

DFID Market Development (MADE) in Northern Ghana Programme



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SECTION 1. INTRODUCTION

Groundnut (*Arachis hypogaea* Linnaeus) is an annual legume and an important cash crop in Northern Ghana. It is a rich source of edible oil (50%) and protein (25-28%) as well as carbohydrate (20%), making it an important crop for nutrition and food security as well. Its nutritional value makes it an important constituent in weaning foods, a vital attribute in the North which suffers from the highest rates of child malnutrition and stunting in Ghana. It is one of two nutrient dense foods selected by a DFID funded study of foods to address malnutrition in Ghana¹.

In addition to groundnut's high nutritional value, as a legume it is very beneficial to soil fertility in multi-crop rotational systems. The potential contribution the crop could make to soil fertility by fixing nitrogen is at present diminished by the lack of sufficient Rhizobia in the soils of the North. However, the technology to inoculate seed with Rhizobium has been tried successfully already in similar legumes such as soybean and should be readily adaptable to groundnuts. This would both boost groundnut yields and contribute to soil fertility.

It is also one of the more profitable crops grown by smallholder farmers in Northern Ghana producing higher incomes than the cereals. At current yields, in 2011, farmers earned GH¢2,449 gross profit per ha, second only to yam in terms of returns per hectare in the North². A labour intensive crop to plant, harvest, shell and dry, groundnuts provide opportunities for the poor to sell their labour. Processing into paste and oil provide opportunities for profitable enterprise, especially for women.

Ghana is a major producer of groundnuts in the region, with nearly all production originating in the North. Local production has typically been able to meet domestic demand with modest amounts exported periodically. Domestic demand has been growing strongly pulling through a doubling of production and causing prices to rise rapidly. New groundnut based products have been developed and rising Ghanaian incomes and consumer preference for groundnuts are driving rapid growth of demand which domestic production has been barely able to cope with. With control of aflatoxin, the crop could become a major export from the North to regional markets and the attractive European market for nuts consumed as snacks. So, any increase in production would be readily absorbed by both the domestic and export markets.

Thus, growing and processing groundnuts represent a major pro-poor opportunity for the North. The strong growth of the market should ensure that producers and processors are able to earn good incomes. The crop would also help to address child nutrition and soil fertility in the North.

¹Strengthening Agri-Food Value Chains For Nutrition: IDS, 2013

² Developing a Rice Industry in Africa, Ghana Assessment, Bill & Melinda Gates Foundation, 2012

Table 1. Groundnut Market System Analysis

Mapping the poor and Other Actors	Market Growth & Segmentation Analysis	Value Chain Analysis	Analysis of support functions	Analysis of policies & institutions	Identification of Systemic Constraints
<p>General</p> <ul style="list-style-type: none"> The second most attractive crop in terms of revenue Produced by more than 625,000 households in Northern Ghana. <p>The Poor</p> <ul style="list-style-type: none"> Grown on small plots of land by poor farmers but both large and small land holders grow the crop. Grown mainly by women in many parts of the North with variations between districts/regions Though important for meeting household protein needs, grown mainly as a cash crop even by the poorest farmer About 94% of production in Northern Ghana. Production, mainly rain-fed and labour intensive. Labour provided mainly by family and labour sharing (in kind) with labour shortages during planting & harvest. 	<p>International Market</p> <ul style="list-style-type: none"> Low international trade historically, but growing fast. EU is the largest market with 43% of global demand Renewed interest in EU in sourcing nuts from Africa for snack market that are aflatoxin free. <p>Domestic Market</p> <ul style="list-style-type: none"> Significant growth: 47% increase in area cultivated & 69% increase in production. However, production has barely kept pace with demand. Overall, the price of groundnut has been growing at 13% (CAGR) over the past 10 years. Total production of about 475,100 MT in 2012, mainly produced in 3 northern regions. Roughly 72% of total production is sold for consumption in urban areas. Ghanaian groundnuts are 	<p>Description of Value Chain</p> <ul style="list-style-type: none"> Savannah regions provide ideal conditions for groundnuts. North is price competitive against main world exporter Argentina despite yields of 0.9 MT/ha compared to achievable 2.5MT/Ha. Low input/output system with use of retained, poor quality seeds, low use of other modern inputs and mechanisation. High losses to diseases & pests due to low use of agro-chemicals Timing of planting & harvest is critical. Where women have to wait for main cereal fields to be sown and harvested, can lead to major post-harvest losses depressing value added. Aflatoxin levels high due to poor shelling, drying and storage. Depresses crop values. <p>Value Formation</p>	<p>General</p> <ul style="list-style-type: none"> Weak support functions leading to low use of improved seeds & adoption of good agronomic practices. <p>Research</p> <ul style="list-style-type: none"> Most research has focused on developing seed varieties, but low adoption rates, especially for disease & pest resistant seeds Inoculation of seeds with rhizobium possible but not tested in field. Research on limiting aflatoxin contamination, which could increase gross margins dramatically has not been tried out in the field. <p>Knowledge, Extension</p> <ul style="list-style-type: none"> Poor dissemination of knowledge on good agricultural & post-harvest practices Extension services under-resourced and not 	<p>Policy</p> <ul style="list-style-type: none"> Not targeted by any specific government policy, but mentioned in METASIP Fertiliser subsidy not targeted at the crop Government intervention on seed subsidy has had little impact on groundnuts Grains & Legumes Development Board (GLDB) failing to release sufficient quantity of foundation seed Limited policy recognition of export potential <p>Institutions</p> <ul style="list-style-type: none"> Underfunding of research & extension institutions Very poor coordination between public institutions and private input suppliers 	<p>Key Market Failures</p> <ul style="list-style-type: none"> Under supply of public goods- research, seeds, extension (GAP), Market power lies with wholesalers in the large cities and they have failed to pass on higher consumer prices to farmers Market failures in financial markets limit ability of farmers, traders and processors in the North to invest in groundnut farming and processing. Lack of agricultural leasing market reduces supply of mechanisation Coordination failures: large numbers of small farmers and actors in the value chain, underfunded public institutions and lack of PPP arrangements, lead to



<ul style="list-style-type: none"> The poor provide labour for all activities. There are large number of small scale traders and processors of groundnuts in the North, the majority of whom are women Processing in the North is predominantly artisanal, processing nuts into paste and oil. The major edible oil mill in the North is shut awaiting rehabilitation by Avnash. There are a few organised past producers in the North. <p>Other Actors</p> <ul style="list-style-type: none"> Other key players in the groundnut value chain include itinerant traders and emerging organised aggregators who buy for merchants based in Techiman Formal processing is dominated by a few large scale processors of nuts (e.g. Ghana Nuts) and large scale oil millers based around Techiman. New snack manufacturers have emerged in Accra producing coated 	<p>sold mainly on traditional markets</p> <ul style="list-style-type: none"> Per capita consumption is high at 12kg but continues to increase rapidly with incomes Demand is being driven by versatile nature of groundnut, which makes it used extensively as a food in Ghana. Groundnuts are used as a weaning food, as a culinary ingredient to make many Ghanaian dishes, as a snack food and a high quality cooking oil especially suited to frying as it has a high smoke point. Market segments include unroasted nuts, processed nuts, coated snacks and edible oil. All segments are growing but the fastest growth is in processed products with coated snacks growing very rapidly from a small base. About a quarter of production is now going towards processing. Almost all processing in the South. 	<ul style="list-style-type: none"> Substantial cost of aggregating from the farm gate to regional markets in the North due to small plots of the average farmer and transport on poor roads Large mark-up (75%) between price in Tamale and consuming centres that cannot be explained by transport and handling costs alone. Likely to be caused by post harvest losses and large numbers of intermediaries. <p>To increase Value</p> <ul style="list-style-type: none"> Use of certified seeds and more use of modern inputs to control pests, diseases. Mechanisation to ensure timely planting and harvesting. Better post-harvest practices to reduce losses & avoid aflatoxin contamination. More efficient supply chains to end-users (processors) and consumers. 	<p>focused on groundnuts</p> <p>Financial</p> <ul style="list-style-type: none"> Poor access to finance for small farmers to buy inputs for crop which is capital intensive if using modern methods Lack of agricultural leasing is major constraint for crop demanding timely planting/harvesting Inadequate supply of finance to trades/processors in the North 	<ul style="list-style-type: none"> Poor enforcement of standards for aflatoxin by the Food & Drugs Authority Limited attention given by institutions to promote trade (e.g., EDAIF, GEPA). 	<p>bottlenecks in supply chain. End users are medium sized businesses unable to invest in farmer productivity, coordinate activities of research, extension and input distribution systems or build direct supply chains with farmers.</p>
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peanuts.

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SECTION 2. MAPPING THE POOR AND OTHER ACTORS

2.1 THE POOR

The cultivation of groundnut is practiced by large numbers of smallholder farmers in northern Ghana: over 625,000 households, representing 74% of total households in the North Savannah region, reported growing groundnuts³. It is predominantly grown, marketed and processed by women.

The crop plays an important role in households for both subsistence and commercial purposes. Throughout the North, where malnutrition and stunting is high, it is an important source of protein, especially for children. It is used widely by households to make soups, as a snack and to provide edible oil for cooking. Its leaves, stems and roots are fed to animals as a source of fodder during the dry season. Rotated with maize, it forms an integral part of the mixed cropping-livestock system that is the bedrock of the livelihood strategies pursued by poor farmers in the North. It fixes nitrogen in the soil to provide the needs of the maize crop. The contribution it makes would increase if there was a higher concentration of Rhizobia in the soils of the North.

Despite its importance as a source of subsistence, it is grown mainly to augment the sources of cash earned by the household. It is in fact, one of the most commercialised crops for farming households, regardless of land-holding size (Table 2).

Table 2. Share of producing households who market groundnut production

Holding Size	<0.5 ha	0.5-1.0 ha	1-2 ha	2-3 ha	3-4 ha	4-5 ha	>5 ha	Overall
Commercialization Rate	50%	59%	56%	78%	78%	81%	85%	72%

Source: IFPRI-GSSP on data from Ghana Statistical Service, 2007, Adapted from Angelucci F., Bazzucchi A., 2013. Analysis of incentives and disincentives for groundnuts in Ghana. Technical notes series, MAFAP, FAO, Rome.

Over 90% of the crop is grown by farmers who plant less than 2 ha⁴. It is often grown by the poor as part of their strategy of maximising their use of labour. Northern smallholders allocate about a fifth of their land to groundnut cultivation and sell their produce almost immediately after shelling for cash requirements⁵. Only those groundnuts not fit for sale on the market are consumed by low-income households, which adds complications from aflatoxin contamination to existing public health concerns⁶.

Nevertheless, it is also a very profitable commercialised crop⁷. Estimates of profitability vary. The FAO estimated the profitability in 2010 as follows:

³Quiñones, Esteban J., and Xinshen Diao. "Assessing Crop Production and Input Use Patterns in Ghana: What Can We Learn from the Ghana Living Standards Survey (GLSS5)." *IFPRI Ghana Strategy Support Program Working Paper 24* (2011).

⁴Angelucci F., Bazzucchi A., 2013. Analysis of incentives and disincentives for groundnuts in Ghana. Technical notes series, MAFAP, FAO, Rome.

⁵ Masters, William A., et al. "Comprehensive Assessment of the Peanut Value Chain For Nutrition Improvement in Ghana" Final Report Tufts University and Global Alliance for Improved Nutrition, September 2013.

⁶ Masters, William A., et al. "Comprehensive Assessment of the Peanut Value Chain For Nutrition Improvement in Ghana" Final Report Tufts University and Global Alliance for Improved Nutrition, September 2013.

⁷Brandenburg, FK Tsigbey1 RL, and V. A. Clottey. "Peanut Production Methods in Northern Ghana and Some Disease Perspectives.", SARI, University of Florida, North Carolina State University

Table 3. Profitability of Maize, Sorghum Groundnut Production in Ghana 2010.

	Normal Year Scenario			Bad Year Scenario		
	Maize	Sorghum	Groundnuts	Maize	Sorghum	Groundnuts
Yields (kg/ha)	820	710	880	600	550	610
Price (US\$/ton)	200	200	500	300	300	660
Gross Rev. (US\$/ha)	306		440	345		403
Cash Costs	77.8		96	77.8		96
Net Rev. (US\$/ha)	228.2		344	267.2		307
Labour (days/ha)	95		103	95		103
Returns to labour	2.4		3.4	2.8		3.0

However, the study used yields from 2003-2004. With more recent yields, one study estimated that the average farmer makes an average of GH¢795 gross profit per ha or GH¢568.15/MT. Further, by reaching MOFA's definition of "achievable yields" of 2.5 MT/ha farmers would reach profits of GH¢1,420 per ha. A more recent study by the Bill & Melinda Gates Foundation put the figure for gross profits (excluding cost of labour) at GH¢ 2,449 gross profit per ha. That made groundnuts second only to Yam in terms of returns per hectare in the North⁸.

Several constraints prevent smallholder farmers from expanding production. In the absence of machinery, groundnut is an incredibly labour-intensive crop, taking up most or all family labour. The time taken to sow, weed, harvest and dry in the production process prevents farmers from expanding harvested areas. Most smallholders use manual practices, such as bullock ploughs or hand hoeing for field preparation and other activities⁹. Farmers frequently employ additional workers or pool labour sources, especially for weeding (the most time-consuming period of the season). But small farmers cannot afford to pay for hired in labour. Groundnut pods are cracked by hand and dried in open air sacks or thatches, but manual practices also leave producers open to theft by hired labour.

These labour constraints are magnified for women. In male-headed households, preference is given to the main cereal crop grown by the household head as it forms the main staple eaten by the family. Women wait to get the family labour needed by their groundnut fields to be planted. With the crop likely to be spoiled by late rains, timely planting is important. Inadequate weeding during the early growing cycle damages the crop substantially but women may have to wait for the cereal crop to be weeded first. Most importantly, the crop must be harvested at the right time: too late and it will start to sprout or the ground will become hard baked making it very difficult to harvest. So, having to wait for the cereal crop to be harvested can be hugely damaging for women groundnut framers.

The poor, especially women, are also involved in the trading and processing of groundnuts. Buying small quantities of groundnuts locally and taking them to market provides a small source of income to women who, nevertheless, play a vital role in aggregation. Processing is mainly artisanal using crude methods to make paste and extract oil. Women may make kulikuli for the household and sell surplus in local markets.

2.2 OTHERACTORS

The groundnut value chain is made up of a variety of actors, including women, with overlapping roles (see SECTION 4 for a more detailed description of how various roles fit in the value chain):

Research organizations: The main source of research is SARI which conducts research on seeds, GAP and post harvest technologies. There are also several international sources of research. As part of Feed the Future, Mycotoxin Innovation Lab, conducts research on combatting mycotoxin contamination, based out of the University of Georgia. Partnerships for Aflatoxin Control In Africa also conducts research and field trials to control the disease. GRATIS Foundation aims to "develop,

⁸ Developing a Rice Industry in Africa, Ghana Assessment, Bill & Melinda Gates Foundation, 2012

⁹ A minority of farmers use machinery for land preparation and shelling.

promote and disseminate marketable technologies and skills for the growth of industry, particularly, micro, small and medium scale enterprises in Ghana”¹⁰.

Seed producers: Once a seed variety grown by SARI or imported has been registered for release, the Grains and Legumes Development Board (GLDB) is responsible for producing foundation seed. Foundation seed is then multiplied by seed companies who contract certified seed producers to dedicate land to cultivate new seeds for sale. These include Seed Unit, Seed Producers Association of Ghana, and the Savanna Seed Services Company Ltd., who reported producing 1.6 MT of groundnut seed in 2010¹¹. Women are often hired to sort seeds.

Other input providers: These include fertilizer suppliers and agro-chemical companies. The four main fertiliser importers¹² have 20-25 wholesalers and distribute their products through 2700 retailers across Ghana, most of whom are members of Ghana Agri-Input Dealers Association (GAIDA)¹³. There are also some unlicensed informal agents and traders who sell fake, often adulterated inputs. Mechanisation services are supplied by a network of service providers based mainly in the South whose agents source business in the North and a few tractor hire operators based in the North. The Agricultural Mechanisation Services Enterprise Centres (AMSECs) established by government do not function effectively. The company Amsig Resources, with funding by MiDA, offers a variety of services such as credit inputs (such as mechanisation for land preparation and harvest), warehousing, cleaning and processing and purchase produce from farmers at competitive prices.

Aggregators: Aggregators buy groundnuts from traders and farmers to supply the larger, urban markets in the south. They include spot/itinerant traders, private aggregators/agents and northern wholesalers. Local marketing is mostly done by **market women** who do not take credit from buyers, preferring to pay a proportion of the final price in cash (50%) to farmer, collect produce and supply major buyers and markets before paying the balance to the farmer¹⁴. The larger aggregators work on a more formalised basis with local aggregators in the North who do provide credit (in cash and kind) to grow groundnuts. These relationships are usually based on trust, not contract and tend to work when the farmer and the aggregator have known each other for a while through spot trading. There have been attempts to develop alternative supply chains. For, example, the marketing company SAVBAN is a partnership between the Savannah Farmers Marketing Company established by the NGO Association of Church Based Development Project (ACDEP) and the Bandaayili farmers union. It was intended that 20,000 farmers sign with their respective Farmer Based Organisations (FBOs), who would subsequently sign contracts with SAVBAN to supply their produce for the latter to market¹⁵. However, these alternative channels established by NGOs have not proved effective. Both SAVBAN and the Savannah Farmers Marketing Company have had trouble making the enterprise profitable and both are currently moribund waiting for ACDEP to decide on their future.

Processors: In 2012, 116,580 MT of groundnuts produced (about a quarter of total production) went into industrial & commercial processing, 60% of which was artisanal processing by women into oil and confectionery. Ghana Nuts Limited, Burger Foods Limited, Golden Web Oilseed Processing and Refining, Kumasi Vester Oil and Avnash Industries (formerly Bosbel Oil) are among the major processors of groundnut. The number of processing businesses with refineries has increased from just 1 in 2006 to 4 in 2013. Women are also employed in factories to sort groundnuts to limit the processing of aflatoxin infested kernels¹⁶. Avnash has bought the formerly state owned edible oil mill in Tamale but it is awaiting rehabilitation, possibly by 2016.

¹⁰ Gratis Foundation Website: <http://www.gratis-ghana.com/> Accessed February 2014

¹¹ Masters, William A., et al. “Comprehensive Assessment of the Peanut Value Chain For Nutrition Improvement in Ghana” Final Report Tufts University and Global Alliance for Improved Nutrition, September 2013.

¹² Yara/Wienco, Chemico, Golden Stork and Dizengoff

¹³ Masters, William A., et al. “Comprehensive Assessment of the Peanut Value Chain For Nutrition Improvement in Ghana” Final Report Tufts University and Global Alliance for Improved Nutrition, September 2013.

¹⁴ Based on field surveys

¹⁵ Masters, William A., et al. “Comprehensive Assessment of the Peanut Value Chain For Nutrition Improvement in Ghana” Final Report Tufts University and Global Alliance for Improved Nutrition, September 2013.

¹⁶ Masters, William A., et al. “Comprehensive Assessment of the Peanut Value Chain For Nutrition Improvement in Ghana” Final Report Tufts University and Global Alliance for Improved Nutrition, September 2013.



Donors and Non-profits: Groundnut has not attracted much attention from donors and the non-profit sector. Most of the donor programmes in the North are targeting cereals or other legumes. USAID's ADVANCE is targeting maize, rice and soya. The few non-profits involved are small. Tumu Deanery Rural Integrated Development Programme (TUDRIDEP) is an NGO that provides extension services and access to finance. Partnership for Rural Development Action (PRUDA) is an NGO that organises farmer groups and provides credit.

SECTION 3. MARKET GROWTH AND SEGMENTATION ANALYSIS

3.1 GLOBAL MARKET

The global export market for groundnuts is small. Most of the large producing countries (e.g. China, India) are also major consumers so international trade is limited. However, international trade is growing rapidly. It was worth \$2.2 billion in 2011, with an average global price of \$1,336 per metric ton (in large part due to the increase in global food prices)¹⁷. This is a significant increase over 2000 when the market was worth \$1 billion.

The major areas of consumption are in Asia with China and India to the fore. The major exporters are the US and Argentina. The highest importer is the EU, making up 43% of the global demand¹⁸. However, safeguards against the import of groundnut have been in effect since 2013, requiring border checks for aflatoxin levels, particularly products from Africa. This has been due to the low quality of groundnut produced which fails to meet the primary export standard criteria of 30 ppm for aflatoxin levels, arising from poor postharvest handling processes adopted by farmers.

Several African nations are emerging as major producers. Nigeria, Sudan and Senegal are important producers. A large proportion of Senegal's agricultural sector is groundnut production: 92% of its net export was groundnut oil¹⁹. Other major producing regions include Gambia, Cameroon, Benin, Guinea, Mali, Cote d'Ivoire and western Burkina Faso²⁰. Yields in Africa are the lowest, ranging between 0.5-0.7 tn/ha²¹, behind the US and China (2tn/ha) and Asia and South America (1tn/ha).

Though Ghana is typically a net exporter, both imports and exports are incredibly low. However, there is a huge potential for Ghana to expand exports. From time to time, the country has surpluses. In 2010, Ghana is estimated to have excess production of 187,228 MT, or 39% of total production²² though that estimate was produced on the basis of per capita consumption estimates that were not well informed. Despite the excess, exports in that year were only a feeble 45MT and increased to just 62MT in 2013²³. However, to export significant quantities to attractive markets such as the EU, aflatoxin levels would need to be much lower.

Ghana used to be considered a relatively high cost producer. In the past, the cost of producing a metric tonne of groundnut was estimated at US\$182/MT compared to US\$95/MT and US\$87/MT in Brazil and Senegal, respectively. However, more recent estimates show that the country is now cost competitive against international exporters such as Argentina. In fact, the price in Tamale in 2010 of \$759/MT was lower than the Argentinian fob price of \$901/MT²⁴. Since then, though domestic prices have risen sharply, the depreciation of the cedi has helped maintain competitiveness.

¹⁷ FAO Stat Data

¹⁸ FAO Stat Data

¹⁹ Diop, Ndiamé, John Beghin and Mirvat Sewadeh (2004), "Groundnut Policies, Global Trade Dynamics and the Impact of Trade Liberalization", World Bank Policy Research Working Paper 3226, March, Washington DC.

²⁰ Angelucci F., Bazzucchi A., 2013. Analysis of incentives and disincentives for groundnuts in Ghana. Technical notes series, MAFAP, FAO, Rome.

²¹ Though these are comparable to yields in India, the second largest exporter.

²² Afara Global Powerpoint Presentation: <http://afaraglobal.co/wp-content/uploads/2011/12/Ghana-Peanut-Overview.pdf> Accessed February 2014

²³ MOFA, Agriculture Facts and Figures 2010, 2013

²⁴ Angelucci F., Bazzucchi A., 2013. Analysis of incentives and disincentives for groundnuts in Ghana. Technical notes series, MAFAP, FAO, Rome.

3.2 DOMESTIC MARKET

The groundnut market in Ghana has grown dramatically. Between 2007-2010, the area harvested grew by 47% and production by 69%²⁵. Overall consumption increased from 288,000 MT in 2010 to 310,920MT in 2013. Almost all production is consumed locally in country, so the growth in production reflects growth in demand.

Production is highly concentrated in the northern half of Ghana: the Northern, Upper East and Upper West regions account for 94% of production. The dry conditions of the North suit groundnut production. Production has grown most in the Northern Region, increasing from 40,000MT in 2000 to 227,652MT in 2010 (Table 4) but it is increasing also in the Upper West.

Table 4. Production change in northern Ghana (2000-2010)

	Northern Region	Upper East Region	Upper West Region
2000	40,000	100,015	68,623
2002	130,000	150,000	120,000
2010	227,652	86,613	124,041

Source: MoFA, Adapted from: Angelucci F., Bazzucchi A., 2013. Analysis of incentives and disincentives for groundnuts in Ghana. Technical notes series, MAFAP, FAO, Rome

Per capita consumption is 12kg, compared to 3 kg in the United States. Groundnuts are a central component of the Ghanaian diet, used for soups, snacks (roasted andraw),oil, cake for human/animal feed as well as confectioneries. In the north, women press kernels to extract vegetable oil, which is an important source of income. Leftover meal is used to make the popular kulikuli snacks (cakes) or process into kulikuli zim (the powdered form). Groundnut paste is a central component in the popular groundnut soup, and is also used as a spread.

Several market opportunities exist for groundnut producers. An estimated 116,580 MT of groundnut produced in 2012 went into industrial and commercial processing, processed into weaning foods and confectioneries as well as groundnut oil and groundnut paste for spread and soups. Groundnut hay is also sold domestically by farmers as livestock feed, particularly for goats. After pod removal, farmers in close proximity to urban centres can earn additional income by selling hay in the marketplace. Hay often competes with kernel sales in the long dry seasons²⁶.

Increased incomes have therefore caused the growth of groundnut consumption in all its forms. The segment of the market that has witnessed the fastest growth is the processed market where new manufacturers have emerged supplying ready-made paste and snack foods such as peanuts coated with flour (Nkatie Burger) or cocoa (chocolate pebbles).

In fact, domestic production has struggled to meet demand. Prices rose by 66% between 2007 and 2010 and are expected to continue to increase at the current 13% CGAR. The North has been hard pressed to cope with demand. So, some processors, such as Burger Food Industries, a manufacturer of the popular Nkatie Burger snack, have started importing groundnut from other West African nations²⁷. There is plenty of scope for the North to take full advantage of the growth of the domestic market. However, supplying processors making foods does require better control of aflatoxin levels which are very high.

²⁵ Angelucci F., Bazzucchi A., 2013. Analysis of incentives and disincentives for groundnuts in Ghana. Technical notes series, MAFAP, FAO, Rome.

²⁶ Brandenburg, FK Tsigbey1 RL, and V. A. Clotey. "Peanut Production Methods in Northern Ghana and Some Disease Perspectives."

²⁷ Masters, William A., et al. "Comprehensive Assessment of the Peanut Value Chain For Nutrition Improvement in Ghana" Final Report Tufts University and Global Alliance for Improved Nutrition, September 2013.

SECTION 4. VALUE CHAIN ANALYSIS

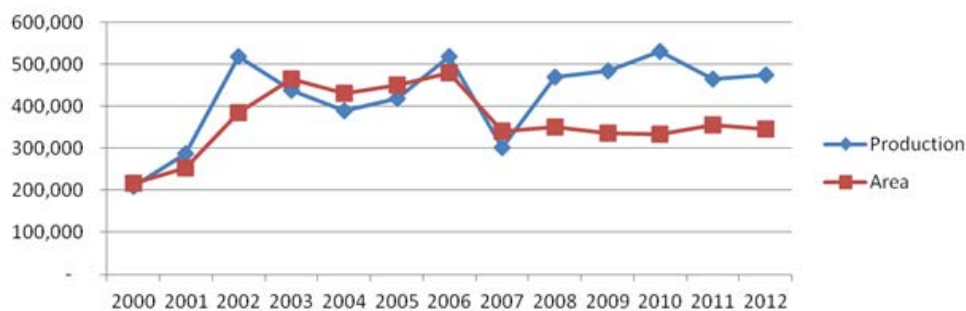
4.1 DESCRIPTION OF GROUNDNUT VALUE CHAIN

Groundnuts produced and consumed in northern Ghana and transported for consumption in the South, though it is also grown in north-eastern part of Brong Ahafo Region, northern parts of Ashanti and Eastern Regions. There are three main varieties of groundnut cultivated in Ghana: *Shitaochi* (more commonly referred to as *Chinese*), *Manupinta* and *Nkatapa*.

Agro-ecologically, the dry conditions of the savannah regions give farmers a comparative advantage for growing groundnuts. Two types of land are used to cultivate groundnut²⁸. Compound fields are located in the uplands, adjacent to housing in smallholder communities. The soils are often rich with farmyard manure and other organic deposits. Bush fields are in either the uplands or lowlands, but further away from households. The northern savannah zone experiences a uni-modal rainy season from April-May to September-October with an average annual rainfall of 900-1100 mm²⁹. Fields are rain-fed as irrigation is virtually non-existent. The dry post-harvest season is ideal for post-harvest practices, but farmers sell produce based on seed maturation cycles and need for cash.

Groundnut production has been growing at an annual rate of 8.51% between 2007 and 2012 (475,056 MT as of 2012, see Figure 1). The average yield achieved by farmers is estimated at 1.5 MT/ha compared to an “achievable” yield of 2.5 MT/ha³⁰. This shortfall has been due to inappropriate agronomic practices adopted by farmers. Most farmers recycle groundnut seed from previous harvests rather than purchase newer and more advanced inputs (including fertilisers and agrochemicals) and fail to maintain their farms as required during the various harvest periods. On average, postharvest losses amounted to 10% of total groundnut production due to inefficient harvesting and postharvest methods and technologies. Out of the biological groundnut production of 475,056 MT, only 427,550 MT is appropriate for consumption³¹, resulting in estimated losses worth GH¢414.1m (priced at GH¢968.56/MT).

Figure 1. Biological groundnut production (MT) and area cultivated (HA)



Source: MOFA

Figure 2 shows a general breakdown of the different elements of the groundnut value chain. The distribution channel is large, increasing the transaction costs that are transferred to the final consumer. Reducing the number of actors playing intermediary roles between farmers and physical markets could help lower prices to stimulate further domestic demand. Arguments can be made for interventions all along the value chain, from inputs and harvest practices to market distribution.

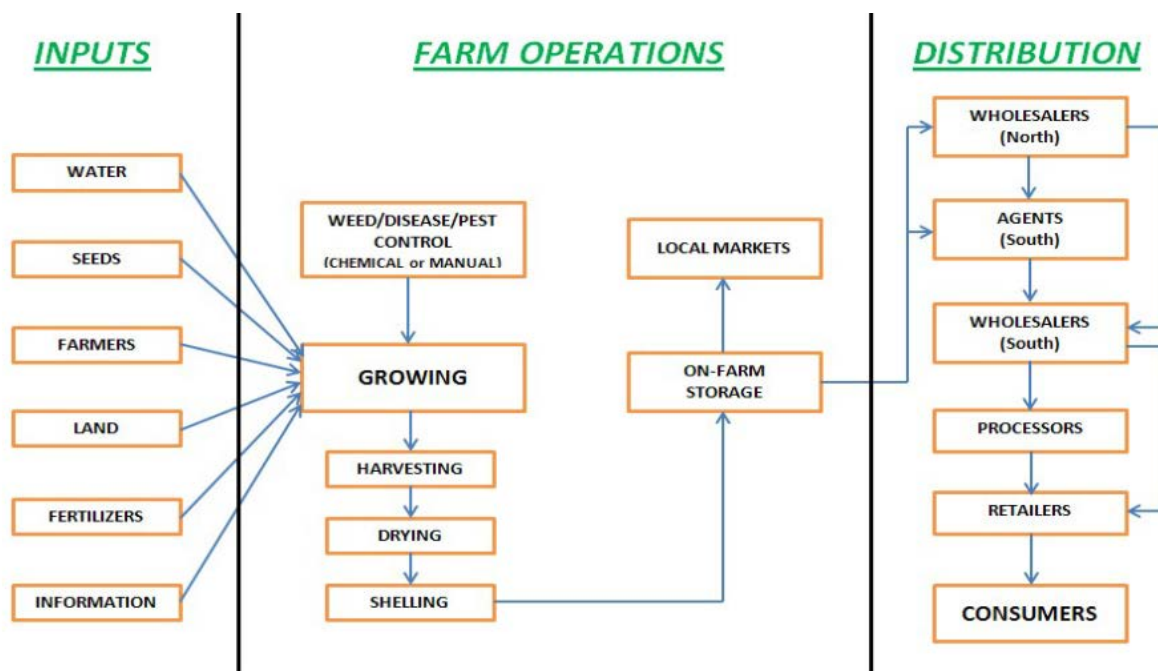
²⁸ Brandenburg, FK Tsigbey1 RL, and V. A. Clotey. "Peanut Production Methods in Northern Ghana and Some Disease Perspectives."

²⁹ Masters, William A., et al. "Comprehensive Assessment of the Peanut Value Chain For Nutrition Improvement in Ghana" Final Report Tufts University and Global Alliance for Improved Nutrition, September 2013.

³⁰ This is a defined achievable yield by MOFA, confirmed by on-farm trials. Ibrahim, Mohammed, Wojciech J. Florkowski, and Shashidhara Kolavalli. "Determinants of Farmer Adoption of Improved Peanut Varieties and their Impact on Farm Income: Evidence from Northern Ghana." 2012 Annual Meeting, August 12-14, 2012, Seattle, Washington. No. 125000. Agricultural and Applied Economics Association, 2012.

³¹ Agriculture in Ghana, Facts and Figures 2012. MoFA

Figure 3. Value chain of Ghanaian groundnuts



Source: Masters, William A., et al. "Comprehensive Assessment of the Peanut Value Chain For Nutrition Improvement in Ghana" Final Report Tufts University and Global Alliance for Improved Nutrition, September 2013.

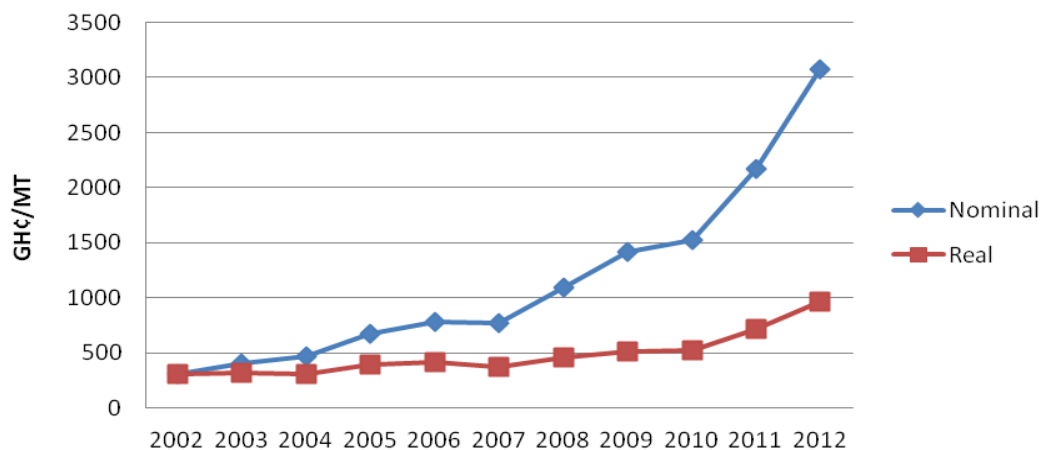
Aggregators vary by region. The groundnut value chain is dominated by sporadic purchases by wholesalers in open markets, with no consistency in price or quality. In far reaching areas, itinerant traders rely on spot purchases at the farm gate, assembling, storing and transporting groundnuts, before selling produce to wholesalers at market prices. As groundnuts are grown on very small plots dispersed between farmers, bulking produce is very tedious, and pushes up margins for traders substantially³². Institutional aggregators, such as processing and marketing companies, prefer to establish contract purchases with aggregators, as contracting and co-ordinating with farmers can be challenging. The aggregators contract farmers but on a loose basis of trust, as noted earlier. Tamale and Wa act as transit, wholesale and retail centres for the north, while respective southern hubs are located in Techiman, Kumasi, Cape Coast and Accra.

Most processing activity takes place in the urban and peri-urban communities. Processors buy their groundnut from itinerant traders and retailers on the respective local markets where they operate. Prices are therefore not effectively transmitted between the north and south central markets. Both farmers and local traders have low bargaining power due to a lack of knowledge of market prices and supply respectively. For farmers, this bargaining power is frequently weakened during times of financial stress, when cash is needed in hand (school fees, medicines, etc.).

4.2 PRICE TRENDS AND MARGIN ANALYSIS

Groundnut prices have been growing at a cumulative annual growth rate of 13% over the past 10 years as shown in Figure 4. This growth has largely stemmed from market forces, due to its popularity among households around the country and increased incomes in Ghana

³² Quaye, W. and Kanda, I. "Bambara Marketing Margins Analysis", Food Research Institute, February 2004

Figure 5. Average rural wholesale price trends for groundnut

Source: MoFA, Agriculture in Ghana Facts and Figures 2010

Price movements naturally have an effect on both a farmer's willingness to produce and a consumer's ability to pay. Thus issues of market efficiency and the integration of origin and destination markets become relevant.

The divergence in prices between the north and south has become increasingly pronounced. Wholesale prices in Tamale are on average less than 60% of wholesale prices in Accra³³. Though nominal prices have increased immensely due to inflation in both parts of the country, farmgate prices in the north have not increased at the same rate as wholesale prices in the south (Table 4). Inefficiencies in the value chain have resulted in a widening gap between farm gate and wholesale prices.

Table 3. Comparison of real wholesale and farmgate prices of unshelled groundnuts 2005-2010

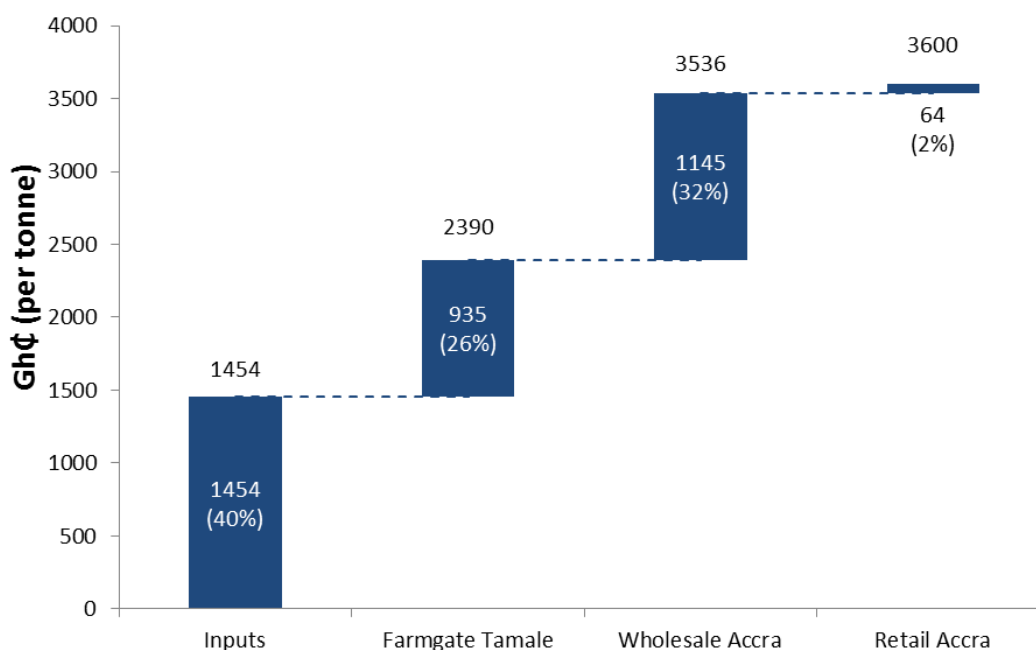
	2005	2006	2007	2008	2009	2010
Wholesale prices in Accra	379.4	837.5	839.2	1290.7	1632.1	1893.6
Farmgate prices in Tamale	351.4	421.1	343.5	566.4	822.0	1085.8

Source: Angelucci F., Bazzucchi A., 2013. Analysis of incentives and disincentives for groundnuts in Ghana. Technical notes series, MAFAP, FAO, Rome.

Figure 6 presents a breakdown of value added activity the groundnut chain. Farmgate prices for the surrounding Tamale area were used in the analysis, but margins for farmers in more remote areas are likely lower due to additional transport costs and lower bargaining power due to insufficient market information.

³³ MoFA January 2013 Weekly Market Price Data

Figure 6. Breakdown of value added activity in groundnut value chain (2013)



Source: MoFA; Masters, William A., et al. "Comprehensive Assessment of the Peanut Value Chain For Nutrition Improvement in Ghana" Final Report Tufts University and Global Alliance for Improved Nutrition, September 2013; author's calculations

The large-scale privatisation of the petroleum industry has pushed up transport charges³⁴, which have subsequently affected marketing costs. When analysing the distribution from northern farm gate areas to wholesalers in Accra, distribution costs now make up 32% of retail prices³⁵. Inputs are also costly, making up 40% of the final retail price.

Figure 6 shows that 26% of the final retail price goes towards margins for the producer. However, as previously noted, groundnuts are an incredibly labour-intensive crop, primarily sourced by informal family workers (including children). As such, the price earned by the producer per hour worked is relatively low. In order to promote groundnut as a poverty reducing crop, increasing the efficiency of the value chain must work to lower costs for primary producers and from the farmer to the consumer.

SECTION 5. ANALYSIS OF SUPPORT FUNCTIONS

5.1 RESEARCH

Seed breeding trials are conducted by institutions under the Council for Scientific Industrial Research such as the Savanna Agricultural Research Institute (SARI). Developed seeds are then turned over to the Grains and Legumes Development Board to produce foundation seeds to distribute to registered seed suppliers (including companies, non-profits, FBOs or aid agencies) who in turn contract certified seed producers to multiply the seed³⁶.

Seed researchers at local experimenting stations have been active since the 1960s, introducing new varieties such as *Shitaochi* from China, *Mani Pintar* from Zambia and late-maturing varieties *Sinkarzie*

³⁴ Angelucci F., Bazzucchi A., 2013. Analysis of incentives and disincentives for groundnuts in Ghana. Technical notes series, MAFAP, FAO, Rome.

³⁵ Note: The difference in prices assumes a continuous line of trade between the northern and southern markets. However, this figure falls in line with a 2010 estimate of 28% (Angelucci F., Bazzucchi A., 2013. Analysis of incentives and disincentives for groundnuts in Ghana. Technical notes series, MAFAP, FAO, Rome.)

³⁶ ASTI-CSIR, Ghana: Recent Developments in Agricultural Research. Accra: Ghana Council for Scientific and Industrial Research (CSIR) and the Agricultural Science & Technology Indicators (ASTI) project, 2010.

and *F-mix*. New breeding and on-farm trials from the national research service's program led to the release of new early maturing varieties³⁷ in 2006, and have shown to be resistant to both drought and disease while offering strong yields³⁸. *Adepa* has been shown to be ideal for the northern Guinea Savannah zone while the *Nkosour* is best for humid forest zones³⁹. SARI believes it is in a position to supply groundnut seed inoculated with *Rhizobium* but has not carried out field trials or demonstrations.

Some research has been aimed at combatting the aflatoxin epidemic, amongst other diseases. Trials conducted by SARI have shown that the use of local soap and fungicide are ideal as it prevents the emergence of resistant varieties. Other trials in Wa, conducted by SARI and several US universities, have shown that the application of fungicide and phosphorus resulted in an increase in gross margins by a factor of 4-5, while returns to labour and productivity doubled⁴⁰.

Innovative ways to introduce technology into the value chain have also been developed. The Peanut and Mycotoxin Innovation Lab and non-profit Full Belly Project recently developed a shelling machine made from concrete and recycled bicycle parts to increase shelling rates with limited breakage.

Despite the discovery of new seeds and better methods of controlling diseases, pests and improving post-harvest methods, the commercialisation of the research by input supplier and its adoption by farmers has been low due to:

1. Poor Dissemination of research: The committees consisting of SARI and the extension agents responsible for dissemination are underfunded and rely on a few demonstration farms. The use of media is negligible. Thus, farmers remain uninformed of the findings of research.
2. Lack of effective partnerships: SARI, the GLDB and the seed companies has not developed effective partnerships so the supply of breeder, foundation and certified seed is low. The major seed companies have also failed to develop an effective partnership with SARI. With seed the key to increasing yields, controlling for disease and pests and drought resistance, this is an area where MADE can make a major contribution.
3. Lack of private sector capacity to commercialise new equipment: There are few established fabricators of agricultural equipment in Ghana to commercialize better equipment and importers limit themselves to the needs of large, commercial farmers.

5.2 KNOWLEDGE AND EXTENSION

Knowledge of cultivars is very important for groundnuts. Varieties are suited to different uses with some better for oil content, others for fodder, some are more resistant to drought and yet others resist pest and diseases better. So the failure to disseminate knowledge effectively is a major factor in research not showing effective results.

Extension agents are few in number, with only one agent per 3,000 farmers (in some areas, the ratio is as low as one agent for 7,000)⁴¹. Services that do exist do not seem to have given high priority to groundnut cultivation. One recent study showed that those who did receive extension services were not shown to significantly affect variety adoption or income from farming showing the inefficacy of the public extension services⁴².

³⁷ *Adepa, Azivivi, Nkosour and Jenkaa*.

³⁸ Masters, William A., et al. "Comprehensive Assessment of the Peanut Value Chain For Nutrition Improvement in Ghana" Final Report Tufts University and Global Alliance for Improved Nutrition, September 2013.

³⁹ Konlan S, Groundnut varietal response to spacing in the Guinea Savannah and forest zones of Ghana. Kumasi, Ghana: Kwame Nkrumah University of Science and Technology, 2010.

⁴⁰ Naab, J. B., et al. "Groundnut yield response and economic benefits of fungicide and phosphorus application in farmer-managed trials in Northern Ghana." *Experimental agriculture* 45.04 (2009): 385-399.

⁴¹ Masters, William A., et al. "Comprehensive Assessment of the Peanut Value Chain For Nutrition Improvement in Ghana" Final Report Tufts University and Global Alliance for Improved Nutrition, September 2013.

⁴² Ibrahim M, Florkowski W, Kolavalli S, The Determinants of Farmer Adoption of Improved Peanut Varieties and Their Impact on Farm Income: Evidence from Northern Ghana. Presented at the Agricultural and Applied Economics Association Annual Meeting, Seattle, WA, 2012.

Where extension has been undertaken effectively, the results are more promising. In conjunction with the Crops Research Institute (CRI), USAID's Feed the Future program set up several demonstration plots. 30 groundnut farmers visited the plots twice a month for three years of training, and are now training other farmers in the region. This initiative has helped double yields and raise income substantially⁴³. Finatrade Foundation is now looking to finance similar model farms with the University of Ghana, Legon and Kwame Nkrumah University of Science and Technology.

A significant percentage of farming households in the northern regions are part of farmer-based organisations (FBOs), which are tracked online by MOFA, aggregated by region, district and crop. These networks are used for agricultural extension and service outflows by MoFA and NGOs. There is great potential for these groupings to be used effectively to direct knowledge and extension advice to rural beneficiaries, but are set back by poor leadership and bureaucratic structuring.

The private input supply industry has also been slow to identify the potential offered by groundnuts and to develop products and services to meet the needs of farmers. So, disappointed by the traditional practices amongst farmers towards the use of seed, none of the seed companies have bothered to develop a good supply of certified groundnut seeds let alone specialist varieties. Any attempt to develop groundnut supply in the North will need to scale up seed production. The fertiliser importers have also focused on the supply of NPK fertiliser which is not suited to groundnuts. What is needed is a fertiliser that addresses the shortage of phosphorus in the soils of the North.

Indeed the whole network of dealers in the North have not given much attention to developing a market for inputs for groundnuts and transmitting extension to farmers to back that up.

5.3 FINANCE

Financial support has typically come from both informal and formal institutions (namely MFIs). Informal sources, including "money lenders, traders and rotating credit associations"⁴⁴, tend to provide shorter term loans, but reach clients better than formal channels. Women often use local finance collectives, but one survey shows that female processors of groundnuts are typically self-financed⁴⁵. Aggregators may provide funds for ploughing, seeds and fertilisers in return for produce but that will be limited to the few farmers they know and trust⁴⁶.

Any attempt to persuade farmers to grow better varieties is likely to run up against the barrier of access to finance. High input costs associated with the growing of new varieties call for greater use of capital, which smaller farmers do not have. In most cases these farmers are unable to obtain finance from banks and microfinance institutions (MFIs) or those lucky enough to do so at high interest rates that make the overall production process uncompetitive. Small holders therefore resort to cheaper methods, such as retaining seeds and skimping on the use of mechanisation which, in the long run, produce lower yields, higher costs, lower quality and hence lower incomes.

Though the north has many rural banks and MFIs, most are undercapitalised and ill-equipped to make agricultural loans. Facilitating partnerships between the more capable and commercial banks that can provide them with wholesale finance and training them in the cash flow requirements and success factors in groundnut production could help to reduce the information asymmetries that underlie this constraint.

The women that currently can afford to buy only limited quantities of groundnut and use inefficient technology to process it could, with access to finance, both increase the scale of operations and invest in better technology. This requires that they are able to improve record keeping. Access to

⁴³ Masters, William A., et al. "Comprehensive Assessment of the Peanut Value Chain For Nutrition Improvement in Ghana" Final Report Tufts University and Global Alliance for Improved Nutrition, September 2013.

⁴⁴ Masters, William A., et al. "Comprehensive Assessment of the Peanut Value Chain For Nutrition Improvement in Ghana" Final Report Tufts University and Global Alliance for Improved Nutrition, September 2013.

⁴⁵ Sheremenko, Ganna, Wojciech J. Florkowski, and Anna M. Klepacka. "Poverty Outreach in Southern and Northern Ghana." *2013 Annual Meeting, February 2-5, 2013, Orlando, Florida*. No. 142987. Southern Agricultural Economics Association, 2013.

⁴⁶ Masters, William A., et al. "Comprehensive Assessment of the Peanut Value Chain For Nutrition Improvement in Ghana" Final Report Tufts University and Global Alliance for Improved Nutrition, September 2013.



quality business development services (BDS) as well as familiarising the banks with the cash flow and economics of rice processing is needed to reduce information failures.

5.4 MECHANISATION

The Agricultural Mechanisation Services Enterprise Centres (AMSECs) programme was established to help smallholders gain access to mechanised services, by setting up credit facilities and co-ordinating with companies to purchase agricultural machinery. These have largely been ineffective. Instead, private tractor hire services have developed most of which are based outside the North. The bimodal agriculture of the South makes tractor services far more economic than establishing such businesses in the North with its mono-modal rainy season. Hire services based in the south use the North to provide services when the south does not need them.

As a result, there is strong competition for the use of tractor services and male farmers tend to give preference to the main cereal crop they produce. So, land preparation, planting and harvesting of groundnuts remains mainly labour based. There is a need to increase the supply of mechanisation services to the North. Leasing more tractors with specialist groundnut planting, weeding and harvesting equipment in tow could provide a viable solution. This will increase the area under cultivation for groundnuts and hence need not reduce the demand for labour. Additionally, a more commercial approach to the crop should result in greater use of paid labour and that should benefit the poor.

SECTION 6. ANALYSIS OF POLICIES AND INSTITUTIONS

6.1 POLICIES

There is no policy specific to the groundnut industry. However, as part of a larger strategy targeting cash crops in the north, the Government of Ghana's Medium Term Agricultural Sector Investment Plan 2011-2015 (METASIP)⁴⁷ aims to boost the rural industrial processing of cash crops, including groundnut, by 2015. Planned interventions include identifying suitable sites to provide utilities, attracting investors to establish local cottage industries and facilitating the importation of agro-processing equipment. These are yet to materialise.

The more general agricultural support policies that GoG is pursuing are unsuited to groundnuts. Unlike other crops, there is no subsidy for groundnut seeds, even though better seeds have a big role to play in improving farmer's incomes and climate proofing its cultivation. Without fertiliser that is appropriate for groundnuts, the general subsidy on fertiliser does not benefit groundnuts as much as other crops.

6.2 INSTITUTIONS

The general underfunding of SARI and the extension service has been noted earlier as has the failure of the AMSECs. Other government initiatives have been focused on groundnuts specifically, but could be expanded further. As noted earlier, SARI has worked to develop and distribute improved groundnut varieties in northern Ghana⁴⁸, but the adoption of new varieties has not been widespread. Two government seed agencies, the National Seed Committee and National Seed Services, were linked to just 0.05% of groundnut production in 2011⁴⁹.

⁴⁷ METASIP 2011-2015, Output 2.5.2: "Rural industrial processing of cassava, oil palm, sheanuts, cashew nuts, soybeans and groundnut increased by 20%, 20%, 40%, 30%, 30% and 30% respectively by 2015."

⁴⁸ Ibrahim, Mohammed, Wojciech J. Florkowski, and Shashidhara Kolavalli. "Determinants of Farmer Adoption of Improved Peanut Varieties and their Impact on Farm Income: Evidence from Northern Ghana." *2012 Annual Meeting, August 12-14, 2012, Seattle, Washington*. No. 125000. Agricultural and Applied Economics Association, 2012.

⁴⁹ Masters, William A., et al. "Comprehensive Assessment of the Peanut Value Chain For Nutrition Improvement in Ghana" Final Report Tufts University and Global Alliance for Improved Nutrition, September 2013.

In addition, there are two other notable failures in the public institutions supporting groundnuts:

- The Food and Drugs Authority has failed to enforce standards for aflatoxin so that a large number of groundnut consumers throughout the country are exposed to high levels of aflatoxin. As a potent toxin and carcinogen, this is an issue which must be addressed urgently. The large processors are able to reduce aflatoxin to acceptable levels in their product but only at a high cost which inevitably affects the prices received by the farmer in the end
- The Export Development and Agriculture Investment Fund (EDAIF) and Ghana Export Promotion Authority have not targeted groundnuts as part of their strategy to develop non-traditional exports.

Some initiatives have aimed to create alternative markets for poor farmers. For instance, an agreement by twenty-five farmer-based groups in the Upper West Region to sell their produce to the Ghana School Feeding Program sponsored by the Ministry of Food and Agriculture. Another significant opportunity is an initiative launched by the World Food Programme (WFP) known as "Purchase for Progress" (P4P) funded by the Canadian International Development Agency (CIDA). The P4P aims to address smallholder issues such as low productivity, difficulties in accessing markets, and inadequate infrastructure.

Some international agencies have worked to better target groundnut farmers⁵⁰. The International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) is working to improve channels for Ghanaian agro-dealers to build better businesses and help groundnut producers boost production. In addition to standard extension services, training in business management, technical skills and demand creation activities (such as field days and demonstrations) were undertaken to encourage the use of advanced inputs and hybrid varieties.

SECTION 7. IDENTIFICATION OF SYSTEMIC CONSTRAINTS

The groundnut market system has not reacted adequately to strong demand and rapidly rising prices. Demand continues to outstrip supply so that large processors (e.g. Burger Industries and Ghana Nuts) are turning to imports. The production of groundnuts in the North is mainly by poor smallholders who find it difficult to raise the capital to expand production of groundnuts or raise productivity. It is easy to spot the key constraints such as the lack of seeds. Groundnut seeds are difficult to reproduce for both farmers and suppliers, yielding only 15 seeds per plant (assuming no losses)⁵¹. One seed supplier cited delicate seeds and difficulties in processing as reasons for not growing groundnut seeds⁵². The problem of huge post-harvest losses is also obvious resulting in lower incomes for farmers and health risks for consumers.

What is important, however, is to look beyond these symptoms at the market failures that give rise to these symptoms to identify the systemic constraints:

- Undersupply of public goods (research, extension). SARI has developed varieties that could boost productivity and make the crop more resilient to diseases, pests and the weather variations that are the consequence of climate change, SARI and international institutes have developed post-harvest techniques that can reduce losses and control aflatoxin. But this research has not been widely disseminated or commercialized. Public institutions are weak and they have failed to develop partnerships with private businesses with mutual interest. Lack of breeder and foundation seed and failure of SARI and GLDB to develop a partnership with seed companies is the biggest symptom of this failure. The supply of extension services to disseminate knowledge of GAP and provide advice to farmers on what varieties are best

⁵⁰ Angelucci F., Bazzocchi A., 2013. Analysis of incentives and disincentives for groundnuts in Ghana. Technical notes series, MAFAP, FAO, Rome.

⁵¹ Masters, William A., et al. "Comprehensive Assessment of the Peanut Value Chain For Nutrition Improvement in Ghana" Final Report Tufts University and Global Alliance for Improved Nutrition, September 2013.

⁵² Based on field interviews.

for the market is also woeful. Both public institutions and private input dealers are weak. This weakens the ability to convince farmers to grow improved varieties and to bring new land under groundnut cultivation. The poor enforcement of food standards has exposed poor consumers to high levels of a carcinogen.

- Adverse market power: Market power is concentrated in the hands of aggregators and wholesalers in the large cities who are not passing on the incentive provided by high consumer prices back to the farmers. There is a need to open up new, more stable and direct channels to end-users and consumers
- Coordination failures prevent a concerted response: Most of the actors in the value chain are small and lack the ability to coordinate functions across the value chain. Even those who have the market power, the aggregators, wholesalers and end users, are themselves SMEs. This leads to coordination failures which prevent the market from responding effectively. There is a need to develop platforms that enable better coordination across the value chain.
- Financial market failures: lack of information needed to distinguish good borrowers from bad and risk averse financial institutions (banks, rural banks and MFIs) undermine access to formal sources of finance. The rural banks and MFIs have the products and low transaction costs to potentially lend uncollateralized successfully but their failure to invest in training of staff and systems prevents them from realizing that potential. Competition amongst rural banks and MFIs that could lead to innovation is limited by the presence of donor supported wholesale finance and a ready market for banks to lend to government and large corporates.
- The market for agricultural equipment leasing is in its infancy: Groundnuts require mechanisation to overcome labour constraints and improve quality, particularly when grown by women. Outright purchase of equipment is not possible not only because of poor access to finance but also because the small scale of cultivation makes it uneconomic. What is needed is for dedicated service providers to provide mechanisation services to farmers. In turn, that requires that service providers can lease equipment. The market for the leasing of agricultural equipment is however in its infancy with most leasing companies having withdrawn from the market because most lessors did not honour their agreements. Only Stanbic Bank is still active. This is a market failure caused by government and donor programmes that have given away equipment in the past engendering moral hazard.

SECTION 8. CONCLUSION

The growing, trading and processing of groundnuts is clearly a major pro-poor opportunity for the North. The crop can help to improve incomes, reduce malnutrition, improve soil fertility and, with the new varieties, help build climate resilience. Addressing the systemic constraints above requires a set of concerted interventions along the groundnut value chain. Possible interventions include:

- **Research: dissemination, demonstrations, commercialisation**: Facilitate the forging of an alliance between SARI, international research institutions, local extension service and the private sector to disseminate the findings of research, GAP, market trends and purchasing needs of end users and post-harvest practices. Incentivise the private sector to work with the extension service and SARI to set up demonstrations and commercialise new varieties.
- **Platforms for Extension services**: There is a large deficiency in the number of extension agents in northern Ghana. In the absence of on-site agents, mobile phone platforms may help fill the knowledge gap for farmers. ADVANCE is working with Farmerline to provide extension services for rice, soya and maize using voice/SMS messages and mobile surveys⁵³. MADE could use that platform for groundnuts. Similarly, a local NGO, the Savannah Young Farmers Network, has established an audio conferencing platform (a VoIP application) to help connect farmers with extension officers, agronomists, veterinary officers and other experts. Studies have not tested the

⁵³Farmerline Website: <http://farmerline.org/tech/> Accessed February 2014




efficacy of these services, but market information would undoubtedly be valuable to farmers in negotiating with agents and traders, as well as timing household and agricultural decisions.

- **Seed markets, input supply:** MADE could facilitate partnerships between SARI, GLDB and progressive seed companies to commercialise seeds of new varieties that could increase incomes and climate resilience. The seeds would be inoculated with Rhizobia.
- **Mechanisation services:** Mechanisation services would counter issues posed by labour constraints, and free up the binding constraint of labour to be used more efficiently. Women producers will be less disadvantaged compared to men. Mechanisation of land preparation, harvesting and postharvest processes could increase productivity by about 20%. The combination of good agronomic practices with the use of mechanisation services could reduce cost of production per metric tonne by nearly 40%-50%. The key is to develop the market for leasing equipment suited to groundnuts and then working with the tractor hire service providers in the North, and those based in the South who serve the North, to ensure that the equipment is marketed effectively to poor women farmers. The equipment would cover all aspects of farming and processing (e.g. shellers, dryers).
- **Access to finance:** Facilitate partnerships between commercial banks and rural banks and MFIs to innovate commercially viable lending practices to small farmers, traders and processors. Provide the necessary expertise to develop systems and train staff on the economics of groundnuts on a cost sharing basis with the more progressive rural banks, MFIs and commercial banks
- **Coordination.** Whilst full-fledged contract farming involving end users is not likely to be possible (given that their SME status limits their ability to invest and resilience to the threat of side selling) it is possible to strengthen the use of aggregators to improve coordination. The aggregators can be incentivised to work with input suppliers, providers of mechanisation services and financial institutions to ensure that the farmers they are working with can adopt new varieties and better agronomic and post-harvest practices. For example, BASA Agrobusiness, a private aggregator, used funds from Ghana Nuts Company to finance small agents to make spot purchases in far reaching areas⁵⁴. Burger Industries is using aggregators to purchase groundnuts in the North and could be incentivised to increase their ability to coordinate and transfer knowledge.
- **Using embedded services to control aflatoxin.** The international firm, Fair Match, has been working with one of the world's largest snack companies, Intersnack, to source peanuts from Africa. It has succeeded in Malawi. MADE could incentivise them to work in northern Ghana.

⁵⁴Masters, William A., et al. "Comprehensive Assessment of the Peanut Value Chain For Nutrition Improvement in Ghana" Final Report Tufts University and Global Alliance for Improved Nutrition, September 2013.

ANNEX A – GENDER ANALYSIS

MADE Gender Market Screening Form		
Market name	GROUNDNUT	Assessment Colour Code
1. Description	<p>94% of Ghana's groundnut is produced in northern Ghana by more than 625,000 households, mostly smallholder farmers. It is mainly rain-fed crop with high labour requirement provided by women and young people. The sector experiences labour shortage at harvest time due to competitive use of labour during the rainy season. 72% of groundnut farmers sell their crop.</p> <p>There are a few large scale groundnut processors and oil millers. There is however a growing commercial processing and potential export of groundnuts. The key players in the groundnut value chain include farmers, local market women, itinerant traders and emerging organised aggregators.</p>	
2. Gender sensitivity (How gender sensitive is this market?)	<p>Groundnut is one of the commodities initially regarded as women's crop grown by women as a minor dish, a good source of vegetable protein for the household as well as a food security crop. It is now a strategic cash crop cultivated by both men and women as a poverty reduction strategy in northern Ghana. The processing industry is mainly women (60%) using low technology and processing various products including groundnut oil, paste, cake, flour, fried groundnuts among others as a source of income for the women.</p> <p>Groundnut cultivation has a very high labour demand which is met mostly by women and serves as a source of income for them during the season.</p>	
3. Contribution to negative gender effects.	<p>Commercialisation of groundnut production has the potential of displacing women in production who often lack adequate access to land in communities where there is limited arable land. It could also displace labour by women in sowing and harvesting of groundnuts which could affect their income.</p> <p>Promotion of mechanisation, improved seed varieties and high inputs requirement could marginalise women in their participation in groundnut production due to their lack of capacity to access finance to acquire inputs.</p> <p>Industrialisation and commercialisation of groundnut processing has the potential for displacing women because it could change consumer preference for deodorised oil which women processors do not meet.</p>	
4. Opportunities to adapt to or mitigate these negative effects	<p>Facilitating access to improved seeds and good agronomical practices could increase the productivity of women farmers who often have less access to inputs.</p> <p>Improving access to better processing technologies could remove the drudgery, increase productivity and income of women processors. Also, facilitating post harvest handling and storage could improve the quality of nuts for processing, leading to higher quality processed products and higher</p>	

	income for women.	
5. Gender promoting measures	<p>Interventions could employ the following measures:</p> <ul style="list-style-type: none"> • Introduce women farmers to certified seeds and good agronomic practices • Increase awareness and access among women about improved technologies for groundnut processing • Facilitate women's access to BDS and finance • Facilitate linkages to new markets • Facilitate MFIs and other financial institutions to develop suitable agricultural financial products for women • Create forums to discuss benefits of improved technologies to the family and community at large 	
6. Obligatory gender mitigating measures	The interventions in the groundnut market should take account of displacing effects and offset the effects through appropriate measures, making sure that women are not marginalised.	
7. How will gender promotion measures be monitored?	There will be a yearly assessment by the gender specialists with inputs from the market development specialist.	
Risk colour coding	 Low  Medium  High	

ANNEX B – ENVIRONMENT & CLIMATE CHANGE ANALYSIS

MADE Environment/CC Screening Form		
Intervention/ component name	Groundnut	
1. Description	<p>Activities in this component may focus on providing access to improved groundnut production technology, improved seeds, mechanisation services, good storage facilities to reduce high post-harvest losses, and improve processing capacity at village level.</p> <p>Mainly grown in wet season (rain-fed). Production mainly concentrated in Northern, Northern Brong Ahafo and Volta Regions of Ghana.</p>	Risk
Risk from Climate Change	2. Sensitivity of the intervention to risks from CC Very vulnerable to both flood and drought. Some groundnut diseases are climate linked – Excess moisture promotes activities of Aspergillus flavus increasing level of aflatoxin in groundnuts.	Without adapt.
	3. Opportunities to adapt to these CC risks More adaptive to infertile soils than most crops- low dependence on external inputs. Groundnut is a total crop with multiple uses and benefits – provide opportunity for adaptations by income generation. Improve agro practices – crop rotation, time planting and harvesting.	With Adapt.
CO₂/GHG emissions	4. Contribution of the intervention to CO₂/GHG risks Relatively small. Some limited adverse effects from clearing vegetation.	Without Mit.
	5. Opportunities to mitigate the CO₂/GHG risks Improve agro-practices mainly.	With Mit.
Environment risks	6. Risks to the environment from intervention Small risks from increased agrochemical use.	Without Mit.
	7. Opportunities to mitigate the environment risks Groundnut husks, vines and cake are excellent for livestock feeding. Groundnut for soil fertility improvement by direct fixation of nitrogen and provision organic matter to the soil fauna and flora. Reduce the incidence of the notorious parasitic weed - striga.	With Mit.
8. Summary	A relatively climate change sensitive crop	
9. Obligatory mitigation or	Any market intervention on this crop which seems likely to lead to an increased	

adaptation measures	area of cultivation will be accompanied by promotion of sustainable cultivation.		
10. Overall Risk assessment after mitigation	High from climate change, low from environmental impact – but this should be able to be mitigated by improved practice.		
11. How will the mitigation/ adaptation be monitored?	A random sample of producers will be visited on an annual basis and the sustainability of their practice will be monitored in respect to: 1. Prevention of soil erosion 2. Safe use of agrochemicals		
Risk colour coding	Low	Medium	High
In order to be approved, none of the risk assessments after mitigation/adaptation (Rows 3, 5, 7 or 10) can be red.			

ANNEX C – POLITICAL ECONOMY ANALYSIS

MADE Political Economy Market Assessment

MARKET	GROUNDNUTS
<i>Stakeholder mapping</i>	
<p>1. Who are the “most influential” stakeholders or stakeholder groups in the market?</p>	<p>Traders, Aggregators and Processors. Aggregation of groundnuts is concentrated in the North. Aggregators have diverse business models and different capacities for farmer training, provision of warehousing facilities, warehousing receipt systems and bulking of produce for processing and marketing. Individual aggregators, mostly itinerant traders, prefer to buy “spot” (pay cash on delivery for products that they inspect before purchase), while corporate aggregators prefer some form of pre-planting or pre-harvest arrangement.</p> <p>Spot purchases by aggregators/wholesalers in open markets, where prices fluctuate and quality is variable, predominate. There is almost no traceability from end-users back through traders to the location of production, and very little incentive for farmers, transporters and traders to upgrade practices to improve quality.</p> <p>Still, traders, and particularly aggregators who bulk up wholesale shipments, are in a unique position to introduce aflatoxin control measures and quality assurance procedures. They drive production practices by offering market access, which is a very scarce resource in northern Ghana. Farmers have shown a clear willingness and ability to comply with customer specifications by adopting technologies that aggregators demand, if the potential purchasers anticipate farmers’ need for credit, training and other enabling services.</p> <p>An estimated 60% of groundnut produced is processed by women using traditional or artisanal level methods and turned into oil, confectionery, paste and snacks for the domestic market. There are only a handful of corporate/institutional processors in the industry. Ghana Nuts Ltd. located in a leading processor located in Techiman, Brong-Ahafo. The company processes and markets tropical nuts and oil seeds such as groundnuts, sesame and cashews and was the recipient of a USD 250,000 grant from the U.S. African Development Foundation (USADF) to modernize and expand their factory. Since receiving the grant, the company has become a multi-million dollar company and is now a key player in other Ghanaian value chains, exporting more than 50,000 mt of shea nut and 80,000 mt of soya beans annually to Europe, India, and Japan. The company employs over 1,000 people, which is a tenfold increase from before the grant.</p> <p>Yedent Agro Processing Ventures, based in Sunyani, is another one of the relatively large companies that process groundnut on industrial scale into weaning foods. There are two other relatively large scale oilseed companies, 3K and A Ventures, Golden Web Oilseed</p>



	<p>Processing and Refining, that have refineries and the requisite facilities to process groundnut into edible oil for the domestic market. Vester Oilmills Limited is also in the process of acquiring a refinery, and could also get into processing of groundnut into oil. Burger Food Industries has been engaged in the production of groundnut snacks since 2000. It exports over 85% of its production to Nigeria</p> <p>In December 2012 Hershey Company announced that it would partner with the Project Peanut Butter to establish a production facility in Ghana that will manufacture groundnut- based vitamin enriched packets to be distributed to impoverished children in rural Ghana. Eventually all the groundnuts used in the project will be sourced from within Ghana. The announcement also states that Project Peanut Butter will “work to improve the peanut farming sector by providing farmers with access to higher quality inputs and better planting and harvesting techniques”.</p> <p>ACDEP, which was initially involved in the groundnuts value chain through its Savannah Farmers Marketing Company but exited the market after losing its major customer over aflatoxin concerns, has indicated an intention to return to groundnuts. ACDEP believes that now the whole “infrastructure” is laid down and is discussing collaboration with IFDC.</p> <p>Growers/Producers. Almost half of the production of groundnuts is concentrated in the Northern Region of Ghana. Altogether, the Northern, Upper East and West regions account for 94% of groundnuts production in Ghana. The majority of groundnuts production is made by small-scale farmers with less than two hectares of arable land. In a typical farming community in northern Ghana, almost all farm families will cultivate some groundnuts, and of their crops it is the one most likely to be marketed commercially: in one survey, more than 90% of households grew groundnuts, and 72% of them sold some of their crop. Very few purchased inputs are used in peanut production. Ghana’s crop is produced almost entirely without irrigation and with few soil amendments.</p> <p>Input suppliers. Almost all production uses farmers’ own retained seed or seeds purchased informally in local markets. In the three regions of northern Ghana, the principal seed producer handling groundnuts is the Savanna Seed Services Company Limited. Other smaller seed producers are also active, in some cases marketing the seed themselves or through agro-dealers.</p>
<p>2. Is there a presence of legitimate and credible stakeholders?</p>	<p>Based on its previous experience in this market, ACDEP is widely regarded at least by regional-level policymakers. Ghana Nuts is also a credible private participant in the value chain.</p>
<p>3. Is there a national politician or other influential political actor (e.g., national or regional “best farmer”) who has a notable</p>	<p>There is no known individual champion of groundnut-farmer or industry interests. There is reference in at least one secondary source to a Ghana Peanut Farmers Association. But little information is available</p>

interest in or ‘champions’ the interests of any of the participants in this market?	on it.
4. Are there vested interests that can block, derail or sabotage policy and institutional change?	None that is apparent.
5. Are farmers in the market organized collectively? Is there a representative farmer based organisation?	There are no known groundnut-specific FBOs. There is reference to a “Ghana Peanut Farmers Association” in some secondary sources.
<i>Institutional assessment</i>	
6. Are there any policies/regulations/norms in the market that could limit or facilitate MADE’s interventions?	Groundnuts are mentioned in objective 1 (Food security, emergency preparedness, and reduced income variability) of the Food and Agriculture Sector Development Policy (FASDEP II). However no specific policy for groundnuts has been developed. METASIP also notes that groundnuts are distinctive among the country’s traditional staple crops in having the highest rate of commercialization among producers, with 69% of peanut farmers selling much of their output. Beyond that, METASIP places little emphasis on groundnuts in particular. Furthermore current policy has no focus on the specific food safety and nutritional issues associated with groundnuts, such as contamination by mycotoxins. Groundnuts attract less than 4.5% of the country’s agricultural research effort. The government does not subsidize the cost of certified seeds for groundnuts, as it does for maize and rice. Also, groundnuts are not a commodity subject to a quality standard under existing regulations.
7. Which are the key public sector institutions, agencies and offices (national, regional, or local) relevant to the market?	The key public sector agencies relevant to the market is MOFA.
8. What platforms or forums are available and accessible to farmers, FBOs and other market participants to engage with policymakers or the policymaking process?	No known crop-specific forums or platforms for engagement with policymakers.
9. Do traditional authorities and other customary institutions play any role in the market?	Traditional authorities do not ordinarily play a role in the groundnut value chain.
10. Are there capable private market participants in the market?	There are a number of processors, as stated in section 1 above.
<i>Summary</i>	
Overall assessment	Overall, the political/regulatory risk to MADE of intervening in this market is minimal. There are no strong vested interests or stakeholders with interests that are adverse to MADE. Although explicit policy and regulatory support for groundnuts is weak, the general political and policy environment is favourable and can be further improved by

appropriate advocacy.

ANNEX D – LIST OF RECENT AND ONGOING RELATED PROGRAMMES

Full name of project	Market	Organisation	Geographical areas of intervention	Start and end year	General Description
N2 Africa	Soya, Cowpea, groundnut	BMGF	Northern Ghana	2010-2012	N2AFRICA project is a science research project that is focused on putting nitrogen fixation to work for smallholder farmers growing legume crops in Africa. The project is run in a number of African countries including Ghana. It is aimed at harnessing the huge nitrogen reserves in the atmosphere into useable forms in soil for plants to use. The main objectives if the project were: Identify niches for targeting nitrogen fixing legumes, test multi-purpose legumes to provide food, animal feed, and improved soil fertility, promote the adoption of improved legume varieties, support the development of inoculum production capacity through collaboration with private sector partners
Peanut Collaborative Research Support Program (PCRSP)	Groundnut	USAID	Ghana	2007-2012	The PCRSP contains twenty- one projects covering topics in production agriculture (plant breeding, agronomy, cropping systems), storage, processing, product development, consumer demand and human health. The project portfolio is organized around a “value chain” concept in order to develop a programmatic coherence from project activities.
Farmers Agriculture and Marketing Project (FAMAR)	Groundnut, Soya, Sorghum	ICCO, EU	Northern Ghana	2004-2011	The project aims at increased yields of small-scale farmers and better access to markets for fairer prices for local agricultural produce. It is being implemented by supporting farmers groups to produce soya, sorghum and groundnuts and facilitating market linkage with a local aggregator, Savanna Farmers Marketing Company (SFMC).
Enhancing Food and Income Security	Groundnuts, onions, maize and other staple crops	USAID	Northern Ghana		The project is helping farmers in marginalized areas of northern Ghana to earn more for their crops while ensuring a better food supply for the region by training farmers to better grow groundnuts, onions, corn and other staple crops, while also helping them access credit and markets.
Smallholder Rehabilitation and Development Project	Maize, groundnut, millet sorghum, yam, cowpea, rice and cassava	IFAD	Northern region		The main objectives of the programme are to encourage food production and to improve rural family incomes through: provision of farm inputs including fertiliser; reactivation of extension services; provision of credit for smallholders and rehabilitation of feeder roads to improve the access of smallholders to markets. The major crop is maize, followed by groundnuts, millet, sorghum, yam, cowpeas, rice and cassava.

