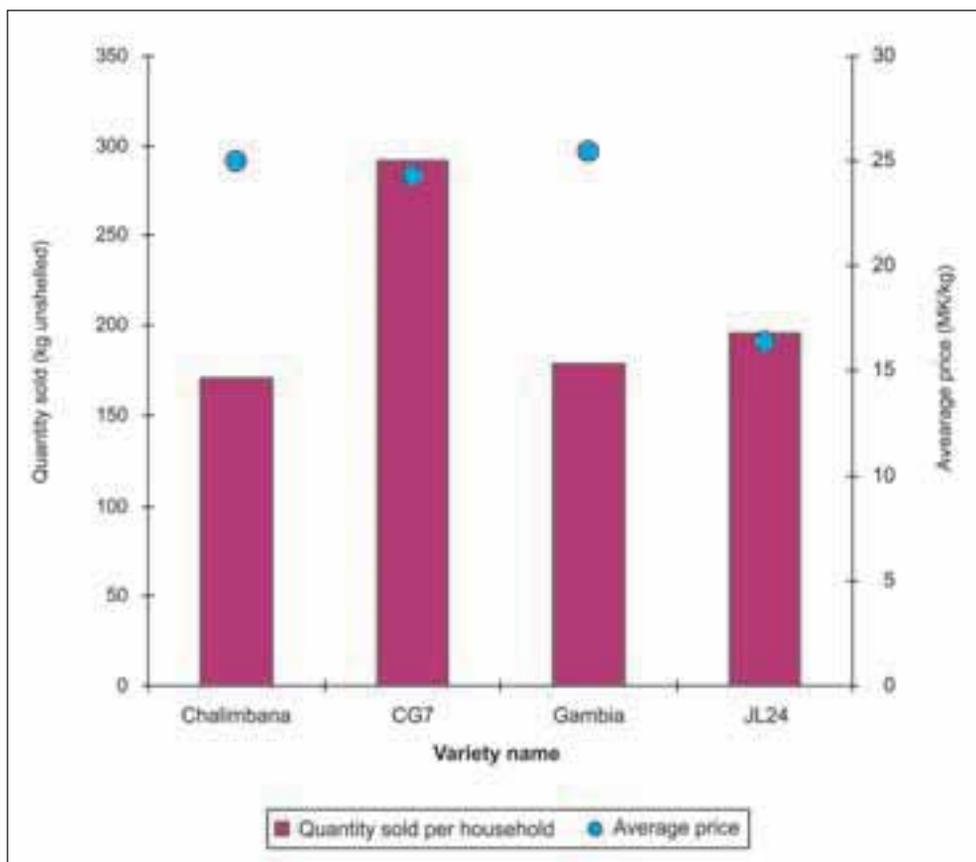


Figure 12. Groundnut price and quantity sold by variety

Source: ICRISAT survey data (2006)

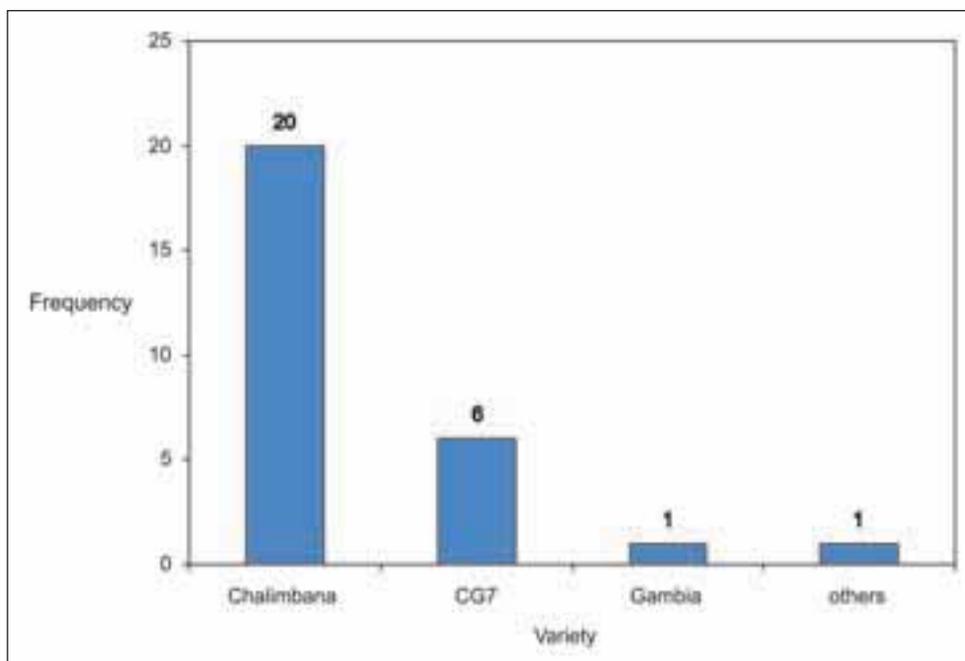


Figure 13. Varieties preferred by groundnut buyers in Malawi

Source: ICRISAT survey data (2006)

Prices were very volatile in all the study areas as there were wide ranges in prices offered. The lowest price offered was MK 18.00 compared to the highest price of MK 42.00 which was offered in Chipoka EPA (Table 15). The highest price could be attributed to an increased number of buyers in the EPA which created competition. The common price used was MK 25.00 in Chinguluwe and Khombedza EPAs whereas Tembwe and Chipoka EPAs had a higher common price of MK 30.00 and MK 32.00 respectively.

Table 15. Prices at which groundnuts were sold in each EPA, 2006

EPA	Variations in prices (MK per kg)			
	Lowest price	Highest price	Mode	Mean
Chinguluwe	18.00	33.00	25.00	22.44
Khombedza	20.00	30.00	25.00	22.94
Tembwe	20.00	35.00	30.00	25.29
Chipoka	20.00	42.00	32.00	24.39

Source: ICRISAT survey data (2006)

One of the biggest constraints to agricultural marketing is the seasonal variation production. Groundnut production in Malawi relies on rainfed agriculture, which affects production and supply of the commodity. Farmers harvest their crop from May to June, the time when supply is high. As a result crop prices are lowest at this time. Farmers who sold their crop soon after harvest obtained lower prices compared to those who opted to sell the crop 6 months after harvest or just before planting (Table 16). This was because right after harvest there was an increased supply over demand whereas 6 months after harvest supply was lower than demand. Consequently, this increased the demand and therefore raised the price of the crop.

There were significant differences in terms of maximum prices offered per kg for the three periods. The highest price was MK 80.00/kg for those farmers who sold their crop 6 months after harvest whereas the maximum price obtained by farmers who sold soon after harvest was MK 42.00/kg.

Table 16. Groundnut prices at different times of the year

Time of sale	Average price (MK/kg)	Percentage increase in price based on the harvest period
Soon after harvest	28.50	-
6 months after harvest	37.95	33
Just before planting	33.33	16

Source: ICRISAT survey data (2006)

4.3. Groundnut marketing information systems

4.3.1. Farmers' market information accessibility

The availability of market information allows farmers to make an informed decision on which crops to cultivate depending on the needs of the market and the prices offered for the various crops. The majority of farmers (58.7%) mentioned local buyers as the main source of marketing information followed by urban buyers (21.7%). The Ministry of Agriculture (MoA) was identified as a source of marketing information in Chinguluwe and Chipoka EPA but with a small influence. It is important to note that there were differences in terms of the intensity of information source across the EPAs with Khombedza EPA citing local buyers most (66.7%) (Table 17). The reasons for these differences are not immediately clear.

Table 17. Proportion of households indicating source of marketing information per EPA

EPA	Proportion of households indicating source of marketing information (%)				
	Local buyers	Urban buyers	Neighbors	MoA	Others
Chinguluwe	50.0	25.0	0	16.7	8.3
Khombedza	66.7	25.0	8.3	0	0
Tembwe	58.3	25.0	0	0	16.7
Chipoka	60.0	10.0	10.0	10.0	10.0

Source: ICRISAT survey data (2006)

4.3.2. Buyers' market information accessibility

Access to market information is very important in setting up and running a successful business. The study indicated that 37% of the traders established contacts for sourcing and selling groundnuts from other businessmen (Figure 14).

The major sources of groundnut marketing information to the farmers were the buyers (Figure 15), neighbors, organizations, radio programs, and local leaders. This shows that there are linkages among the buyers and that the buyers sometimes come through local leaders in conducting their business in the villages.

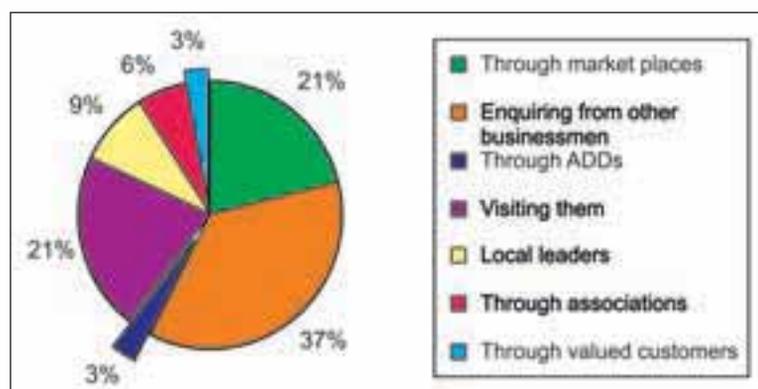


Figure 14. Establishment of contacts for sourcing and selling groundnuts

Source: ICRISAT survey data (2006)

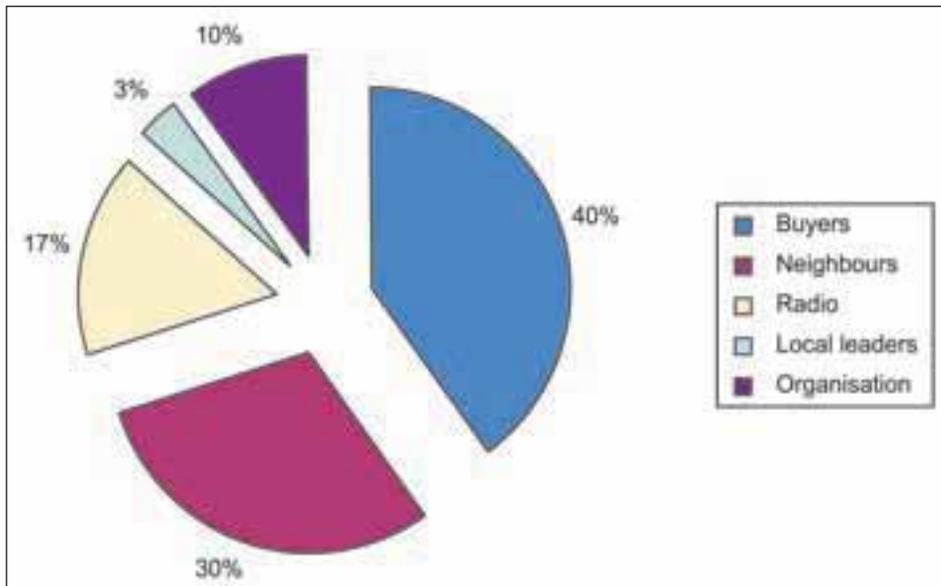


Figure 15. Major sources of groundnut market information

Source: ICRISAT survey data (2006)

A large proportion of buyers reported not having any problems in obtaining market information (78.6%). This is because most of the information was obtained from fellow buyers who have easy access to the local leaders (Figure 16). The main difficulty in obtaining market information was attributed to lack of sufficient networking mechanisms with fellow buyers. This meant that they had to do their own market research and in the process they had to face transportation problems in reaching the farmers (Figure 17).

However, buyers still faced problems in sourcing other types of information required for them to successfully run their business. For example, they found it difficult to obtain information about where to sell groundnuts in large quantities, accurate prices, and where to find steady markets.

Farmers also identified some specific types of information that they wished to get access to. Some of these included where to sell in large quantities, where to get accurate price information, as well as where to source for credit to boost business (Figure 18).

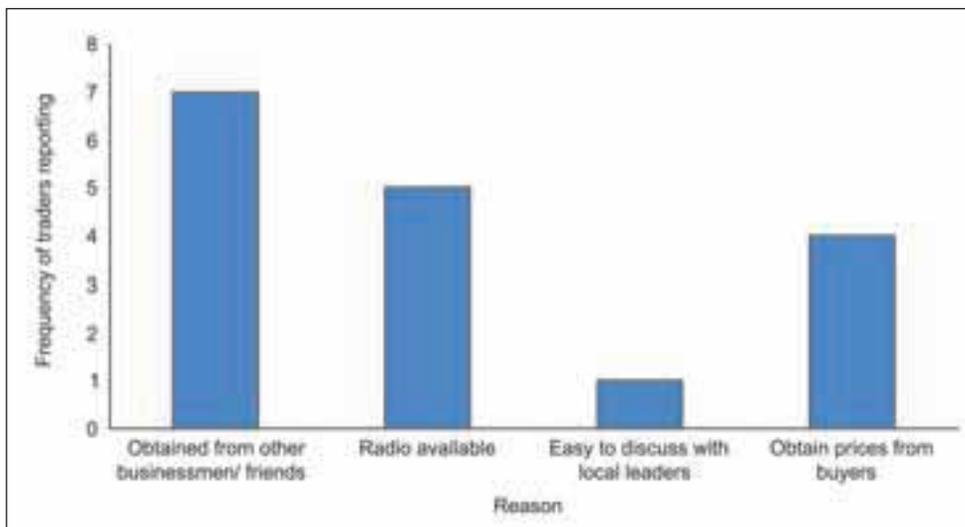


Figure 16. Sources of market information

Source: ICRISAT survey data (2006)

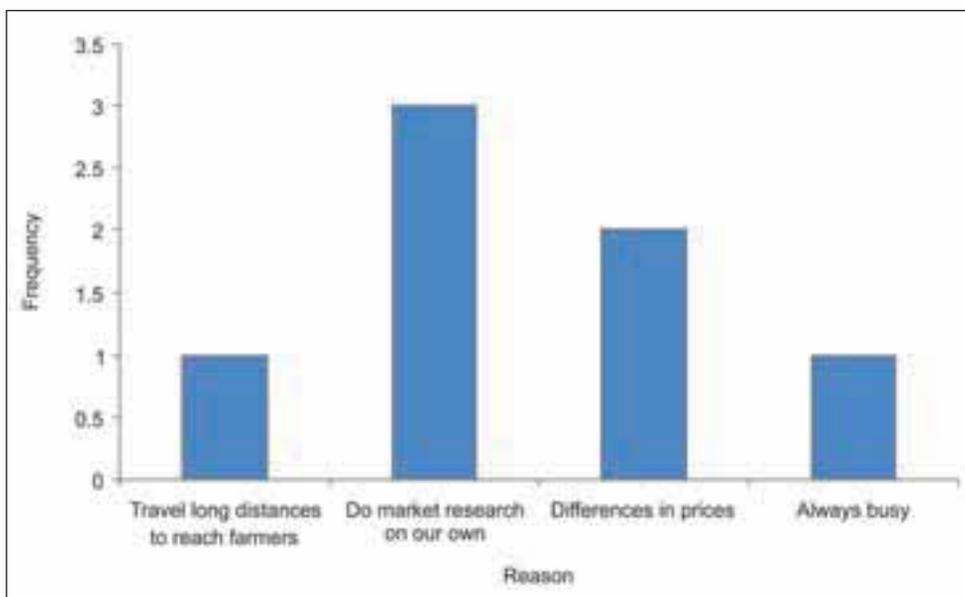


Figure 17. Difficulties in obtaining market information

Source: ICRISAT survey data (2006)

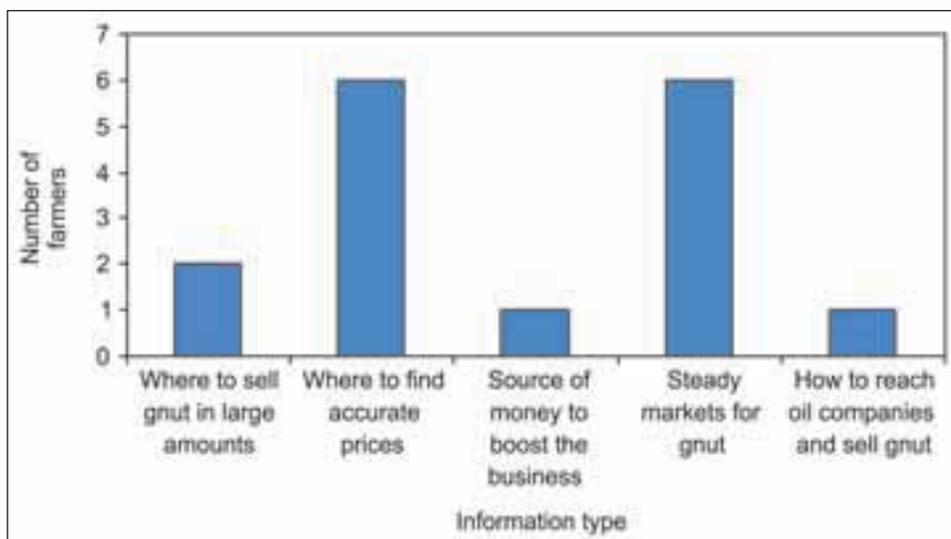


Figure 18. Proportion of farmers mentioning unavailability of particular market information

Source: ICRISAT survey data (2006)

4. 4. Groundnut marketing standards and quality requirements

4. 4.1. Groundnut qualities

In every business, the quality of a product is a very important attribute that determines whether or not a commodity is marketable. In the case of groundnut, buyers have their own preferences depending on what they are going to do with the groundnuts. In all the EPAs more than 50% of the farmers were aware of the quality preferences in the market (Table 18).

Table 18. Proportion of farmers by EPA expressing awareness of groundnut quality market preferences

EPA	Awareness of quality preferences in the market (%)	
	Yes	No
Chinguluwe	68.8	31.3
Khombedza	70.6	29.4
Tembwe	70.6	29.4
Chipoka	50.0	50.0

Source: ICRISAT survey data (2006)

The qualities that the buyers look for range from the phenotypical nature to the purity of the nuts. Groundnut quality has a large bearing on the prices that the buyers offer. If the product does not conform to the set standards of the buyer, the buying price is reduced. The results, as summarized in Table 19, show that 54.8% of the buyers prefer large-grained nuts followed by 9.7% who prefer grain free from insect damage and foreign matter.

Table 19. Qualities of groundnuts preferred by buyers

Quality trait	Frequency	Percentage
Large grains	17	54.8
Grain free from insect damage	3	9.7
Grain free from foreign matter	3	9.7
Red color	1	3.2
Unbroken grain	2	6.4
Well dried nuts	3	9.7
Not rotten	1	3.2
Unmixed varieties	1	3.2
Total	31	100

Source: ICRISAT survey data (2006)

4.5. Groundnut exports and trade

More than half of the groundnuts harvested worldwide are crushed into oil and meal. Consequently, a substantial volume of the groundnut trade worldwide is in the form of oil and meal. However, over the past two decades trade volumes have increased substantially for confectionery groundnuts but fallen for groundnut oil and meal because of loss in competitiveness in relation to substitutes and concerns over aflatoxin contamination in groundnut products.

According to Freeman (1999), global trade in groundnut was projected to slow down from the sharp expansion of the 1980s due to a fall in demand from traditional importers of groundnut oil and meal in the developed countries. A substantial shift was expected in the medium term with the bulk of exports and imports shifting to developing countries. Export growth by developing countries showed to concentrate in Asia and Latin

America; Africa indicated small but positive increases. The United States of America is currently the major exporter, but this may change depending on further developments in American farm policy. In India and China, policy reform in vegetable oil imports will contribute to a modest increase in groundnut oil imports. Oil imports in Africa were shown to increase slightly as production failed to keep up with population growth. Since it is now about 10 years since these estimates were drawn, more recent data and analysis on current trends in groundnut global trade need to be established in order to provide a better basis of making decisions on the development of the sector.

There are indications that utilization will grow fastest in the confectionery sector. This is expected to benefit countries such as Malawi, which already export confectionery groundnuts. Therefore, development of suitable high-quality varieties that can fetch premium prices should be a priority. Groundnut export contributes significant revenues to many developing countries, particularly in Africa. Phytosanitary measures and aflatoxin regulations are therefore expected to become even more important. The exporting countries such as Malawi lack the capacity to deal with these issues and will need continued assistance on how best to address the health and safety concerns of importing countries while increasing market opportunities and income for their own producers.

5.0. POTENTIAL FOR IMPROVING THE SMALLHOLDERS' GROUNDNUT SUBSECTOR IN MALAWI

5.1. Introduction

This section provides a framework for improving the smallholder groundnut sub-sector based on the survey results, literature review of recent policy-based publications and discussions with key informants. The key determinants are technological institutional, economic and policy based. These factors are not mutually exclusive in their behavior towards groundnut sub-sector improvement. And neither do they behave in a linear, step-by-step fashion. An incremental improvement of each of these factors at the same time is what is needed to drive the sub-sector

forward. This implies that spending 100% of the resources on technology is not necessarily beneficial to the sub-sector if no effort is placed on the improvement of markets and institutions.

5.2. Groundnut technologies and their relationship to institutions

The technologies for increasing groundnut yield have been developed and have demonstrated yield benefits where they have been adopted by farmers. Farmers who planted improved varieties in Salima, for example, got better yields compared to those who used local varieties. However, the results from on-farm demonstrations by NASFAM associations showed that the yield gaps are also due to field management practices such as time of planting, plant population, and weeding. This means that the potential to increase groundnut productivity through the use of improved varieties and good agronomic practices does exist. What needs to be done is more technology transfer activities with farmers so that they are aware of the benefits of using improved varieties and agronomic practices that are likely to bridge the yield gap.

The results indicated that seed is one of the key constraints. ICRISAT's revolving seed fund makes basic seed readily available. The missing link is the production of certified seed which is needed in large quantities to reach many more farmers. Community seed banks have endeavored to bridge this gap by giving basic seed to a few farmers in a group who in turn give the seed to other farmers. However, the amounts given (5 kg per farmer) are not sufficient and it requires more seasons for the beneficiary farmers to increase the seed to amounts that can lead to them producing surplus for sale. The spill-over effects of seed banks means that there is a high potential to improve seed access of many farmers. Unfortunately, the DF support for the seed banks in Salima have come to an end in December 2007. Efforts are underway to seek funds to consolidate the already achieved progress and probably scale out and up this great initiative.

Quality improvement: Groundnut requires processing technologies in the production chain. ICRISAT, as far back as 1998, introduced small-scale processing equipment, such as manually operated groundnut shellers

that can reduce labor. ICRISAT has also introduced pod strippers, which can be made locally and also reduce labor. Awareness of the existence of these processing technologies can help farmers start home processing groundnut. Currently, farmers shell and strip groundnut manually. In the process, farmers add water to soften the pods during shelling and this introduces aflatoxin to the already dried groundnuts, rendering them unfit for certain markets.

Finished products have higher value and can help address the low price problems and encourage producers to produce more. However, the ways in which groundnut is consumed in Salima did not show that the farmers are currently doing any value addition to improve the quality. It could be that they are not aware of the availability of oil extracting machines and hand-operated peanut butter machines. For confectionary nuts, currently, there are companies that are packaging and selling nuts in Malawi such as Tambala Food Products, Farmers World and Rab Processors. Getting into partnerships with them to understand their requirements may help in creating sustained demand for the locally produced groundnut.

The establishment of the aflatoxin analysis laboratory at ICRISAT-Lilongwe has helped farmers market groundnuts that are consistent with the quality requirement stipulated by importers. It has facilitated the ability for NASFAM farmers to sell to the fair trade market. Therefore, scaling up the activities through strategic stakeholder partnerships may help farmers in Malawi access the high-value markets.

5.3. Markets and institutions

Markets reforms are more than 30 years old now in the eastern and southern African countries. Despite these reforms, smallholder producers are still suffering from lack of sufficient market infrastructure and support services – essential ingredients for farmer participation and competitiveness in liberalized markets. Deliberate and non-conventional approaches geared to improve farmer linkages to markets and strengthening rural institutions for increasing farmer access to key inputs and services are needed for resource-poor farmers to benefit from new agricultural technologies. Smallholder groundnut farmers in Malawi are no exception. A number of options may

be pursued and the best option will be the one which fits best with a web of several other factors. Some of them are increasing farmers' collective action and introducing contract farming among other measures.

The roles of institutions are also critical. Institutions are rules enforcement mechanisms and organizations that promote market transactions (World Bank 2002). This definition indicates that institutions can provide multiple functions to markets: transmit information, mediate transactions, facilitate the transfer and enforcement of property rights and contracts, and manage the degree of competition (Shiferaw 2006). Along with these concepts, we define market institutions as rules of the game, enforcement mechanisms, and organizations that facilitate market interaction, coordination, contract formation and enforcement.

Market deficiencies are more pronounced in rural areas with underdeveloped roads and communication network and this was typical of the surveyed areas in Malawi. Where supporting market institutions are lacking, rural markets in areas with poor market infrastructure tend to be very thin and imperfect. In the survey area, for example, the price of groundnuts received was at the mercy of the few vendors and the village chiefs.

5.4. Social capital: The basis of institutional innovations

Social capital is one of the five types of capital, the others being natural, financial, physical and human (ECAPAPA 2005). Social capital is the social resources (networks, social relations, affiliations, associations, norms, trust, and disposition to work for the common good) upon which people draw when pursuing different livelihood strategies requiring coordinated and collective action. Natural capital includes the stock of natural resources (soil, forest, water, air, genetic resources, etc.) and environment services (hydrological cycle, carbon sequestration, etc.) from which both resource flows and useful resources for livelihood are derived. Financial capital is the financial assets – cash, credit/debt, and savings that are essential for the pursuit of any livelihood strategy. Physical capital is the household assets and farm infrastructure, including the production equipment technologies and plantations. Human capital is the capacities, the skills, knowledge, ability to work, good health and physical capability which is

important for the successful pursuit of livelihood strategies. Human capital can be developed consciously through formal education and training and unconsciously through experience. The relationships and links between the various forms of capital are presented in Figure 19.

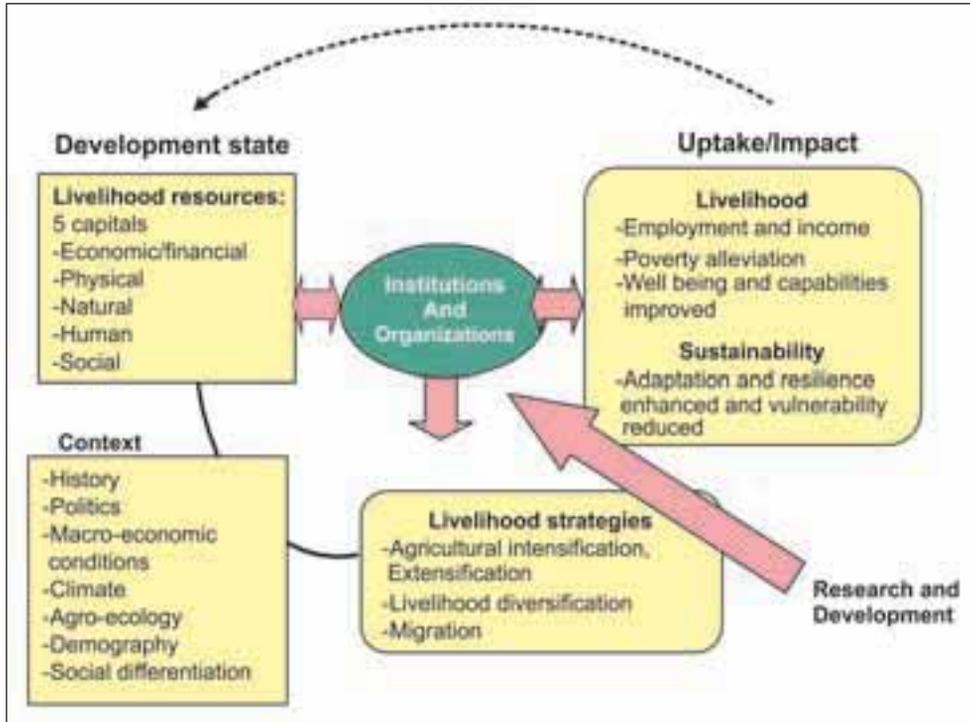


Figure 19. Analytical framework for integrated natural resource management impact assessment on sustainable rural livelihood

Source: Stoorvogel and Smalling (1990)

In our attempts to improve smallholder marketing efforts in rural areas we are, in essence, building on the social capital base among others. There is room to expand efforts in building farmer marketing groups, farmer organizations, as well as function-oriented public–private partnerships. These structures will mitigate the negative impacts caused by market failures and market imperfections and will through their functions also reduce transactions costs. Literature has shown that farmer marketing groups as a result of collective action are unlikely to emerge on their own. We therefore need to make a deliberate effort to ignite and facilitate their formation.

The groundnut smallholder farmers and their related agro-industries in Malawi require innovative approaches, including new policy and institutional arrangements that build market linkages and enhance the competitiveness of agro-enterprises under changing and risky market environments. In addition, institutional innovations for improving rural markets, with enhanced efforts to strengthen the participation of the private sector (including village agro-dealers) and farmer organizations (eg, producer marketing and business groups) to facilitate farmer access to technologies, markets and agro-enterprise services are paramount. Alongside these efforts, there will be a need to continuously evaluate the changing roles of farmer organizations and develop strategies for strengthening rural institutions and their governance to empower smallholder farmers in accessing markets, technologies and in managing risks, especially price risk.

5.5. Agricultural and development policies

Malawi's groundnut policy as stipulated in the Crop Production Policy of the 1980s aimed to substantially increase both confectionery and oil nuts to meet local and export demand and provide raw materials for the domestic oil industry. Subsequently, the policy strategies were to promote production of Chalimbana and Chitembana nuts in the agro-ecologically suitable plateau areas for confectionery, and production of oil nuts (Mawanga and Manipintar) in the Rift valley floor excluding the Shire valley and Nkhata Bay areas. Malimba was promoted for the Shire valley floor, Karonga, Nkhata Bay, and lakeshore areas. Rosette-resistant varieties were promoted for the Phalombe plain. As a result of these policies groundnut production prospered and there were many industries producing oil from the locally available nuts.

A lot of confectionery nuts were exported to the United Kingdom. However, after the collapse of the UK market in 1990 and partly due to aflatoxin contamination problems, groundnut has not been a priority commodity for Malawi in recent development policies. This is despite the fact that other markets for confectionery nut are available especially regionally in countries such as South Africa. Malawian vegetable oil producing companies continue to import crude oil for oil production which could be internally sourced.

In most of the recent national agricultural and development policies groundnut does not feature highly in terms of the potential for growth although the commodity has been contributing significantly to national agricultural exports during the last half century. The MGDS recognizes that the food and agro-processing sector accounts for more than 30% of manufacturing output with value addition ranging between 30 and 35%. It also recognizes that most firms are using relatively simple technologies and rely on imports of intermediate inputs such as crude oil. Most of the companies producing oil in Malawi do not produce for export but rely heavily on the import of crude oil when the country has the potential to produce it.

In the Malawi Economic Growth Strategy (2003) and later the MGDS (2007), agro-processing, which includes food processing, was identified as a high potential sector with tobacco, tea, sugar and cotton identified as the key sub-sectors. Agro-processing of fruits and vegetables, rice, cassava, macadamia nuts, cashew nuts, Irish potatoes and spices were also identified as having potential for growth because they are currently small, both in production and processing. Groundnut was omitted despite the fact that it is widely grown in many parts of the country. This omission has been affecting the growth of the commodity especially in areas such as Salima where cotton is grown alongside groundnuts because priority is given to cotton.

However, despite the groundnuts' low priority ranking there are some sections of the current development policies that, if strengthened, can help in the development of groundnuts. The Malawi government and the MDGs identify the lack of product markets as one of the factors that discourage poor farmers from growing cash crops. Groundnut, which is both a food and cash crop, faces the same constraint but may not benefit if a lot of attention is given to the crops that are identified as having potential for growth or the non-food cash crops. If assistance towards the establishment of efficient product markets is also directed at groundnuts the crop will contribute highly to development and the goal of halving the population living in poverty by 2015.

The Integrated Trade and Industry Policy identify the development of agro-industries, export market development and product development

and diversification as areas that can contribute to national development. There is need to develop or strengthen the production of various products from groundnuts for export instead of exporting only the raw nuts. For instance, if more oil is produced from groundnuts the import of crude oil will be reduced.

The New Era Agricultural Policy (Malawi Government 2005b) proposes the development of agricultural zones in order to promote sufficient quantities of agricultural commodities for the export market. Groundnut is identified as a crop that should be promoted for the lakeshore and mid-altitude areas. The policy further proposes the scaling up of existing market information systems (through the Investment in the Development of Export Agriculture (IDEA)), establishment of Malawi commodity exchange markets and agribusiness training as areas that should be improved in order to promote the development of the agricultural zones. The policy also points out the need to promote value adding or processing of agricultural products in order to increase farm incomes and create jobs in communities through the introduction of agro-processing equipment in local communities with support from One Village One Product (OVOP), Malawi Rural Development Fund, and others.

6.0. SUMMARY AND POLICY RECOMMENDATIONS

6.1. Summary

This study embarked on three main areas – a survey of the literature to explore and attempt to better understand the groundnut sub-sector; a survey of groundnut growing households to understand the production and marketing dynamics and specifically to appreciate the constraints, challenges and opportunities for promoting the sub-sector through technology, institutions and policy interventions; and, finally, a small sample of traders (with specific interest in groundnuts) were tracked from the farm gate to the final destination with a view to understand the marketing channels and therefore identify possible intervention points for improving groundnut marketing so as to maximize the benefits of sub-sector participants.

It would appear that although groundnut in Malawi does not command a high position in terms of its contribution to exports, the commodity occupies a very strategic position in the farming community since it serves as a source of food and nutrition security, and cash income. Its technology is also very divisible, enabling farmers in different income brackets to participate.

A number of key striking issues emerge from the study and these will also form the basis for the recommendations.

1. Despite availability of high-yielding technologies, in particular improved varieties that have been in place for the last 20 years, adoption has still been quite low (Edriss, 2003). As a result, farmer yields are low and far from potential yields. Farmers are not seriously applying crop management practices that would have enabled them improve yields.

2. Price determination for groundnuts in some parts of the country is carried out in a very crude manner and this is no doubt a discouraging factor to increasing groundnut production. Such areas have poor market information systems and farmers are at the mercy of middlemen from the cities who comb the villages immediately and even before harvest to negotiate prices with farmers at the farm gate. Areas with improved transport infrastructure and those carpeted by NASFAM are less disadvantaged. In hunger seasons such as the period before the harvest of 2005/06, farmers visited by the reconnaissance team of this survey mentioned that about 40% of the groundnuts were sold while still in the field. Usually prices are very volatile; the margin between harvest and next planting can be as close as 100%.

3. Malawian groundnuts initially had a very lucrative market overseas. That market withered due to several reasons: failure to meet consistent supply conditions to match the demand of importers, competition with tobacco particularly following the liberalization of tobacco production, hostile sea access routes due to the protracted Mozambican civil war of the 1980s as well as failure to meet quality requirements. Currently, these are no longer constraints and, in fact, Malawi has now been able to tap into the European market through exporting to "Fair Trade". There now seems to be a tremendous opportunity for exporting groundnuts.

4. We have also noted that there is no deliberate anti-groundnut policy and neither is there a policy specifically encouraging promotion of groundnuts. It would therefore seem that opportunities exist for increasing the role of groundnuts in the economy and therefore contributing toward food security and nutrition security, and increased incomes to smallholder farmers.

6.2. Policy recommendations

The following recommendations are based on the current review of literature on groundnuts in Malawi, FGDs involving groundnut farmers, farm surveys involving interviews of individual farm households as well as groundnut traders. In providing these recommendations, some thought is also given in ensuring that they are practicable as much as possible and addressing the *who* and *how* questions.

1. *Linking farmers to markets:* The Ministry of Agriculture working with strategic partners needs to make a deliberate attempt to practically link farmers to markets by improving on the existing agricultural market information system. This improvement need not be for groundnuts alone but will cater to all commodities. In so doing, there needs to be a ground work of identifying and characterizing farmers so that their varying needs in terms of information can be mapped. There are pockets of farmers who remain critically disadvantaged in terms of market information access; these are areas not fully covered by NASFAM or NGOs. At the minimum this can be implemented by facilitating the formation of farmer groups of varying characteristics and functions. These groups would help raise the bargaining power and reducing transactions costs for commodities farmers produce including groundnuts. Regular radio programs, printing and dissemination of price information leaflets that provide some guides on prices temporally and spatially, as well as publishing requirement by industries in terms of quantities and prices they are offering are needed. Innovation platforms and associated forums for groundnuts will assist in bringing together sub-sector stakeholders to provide forums for discussing challenges, constraints, and opportunities and sharing information on how to circumvent them. This will provide opportunities for improved public–private–farmer (PPF) partnerships as well as the value chain for groundnuts.

2. *Breeding policy for groundnuts*: There is need for breeders to strive to understand the demand side better so that the breeding programs can continuously be tuned to respond to farmer and market preferences. This would probably increase adoption rates. At the moment it is not clear whether the breeding policy is sufficiently aligned to the market preferences. When this alignment is clear, adoption rates are likely to increase and the demand from industry would stimulate further increases in yield and output and hence increase farmers' incomes. It appears that the market prefers Chalimbana and as such it fetches a higher price. On the other hand, it appears that ICRISAT involvement in terms of promoting the seed bank is in JL 24 – a variety which is not preferred by industry. ICRISAT's main reason for engagement in JL 24 – a less preferred variety – is because of its tolerance to drought.

3. *Groundnut processing technology*: This remains a challenge to accelerated production and marketing of groundnuts. Farmers need assistance in quality processing of groundnuts as well as information on where and what prices are charged for processing groundnuts to meet the different demands. The current efforts on aflatoxin management are key in promoting groundnut production and marketing and need to be ramped up. The future competitiveness will be based not on whether Malawi can produce more groundnuts but rather on whether the quality of groundnuts produced can compete favorably in the international market and fetch the premium prices. Hand processing of groundnuts is proving to be quite tedious as the opportunity cost of labor for youth continues to surge, even in the rural areas. Requests to ICRISAT and to NGOs by the communities to identify and help source appropriate groundnut processing technologies need to be attended to immediately.

4. *Groundnut seed availability*: The ICRISAT seed bank project based at ICRISAT-Lilongwe came to an end in December 2007. There is a dire need to design some clear strategies to keep this bank going. Results from the impact assessment of this project are yet to be published but feedback from farmers interviewed indicated that the bank has been a very good facility. The challenge is to ensure that the seed bank continues operation even after the donor support ends. The next phase therefore will need to build in some sustainability measures.

5. *Improved crop management practices*: The use of improved seed is not enough for increased productivity of groundnuts. Improved seed needs to go hand-in-hand with the use of improved crop management practices. Research results across the region have consistently demonstrated that gains from improved crop management practices surpass those from improved varieties alone. More emphasis needs to be placed on soil fertility and water management for increased groundnut yield particularly in the more arid areas of the country. The research and extension policy should, in addition to emphasizing improved varieties, embark on the need for timely planting, moisture management, timely weeding and improved postharvest practices.

6. *Government policy on groundnuts*: The government does not have a stand-alone policy on the groundnut crop. However, given the emerging comparative and competitive advantage of the crop for Malawi as compared with the neighboring countries, the government stands to benefit if clear policy messages on the support of the crop come out. This could be in the form of encouraging more quality control, providing an enabling environment to groundnut marketing and trade including encouraging processing of groundnut by domestic firms.

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About ICRISAT



ICRISAT

Science with a human face

The International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) is a non-profit, non-political organization that does innovative agricultural research and capacity building for sustainable development with a wide array of partners across the globe. ICRISAT's mission is to help empower 600 million poor people to overcome hunger, poverty and a degraded environment in the dry tropics through better agriculture. ICRISAT belongs to the Alliance of Centers of the Consultative Group on International Agricultural Research (CGIAR).

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