



## Value Chain Analysis of Grain Legumes in Borno State, Nigeria



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### **N2Africa**

**Putting nitrogen fixation to work  
for smallholder farmers in Africa**



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## Acronyms

ADP	Agricultural Development Project
BOA	Bank of Agric
BOSADP	Borno State Agricultural Development Programme
ATA	Agricultural Transformation Agenda (a development programme in Nigeria supported by the World Bank)
BoP	Base of Pyramid
EAs	Extension Agents
FADAMA	A development programme in Nigeria supported by the World Bank
FAO	Food and Agriculture Organisation of the United Nations
FAOSTAT	FAO's statistical data base
FMARD	Federal Ministry of Agriculture and Rural Development
GM	Gross Margin
Ha	Hectare (10,000 m <sup>2</sup> )
IPM	Integrated Pest Management
LBA	Licensed Buying Agent
LGA	Local Government Area
LPO	Local Purchase Order
MANR	Ministry of Agriculture and Natural Resources
Md	Man-day
MFI	Microfinance Institution
MT	Metric Ton/s
NASC	National Agricultural Seed Council (NASC)
N	Nigerian Naira (exchange rate in July 2015: 198 N/1USD)
NEPC	Nigerian Export Promotion Council
p.a.	Per annum (per year)
TOR	Terms of Reference
TOT	Training of Trainers
VC	Value Chain
N2Africa	Nitrogen Fixation for Smallholder Farmers in Africa



## Table of contents

<b>1</b>	<b>Executive summary .....</b>	<b>7</b>
<b>2</b>	<b>Introduction .....</b>	<b>10</b>
<b>3</b>	<b>Literature Review.....</b>	<b>11</b>
3.1	Value Chain Approach .....	11
3.2	Soyabean Value Chain .....	11
3.3	Cowpea Value Chain .....	13
3.4	Groundnut Value Chain .....	14
<b>4</b>	<b>Methodology.....</b>	<b>16</b>
4.1	Desk Research .....	16
4.2	Focus Group Discussions .....	16
4.3	Key Informant Interviews .....	16
4.4	Collection of Primary Data .....	16
4.5	Analysis.....	16
4.6	Scope.....	16
<b>5</b>	<b>Findings.....</b>	<b>18</b>
5.1	Identified Value Chains and Markets.....	18
5.2	Production Potential in Selected LGAs.....	20
5.3	Access to Land and Youth Involvement .....	22
5.4	Gender Based Constraints .....	24
5.4.1	Land Ownership for Women .....	24
5.4.2	Production and area of investment .....	24
5.4.3	Local processing of Grain Legumes by Women.....	25
5.4.4	Constraints Identified during FGD with Women .....	25
5.5	Quantification of Production, Pricing and Marketing .....	26
5.6	Labour and other Market Challenges .....	27
5.7	Rating of Market Challenges .....	28
5.8	Relationships of Farmers with Input Suppliers .....	29
5.9	Storage System .....	29
5.10	Policy and Regulatory Reform .....	30
5.11	Difficulty in Accessing Loans for Agriculture .....	30
5.12	Other Key Findings.....	30
5.13	Maps and Structures of the Value Chain .....	31
5.13.1	Key Chain Actors (Operators, Supporting Actors, Functions and Roles).....	32
5.13.2	Power Relationship between Actors .....	32
5.13.3	Partnerships and Collaborations .....	33
5.13.4	Key Products and Markets .....	33
5.13.5	Trade Terms.....	33
5.13.6	Women's Role .....	33



<b>6</b>	<b>Conclusions and Recommendations</b> .....	<b>34</b>
6.1	Capacity Building .....	34
6.2	Financial Access for Youth.....	34
6.3	Standardization and Food Safety.....	34
6.4	Public Private Partnerships .....	35
6.5	Low-Cost Storage Facilities.....	35
6.6	Develop Joint Upgrading Plans .....	35
	<b>References</b> .....	<b>36</b>
	<b>Annexes</b> .....	<b>37</b>
	<b>List of project reports</b> .....	<b>72</b>
	<b>Partners involved in the N2Africa project</b> .....	<b>75</b>

## Table of annexes

Annex 1: Summarized recommendations per value chain segment .....	37
Annex 2: List of actors in general FGD on various VCs (Cowpea, Soyabean and groundnut) .....	42
Annex 3: Gender based constraints, consequences, causes and interventions proposed.....	43
Annex 4: Cost and quantity of herbicides and fertilizers .....	45
Annex 5: Selected cost for local processing of grain legumes in Borno State .....	47
Annex 6: Cost and quantity of seeds and fertilizer .....	48
Annex 7: Guides for focus group discussions .....	50
Annex 8: Semi-structures interview guides .....	53
Annex 9: Quantitative questionnaire .....	56
Annex 10: List of Input Companies .....	68
Annex 11: Gross margin for soyabean and cowpea .....	71

## Table of tables

Table 1: Production statistics of selected grain legumes (MT) .....	11
Table 2: Challenges and opportunities for women and youth in Borno state .....	26

## Table of figures

Figure 1: Relationships between actors and supporters for grain legumes in Borno State .....	19
Figure 2: Analyzed Markets for Grain Legumes in Borno State.....	20
Figure 3: Ages of respondents involved in grain legumes in Borno State.....	21
Figure 4: Rate of production of legume grains in selected LGAs.....	21



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Figure 5: Access to land by different category of respondents .....	23
Figure 6: Land ownership by women .....	24
Figure 7: Women production usage and expenditures .....	25
Figure 8: Produce sales and price setting for grain legumes in Borno State.....	27
Figure 9: Information sources on new market prices in Borno State .....	27
Figure 10: Sources of labour and cost in Borno State .....	28
Figure 11: Market challenges faced by farmers in Borno State .....	28
Figure 12: Farmers' relationship with input suppliers.....	29
Figure 13:Storage system and method Farmers' relationship with input suppliers.....	30
Figure 14: Soyabean and Cowpea value chain maps .....	32



## 1 Executive summary

N2Africa in Borno State targets development of three grain legumes – cowpea, groundnut and soyabean. The overall objective is to increase biological nitrogen fixation and productivity of grain legumes to enhance soil fertility, improved household nutrition and increased cash income. In addition to the above, N2Africa in Borno State focuses on developing inclusive agri-business models that will lead to employment and/or self-employment of at least 2,000 youth living in the target area. The Local Government Areas (LGAs) involve include, Biu, Hawul, Kwaya Kusa, Shani, Askira Uba, and Bayo. However, due to security situation in Borno State, the study areas were limited to four LGAs being Biu, Hawul, Kwaya Kusa, and Bayo.

In Borno State, the basic value chain comprises the private sector i.e. enterprises and operational service providers, (micro level) and their relationships, supporting and/or service provision institutions (meso level) and the political, legal, institutional and infrastructure environment that should enable economic and value chain development. Considering the final products and derivatives obtained from the various grain legumes, five distinctive value chains (VCs) are currently active and operational in Borno state regarding the three grain legumes. Each commodity hosts different value chains. These value chains are categorized under each of the grain legumes below:

- **Groundnut value chain:** This VC is mainly for local consumption within the state. Major reason being low patronage by industrial processors such as Nestlé Nigeria plc. -Lagos, Life Flour Group - Lagos, Grand Cereals – Jos who now utilize soyabean as their raw materials. Also, end products of groundnut particularly oil is perceived to contain a high cholesterol level compare to soyabean oil.
- **Soyabean value chain:** Two value chains for local consumption and industrial use are operational in Borno State. It is heavily consumed locally in the form of processed products (local processing) making its availability for industrial use highly competitive. Due to being a low cost protein replacement for animal products, household consumption and utilisation is mainly in the form of several locally processed products often done by women. In Borno State, 46% of soyabean produced is locally consumed. This is in addition to the rapid growth in the poultry sector in the past five years (about 30% per annum) that boosted demand for soyabean meal in Nigeria (USDA, 2008). Major soyabean processors in Nigeria are currently operating below their capacities while faced with a high and growing demand for soyabean oil-cake, soyabean based infant formula and the production of lecithin by chocolate industries.
- **Cowpea value chain:** Value chain for local consumption of grains locally, mainly households and restaurants. Consumption in Borno is very limited as the grains are mainly transported to southern Nigeria and much more regional trading is taking place compared to any other VCs in Borno State. Respondents confirmed 17% of total production is locally consumed, while 83% is moved to Southern Nigeria (mainly Lagos and Onisha).

**Cowpea** is grown in 32 of the 37 states of Nigeria with 18.4% of the total land area. Borno is one of the largest producers accounting for 12.35% (TL-II, 2011). 76% of the national output for **groundnut** is attributed to Bauchi, Niger, Benue, Borno, Taraba and Zamfara States, while Borno is estimated to account for 9% of the total production in Nigeria. For **soyabean**, Borno is still increasing production and youth in Borno State is taking this as an area of focus because of high patronage from industrial processors and high market uptake and as yet limited production.

Currently, limited reliable data prevents establishing clearly the present production, trade and local processing levels and trends. However, the primary data provided such information though with a margin of error. The following pertains regarding production (yield) levels: 70% of respondents in cowpea production estimated 500-1,000 kg as their yield per ha. Also, 78% of respondents in groundnut production estimated between 1,000- 2,000 kg as their average yield per ha and the average yield per ha estimated for soyabean by 55% of the respondents was 980 kg and 40% indicated 2,000 kg as an average yield.

Gross margin analysis was used to determine profit on investment per ha. An average of 1,000 kg per ha was used to analyse the cost of production for soyabean and cowpea as obtained from respondents, while it was difficult to get some figures for estimating the cost of production per ha for groundnut. For cowpea the total variable cost per hectare was estimated at 89,500 Naira while total



farm income was estimated at 125,000 Naira and total gross margin was estimated at 35,500 Naira. The estimated gross margin for soyabean is 27,500 Naira (see details in annex 11). The gross margin for soyabean is without the use of fertilizer or inoculants.

These costs per kg in the production of cowpea and soyabean can be tremendously reduced with increase in yield through introduction of best practices on use of fertilizer and inoculant. Economics of manual threshing, which is one of the impediments of women and youth in agriculture has to be given priority in order to ensure increase in income for farmers and encourage youth to get involved in the grain legumes.

However, Boko Haram insurgency had reduced household capacity for production of grain legumes by 38%, decreased market functions and trade flow whereby three trade routes that link the south from Gombe, Yobe and Adamawa States are disrupted. The insurgency contributes to women and youth inability to access fertile land which represents 24% of all challenges. Generally, women (with their children) and youth are subjected to more risk because of the insurgency and this makes concentration on agricultural production very difficult.

In all the LGAs, ages of 26 -35 and 36 -50 are respectively active in production activities. 70% of the respondents within the age of 26- 35 in Hawul LGA are very active in soyabean production. This confirms findings from youth during focus group discussions on their preference for soyabean production due to high market demand and most buyers pick it up directly at village level while other commodities farmers require paying transportation to the local market. This will assist up scaling of soyabean production in Borno State.

Farmers prefer direct purchase of their input from suppliers in the open market without having business relationships with these input suppliers. However, Jirkur Seed Company and Debiro Company are engaging farmers on a business model that assist farmers to access seeds, fertilizers, and pesticides and pay back with their produce. This has encouraged farmers to upscale production because of the credit facility and guaranteed market. This model is an opportunity to gainfully employ youth in the production segment of the value chain for the various legume grains.

Mirnga Farmers Coop and Savanah Agro Cooperative Society coordinate their members on bulk purchase of inputs to reduce costs. Similarly, individual local traders (Alhaji Bukar Dalbi and Tijani Hassan) in Biu markets render embedded services to farmers on provision of input ahead of the planting season. However, the need to formalize the existing relationship between farmers and these traders will accelerate the trust building process as some of the farmers are still sceptical about the arrangement. Local traders are also taking price advantage and farmers do not have access to information on the prevailing farm gate prices.

Products of several input companies like Notore Chemical Industries, Premier Seeds Nigeria Limited, DA-ALLGREEN Seeds Limited, WACOT, Value Seeds, Alheri Seeds, etc are in the major markets in Borno State. These companies have contact traders in charge of their products, details of other relevant companies are in Annex 10.

On inoculants, farmers in Borno State are gradually becoming sensitized and 93% have not used inoculants technology while 5% had received information on it from BOSADP, 78% are willing to try the use of Nodumax, while others see it as additional cost on production.

The output marketing segment of all VCs involved agents of traders and other local buyers from outside Borno State. 61% of the produce is sold at farm gate by price determined by buyers even though 84% of farmers have preference for sales at the open market. This seems impossible because of impassable roads, high transportation, commitment through pre-finance arrangements etc. Farmers are better off selling directly to the local market. For example, the farm gate price for 100 kg of cowpea is 10,000 Naira and it is 13,500 Naira in the local market. Also, the farm gate price for 100 kg of soyabean is 9,000 Naira, while it ranges between 12,500 -13,000 Naira in the local market. Farm gate prices for groundnut ranges between 18,500 – 20,000 Naira and sold in the local market for 21,500 Naira per 100 kg.

Buyers are representatives (not staff) of national industries in Nigeria, operating as local trader with informal supply arrangement. Soyabean is sold for production of industrial soy oil to Grand Cereals in Jos Plateau State, Hybrid feeds in Kaduna and Fortune Oil in Kano. Cowpea is sold mainly in Lagos,





Onitsha and Agwu markets mostly for domestic consumption and some cottage industries further process cowpea into other products.

Many of the producers are in remote locations and difficult to reach, leading to high marketing costs. Buyers in Lagos complain of Boko Haram insurgency in Borno State which has made them not to venture into visiting the location for many years. This has increased cost of doing business by 35% which has impacted negatively on their profit. However, it has improved a trust building process in business transactions as traders in Borno State now send produce to Lagos on credit while buyers also send money to Borno, all on trust. No incidence of breach in this informal agreement could be confirmed. Marketing of groundnut is limited to local markets in Borno State with women predominantly leading this activity for both fresh groundnut sold in 2.5 kg per local measurement (mudus) and different processed groundnut.

The majority of women involved are married (79%). Women (21% youth inclusive) involvement in the production is limited. Only 7% of the respondents (women) are in production but cannot upscale due to reproductive activities. Also, those in production are faced with constraints of low capacity in identifying non-adulterated pesticides, inability to do spraying themselves, and payment of high fees for labour as it is culturally believed women cannot carry out specific labour tasks and as such they pay more by engaging men to render such services. These gender based constraints for women cut across the various segments of the value chains. Manual processing which require more time and labour is one of the constraints. 45% of the respondents that are women admitted payment of additional money for labour and purchase of inputs (sub-standard and expired inputs particularly, herbicides are purchased) compared to men, while 29% cannot access market information. Women are engaged mainly in local processing of soyabean and groundnut products. 1,200 kg of grain legumes are annually processed. 89% of these women in Biu, Hawul, Kwaya Kusa, and Bayo LGAs have a total sale of 6,048 USD per annum. 67% of income earned by women is used to support the husband directly and spent on food for the family. Only 10% of the women own their land and are directly involved in the production of legumes for household consumption and sales.

The role of public sector in the promotion of grain legumes in Borno State is still limited. BOSADP has been one of the institutions involved in the sector in the state. N2Africa (Borno) continued collaboration with BOSADP is a signal towards sustainability of the project as this is one of the main public institutions active in the sector.

At federal level, there seems to be manifold interest in supporting legume grains as the Ministry of Agriculture and Rural Development (FMARD) through agricultural transformation agenda (ATA). FMARD sees grain legumes as a way to improve rural incomes, nutrition and livelihoods. However, the need to link up with more initiatives of FMARD through ATA on this is highly imperative.

Youth Employment Agricultural Program (YEAP) established by FMARD within the framework of ATA, Central Bank of Nigeria (CBN), via NIRSAL project in conjunction with FMARD and Ministry of Commerce, Industries and Cooperatives are supportive initiatives and platforms that could be used to support grassroots' economic development, including integration of youth into doing business in grain legumes VCs.

For further details, in Annex 1 recommendations per value chain segment (1) Input Provision and Production, (2) Industrial and Local Processing, (3) Trade and Markets are summarized and in Annex 3 gender based constraints, consequences, causes and interventions proposed.



## 2 Introduction

The Bill and Melinda Gates Foundation (BMGF) funded project entitled “Putting nitrogen fixation to work for Smallholder farmers in Africa (N2Africa) aims to build sustainable, long-term partnerships to enable African smallholder farmers to benefit from symbiotic N<sub>2</sub>-fixation by grain legumes through effective production technologies including inoculants and fertilizers. It is a large scale, science-based “research-in-development” project with its implementation in Nigeria being coordinated by International Institute of Tropical Agriculture (IITA). The project aims to enhance legume yields and yields of sequential crops, and to diversify cropping patterns from mono-cropping of cereals to rotation or intercropping with legumes. The project will reach more than 550,000 farmers with a return on investment of US\$3.5 for each US\$ invested.

The vision of success for N2Africa in Borno State is in line with the project vision of success stated above and will specifically reach more than 40,000 farming families and pioneer models for youth engagement in agri-business (input supply, value addition, etc) through which job opportunities in agri-business for youth living in the target area will be created.

The analysis of the value chains will inform the next steps in the integration of youth. The intervention areas (geographical coverage) in Borno State are mainly in southern Borno State and in the following Local Government Areas (LGA): Biu, Hawul, Kwaya Kusa, Shani, Askira Uba, and Bayo on cowpea, groundnut, and soyabean.

Based on the above vision of success, the project requires information on the current situation of the value chains to enable right targeting and the development of inclusive business models. The objectives of this study therefore included;

- conducting a desk research of initial studies and project documents to identify what has been done concerning analysis of the three values chains (cowpea, soyabean and groundnut),
- identify the role of the grain legumes in smallholder farm household strategies for incomes, food security, nutrition, sustainable natural resource management (NRM), gender equity, youth entrepreneurships and employment,
- identify the structure of the values chains, production areas and trends for the selected value chains, using a three year period production data,
- establish the levels of commercialization of the value chains, i.e. the trade segments of the value chains, map out the opportunities and constraints and develop sustainable interventions to alleviate constraints and generate impact for grain legume-led growth.
- Other issues included; policy and regulatory reforms, potential interventions with the legume stakeholders, identify potential partnerships with multi-stakeholder public and private sector value chain initiatives that have promising models etc.

The study was conducted in Biu, Hawul, Kwaya Kusa, and Bayo Local Government Areas (LGAs) in Borno State. In addition, Lagos in the South West Nigeria was visited for trade related activities linked to Borno State particularly, the four LGAs.

In the analysis, the strengths and weaknesses in the value chains are identified. Opportunities and threats are briefly discussed and areas of intervention listed and prioritized that would help to create an environment that is conducive for youths and women to thrive in doing business in Borno State. However, the need to elaborate further on developing upgrading vision based on identified constraints and opportunities are highly imperative to take the youths and other stakeholders alike to the next level of engagement on agribusiness in Borno State

Even though the focus of N2Africa is in the four LGAs stated above, information for other local government areas where field work was impossible due to the security concerns will be extrapolated from the analysed data.



### 3 Literature Review

The significance of value chain approach in development of strategies to upscale grain legumes across the segments of the value chains cannot be overemphasized. This gives insight into relevant literatures on market dynamics of grain legumes as it affects production, local processing trades and the business environment in Borno State.

#### 3.1 Value Chain Approach

Morris and Kaplinsky (2002) define a value chain as follows: “as full range of activities which are required to bring a product or service from conception, through the different phases of production (involving a combination of physical transformation and the input of various producer services), delivery to final consumers, and final disposal after use”. Humpreys (2005) further points out that closer inspection to local firms will reveal that global trends are reaching down to local markets, threatening the livelihood of many rural farmers and producers. If the agri-processing industry is taken as an example, then it becomes evident that even commercial farmers and processors are often not supplying their local retailers anymore. They are often supplying to central buyers from a few retailers with a national outreach, which might not only prescribe certain kinds of inputs, processes, and packaging, but also stipulate rigorous standards and processes. While larger farmers and agri-processors can comply with these requirements, smaller farmers and processors are being increasingly sidelined. This emphasizes on the need for value chain approach in order to ensure fairness to every actor particularly, smallholder farmers. This suggests the need to ensure fairness, so that smallholder farmers are included in a global value chain can imply more benefits and reduce risks (Porter *et al.*, 1998).

#### 3.2 Soyabean Value Chain

In Nigeria, soyabean is profiled as a cash crop; it is predominately cultivated in the savannah region of northern Nigeria. Soyabean was introduced to Borno State in 2004<sup>1</sup> This was almost a century after it was first introduced to Nigeria unsuccessfully in 1908 in Oyo State and 1928 in northern Nigeria<sup>2</sup>. Its cultivation starts in May/June with land clearing, and harvesting normally occurs in late October through November every year. The crop is harvested 3 - 4 months after planting, depending on the time of sowing and seed variety. For example, there is a high demand for soyabean across the country given the need it serves in animal feed. Poultry farmers and fish farmers usually compound their feed using soyabean cake, one of the by-products after processing soyabean. The formal processing sector is documented to have an installed capacity in excess of 700,000 MT per annum<sup>3</sup>.

Statistics of production from 1995 to 2004 is stated in the Table 1:

Table 1: Production statistics of selected grain legumes (MT)

Staples	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Groundnut ('000)	1579	2278	2531	2534	2894	2901	2683	2699	2700	2700
Soyabean ('000)	287	322	361	403	410	429	436	437	484	484

Source: FAOSTAT data, 2005

<sup>1</sup> Influence of farmers' socio-economic and technological characteristics on soybean seeds technology adoption in Southern Borno State, Nigeria. <http://www.ajol.info/index.php/as/article/view/65761>

<sup>2</sup> Mapping of Soya beans Production Areas in Nigeria. <http://www.propcommaikarfi.org/wp-content/uploads/2013/08/28-Mapping-of-soybean-production-areas-in-Nigeria-3-07.pdf>

<sup>3</sup> Part 2: Soybean - National Agricultural Transformation: Soybean Value Chain Action Plan Summary. Retrieved from <http://www.unaab.edu.ng/attachments/Maize%20Final%20Report.pdf>



Although soyabean production has increase from 287,000 MT in 1995 to 550,000 MT in 2010; home consumption is said to be about 200,000MT and there is still a national demand gap of another 200,000MT being met through importation. Oil extraction firms within the country source produce from neighbouring countries of Benin, Republic of Chad and Cameroun to meet up demand. At the home front, the BoP consumers usually consume soyabean as *Wara*, after small-scale processors have worked on the harvested produce.

Known as the 'miracle bean' or 'golden bean' because of its cheap protein-rich grain, soyabean production in Nigeria has been stymied by unfavourable market which often times results to cyclical gluts. One of the major investments in the processing of soyabean was occasioned by the entry of Karma foods Limited into the market. The company established a 20million USD worth factory around Abuja to process locally produced soyabean. This helped to create jobs on the soyabean value chain as the plant is the biggest soyabean factory in sub-Saharan Africa outside of South Africa with its 75,000 metric tons processing capacity<sup>4</sup>. To ensure supply of quality produce, Karma has partnered with local organisations and IITA to provide high yielding improved varieties, creating awareness, promoting sustainable seed production systems.

One of such efforts to ensure farmers coordinate directly with the market was designed by Propcom Mai-karfi<sup>5</sup> (a programme supported by the UK Government to make rural markets work for the poor) in 2012.<sup>6</sup> Propcom Mai-Karfi's efforts are targeted at farmers in northern Nigeria. It was designed to help increase farmers income and also encourage them to expand production. Kaduna and Niger were the project sites of the intervention and 6,444 farmers were reportedly registered but only 997 committed to the supply. By March 2013, 997MT of soyabean had been sourced from the various farmers' clusters. The company -Karma Foods, was able to save about N10 million since they were buying directly from the farmers and in turn the farmers also had about N6 million increase in income since they were also reaching the market directly without middlemen. Sadly, the arrangement was discontinued same year because of 'unforeseen elements such as lack of trust in newly recruited field executives, lack of proper communication and resistance to change within the procurement division, and a need for intensive investment in capacity building of executives made direct procurement a challenge which companies were not willing to take'.<sup>7</sup>

This experience reveals that the value chain will only function if the demand and supply end of the chain are improved. At present, output per hectare is less than 1,000kg but with improved varieties and adaptation of GAPs, it is possible to get above 2,000kg /hectare. According to the Federal Ministry of Agriculture, six issues are of importance to achieve success;<sup>8</sup>

- Vegetable oil, high protein soyabean cake, use of the high protein soyabean cake in poultry feeds. Policies to encourage local sourcing will have to back this.
- Home level utilization and inclusion in recipe with address reduction in infant and maternal mortality and will bring other health benefits. Senior citizens will also patronise it because it is a low cholesterol replacement.
- Small scale processing, especially for women will address issues of gender and will generate more income through processing into snacks like Wara, Akara and Moimoi.
- Incorporating soyabean flour into wheat flour and cassava flour to fortify bread is also possible.

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<sup>4</sup> IITA Bulletin, Repositioning Nigeria's soybean sector: opening new market opportunities for farmers Issue No. 2077, 11-15 July 2011. [http://www.iita.org/c/document\\_library/get\\_file?uuid=18f2c8ad-54be-4d6f-90f7-64830b5a036a&groupId=25357](http://www.iita.org/c/document_library/get_file?uuid=18f2c8ad-54be-4d6f-90f7-64830b5a036a&groupId=25357)

<sup>5</sup> Propcom Mai-karfi <http://www.propcommaikarfi.org/>

<sup>6</sup> Soybean. <http://www.propcommaikarfi.org/our-markets/soybean>

<sup>7</sup> Ibid.

<sup>8</sup> Part 2: Soybean National Agricultural Transformation: Soybean Value Chain Action Plan Summary. Retrieved from <http://www.unaab.edu.ng/attachments/Maize%20Final%20Report.pdf>



- The production of textured vegetable protein in Nigeria with capacity to serve as substitute for meat especially for low-income families. Soyabean are affordable as they cost only one-fifth of the price of beef and poultry yet carry twice the protein as these animal products and also offer essential amino acids. Soyabean are also good for the environment because they require fewer insecticide sprays. They also fix atmospheric nitrogen and thus reduce fertilizer used by farmers. Soyabean is also not susceptible to most of the local pests and diseases which hinder the production of related crops such as cowpea.<sup>9</sup>
- A country-wide program to provide soyabean foods to all primary and secondary schools.

The value chain actors are predominantly in the northern axis, and Borno State serves as hub for access to the grains as raw materials for some major players and their capacities include –

- Fortune Oil Mills Nigeria Limited, Kano. Mills 17,000 to 20,000 tons per annum groundnut and 60,000 tons per annum soyabean
- Yakasai Oil Mills, Kano. Mills 3,000 tons per annum groundnut and 1,000 to 3,000 tons per annum soyabean
- Sunseed Nigeria PLC, Zaria. Mills 70,000 tons per year
- Grand Cereals Limited, Jos. Mills 36,000 tons per annum groundnut (leasing some facilities elsewhere) and 100,000 tons per annum soyabean.

Some other actors in the input segment of the value chain include -

- Premier Seeds Nigeria, Zaria. Produces 120 T of soyabean seed.
- DA-ALLGREEN Seeds Limited/Alheri Seeds, Zaria. Sells soyabean variety TGx-1448-2E.
- Maina Seeds, Kano
- Value Seeds Limited, Kano.

### 3.3 Cowpea Value Chain

Nigeria remains the largest producer and consumer of cowpea in the world. According to FAO data (2001-2010) Nigeria produces an average of 2.58 +/- 0.31 million metric tonnes. Nigeria's cowpea demand deficit is met by imports from neighbouring countries like Niger and Burkina Faso.<sup>10</sup> More than 5.4 million tons of dried cowpeas are produced worldwide, with Africa producing nearly 5.2 million. Nigeria, the largest producer and consumer, accounts for 61% of production in Africa and 58% worldwide.<sup>11</sup> Cowpea is important for food security both as a major vegetable (it contains more minerals and nutrients than most other vegetables) and as a grain. It is also a significant source of vitamins. Despite its importance; there is still the insufficiency of the crop due to some problem, that hinder its productivity, such as abiotic, biotic, socio – economic, socio- cultural and political factors. The abiotic factors include erratic rainfall, high soil temperature, low soil fertility, the biotic factors are insect pest, parasitic weed, disease induced by fungi, viruses and nematodes. The appreciating economic importance made be due to it food value which made it a good supplement/complimentary, source of protein for animal source (meat, egg and fish). Cowpea contains 20 – 25% of protein and 64% carbohydrate. It therefore has a tremendous potential to contribute to the alleviation of malnutrition specifically amongst the poor.

The cowpea value chain involves many people contributing to the development of the commodity. Involved in the value chain are transporters of the commodity and those working in the local value addition enterprises. The monetary values of cowpea products are of major concern to farmers. However, cowpea's contribution to ecological stability is usually underemphasized. Cowpea, through its symbiotic association with beneficial bacteria, fixes nitrogen from the atmosphere to the soil and

<sup>9</sup> Idirsa et al (2010). Influence of Farmers' Socio-Economic and Technological Characteristics on Soybean Seeds Technology Adoption in Southern Borno State, Nigeria  
<http://www.agrosciencejournal.com/public/agro9o3-9.pdf>

<sup>10</sup> <http://www.aatf-africa.org/files/files/publications/Cowpea%20brief.pdf>

<sup>11</sup> <http://www.iita.org/cowpea>



hence enhances soil fertility which also benefits other crops succeeding it. The broadleaf nature of cowpea and soil covering effect ameliorates soil erosion. Due to lower rainfall and favourable soil conditions, cowpea production is concentrated in the northern states with Borno, Bauchi and Zamfara accounting for more than 50 % of the national output.<sup>12</sup>

The bulk of the cowpea enters commercial trade from the surplus producing areas in the north to high centres of consumption in the southern urban markets through Dawanu market in Kano, the access point for legume grain flows. Cowpea processing is dominated by household enterprises and SMEs. In addition, formal industrial processing firms are emerging. These include Kitchen Friendly and Convenient Home Foods. The processing firms mostly produce cowpea flour for instant preparation of home foods. These include cake (akara), moi-moi, pan cake, buns, chin-chin, bread, porridge and beans soup. The processors use dry dehulling milling and produce better quality products compared to traditional processing that uses soaking. Processors sell mostly to urban consumers through supermarkets, local stores and open air markets.<sup>13</sup>

The opportunities for upgrading the cowpea value chain in order to generate grain legume-based growth lie in production and process innovation to respond to unmet and increasing demands in end markets in local, national and regional urban centres. In addition, imported vegetable oils and foods can be substituted. In order to utilize these opportunities, value chain participants need to innovate to improve efficiency, product volume, consistency, quality and productivity, profitability and competitiveness and add operations to increase value added across the value chains. This can be implemented through strengthening associations of farmers, seed firms, agro-dealers, processors, poultry feed manufacturers and organizing these into value chain participant councils for collective action.

### 3.4 Groundnut Value Chain

Groundnut is the 13th most important food crop and 4th in oil seed crop of the world. Groundnut seeds (kernels) contain 40-50% fat, 20-50% protein and 10-20% carbohydrates.<sup>14</sup> Groundnut production, marketing and trade served as major sources of employment, income and foreign exchange before Nigeria became independent. Groundnut seeds contain high quality edible oil (50%), easily digestible protein (25%) and carbohydrate (20%). It is grown on 26.4 million ha worldwide with a total production of 36.1 million metric tons, and an average productivity of 1.4 metric tons ha.<sup>15</sup> The groundnut sector provided the basis for the agro-industrial development and contributed significantly to the commercialization, monetization and integration of the natural rural sector.<sup>16</sup> The success of groundnut as an agricultural commodity in Nigeria was as a result of government setting prices, purchase and export agricultural produce through the commodity marketing boards. Government's withdrawal from provision of market and subsidy in 1986 following the economic reforms of that period and the rise in price of agricultural inputs that followed led to poor outputs and loss of interest in groundnut production especially for the smallholder farmers. The groundnut value chain as it stands today has some of the following problems – low yield given lack of access of high-yielding groundnut seedling, the problem of infections from various mycotoxins, high cost of transportation from areas of production which are predominantly in the northern part of the country, limited information on direct market opportunities and linkages, lack of decent and safe storage facility.

The disbanding of the groundnut marketing board had mixed result to the industry. There is no doubt that a number of merchants had entered the market. But this has not improved the price received by farmers. At the same time the oil millers are complaining bitterly of the cost of groundnut. The oil millers, whose capital is tied to machinery and other infrastructure, lack the required funds to purchase

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<sup>12</sup> [http://www.n2africa.org/sites/n2africa.org/files/images/N2Africa\\_Value%20chain%20analyses%20of%20grain%20legumes%20in%20N2Africa.pdf](http://www.n2africa.org/sites/n2africa.org/files/images/N2Africa_Value%20chain%20analyses%20of%20grain%20legumes%20in%20N2Africa.pdf)

<sup>13</sup> [http://www.n2africa.org/sites/n2africa.org/files/images/N2Africa\\_Value%20chain%20analyses%20of%20grain%20legumes%20in%20N2Africa.pdf](http://www.n2africa.org/sites/n2africa.org/files/images/N2Africa_Value%20chain%20analyses%20of%20grain%20legumes%20in%20N2Africa.pdf)

<sup>14</sup> FAO 2006. Production Year Book, Vol. 60, Rome, Italy

<sup>15</sup> Food and Agriculture Organization FAO 2004. Production Year Book. Vol. 49 P. 16. Rome: FAO.

<sup>16</sup> Journal of Agriculture and Sustainability ISSN 2201-4357 Volume 5, Number 1, 2014, 45-56



and stock groundnut during high season.<sup>17</sup> They have to sell their produce before they can buy raw materials. In addition to that the processors also face steep competition from imported vegetable oil, which is cheaper than groundnut oil. The ban on vegetable oil importation was intended to reduce this competition.

In Nigeria, groundnut is predominantly produced in 15 states - Jigawa, Kaduna, Kano, Katsina, Bauchi, Benue, Borno, Gombe, Kebbi, Kwara, Nasarawa, Niger, Taraba, Yobe and Zamfara states. There are however other states with climate also favourable to groundnut production. There are currently about 14,000 registered groundnut farmers across 26 states of the federation.<sup>18</sup>

In these states, groundnut is produced as a smallholder crop. In Nigeria, cultivation started in 1912. The country led in the global market as the largest producer and exporter of groundnut in the sixties with a production of 500,000 metric tons a year. Groundnut then was responsible for about 70% of Nigeria's export. Production peaked in 1973 with Nigeria producing 1.6 million metric tons. The little export currently done is only to neighbouring West African countries.<sup>19</sup> The haulms (stalks of groundnut) are important fodder for livestock, especially, sheep and goat and in particular ram. The plant, through its biological activities nitrogen fixation, is an important soil fertility conserver. The nuts are consumed roasted, boiled or as confectionary, snack nuts, peanut butter or in cookies. The nut is crushed to produce oil which is principally used for cooking. But is also used for other industrial purposes such as; pharmaceuticals as carrier, cosmetics. It is also used for the production of margarine. The by-product, meal (cake) is used for both human and livestock consumption.

The Groundnut Value Chain project launched by the Federal Government in 2014 is Nigeria's response to reversing the poor trend of groundnut production in Nigeria. The project is aimed at reviving groundnut production, processing and value addition, as well as to provide local and export markets in Nigeria. The groundnut value chain will produce an additional 120, 000 metric tons of groundnut grains valued at N24 billion (US\$ 155 million) and supplied to small, medium and large scale processors. In addition, 2000 metric tons of quality seed of improved varieties of groundnut through formal and informal seed production systems. The project also planned to train 600 women processor groups and 1000 extension agents in improved production and processing technologies, as well as participatory research and extension.<sup>20</sup> As part of the project, 4 new improved rosette resistant and market-preferred groundnut varieties, as well as dissemination of seed of improved varieties and production technologies to at least 180, 000 farmers is planned. Each of these farmers are to be assisted to reach a minimum of 10 farmers, with the goal of reaching at least 1.8 million farmers.<sup>21</sup> This effort is in partnership with International Crops Research Institute for the Semi-Arid Tropics (ICRISAT). The farmers, marketers, local processors, oil millers and oil consumers are the major actors in the Groundnut Value chain where a number of constraints presently exist. Some of these include limited knowledge on modern production produce. The problem of the groundnut industry is that of demand. Farmers are not organized enough to provide the marketing services that were hitherto provided by the defunct groundnut marketing board. As such, there are no standards and the yields farmers obtained remained low compared with the potential yield. There were linkages between farmers with the industrialists.<sup>22</sup>

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<sup>17</sup> Commodity Chain Analysis of Groundnut Sector in Nigeria: A REPORT SUBMITTED TO ADENI PROJECT/NAERLS ZARIA Retrieved from - [http://hubrural.org/IMG/pdf/nigeria\\_groundnut\\_report.pdf](http://hubrural.org/IMG/pdf/nigeria_groundnut_report.pdf)

<sup>18</sup> National Groundnut Producers, Processors and Marketers Association (NGROPPMAN)

<sup>19</sup> Ibid.

<sup>20</sup> <http://agronigeria.com.ng/2014/02/25/groundnut-production-nigeria-set-to-return-to-dominance/>

<sup>21</sup>Groundnut value chain: Bumper packages planned for 15 northern states. <http://www.peoplesdailyng.com/groundnut-value-chain-bumper-packages-planned-for-15-northern-states/> Feb 25<sup>th</sup>, 2014.

<sup>22</sup> [http://hubrural.org/IMG/pdf/nigeria\\_groundnut\\_report.pdf](http://hubrural.org/IMG/pdf/nigeria_groundnut_report.pdf)



## 4 Methodology

The study methodology comprised (a) literature review which covered value chains, general aspects of the 3 grain legumes, global and national production levels, marketing of grain legumes in Nigeria, smallholder farmers' inclusion in the value chains, major industrial players and locally processed products (b) primary data collection at household and organisational levels using structured questionnaire and interview guides in the four LGAs (Biu, Hawul, Kwaya Kusa, and Bayo) of Borno State, Nigeria. Data was analysed using SPSS and descriptive method. The study was carried out in June/July 2015.

Detailed methodological approach utilized for this study was three fold as detailed below;

### 4.1 Desk Research

The study comprised of an initial review, of existing secondary data on grain legumes in Nigeria. The focus was on the role of the three selected grain legumes in smallholder farm household strategies for incomes, food security, nutrition, sustainable natural resource management (NRM) and employment opportunities. Production areas and trends for the selected value chains.. Existing data on trends of agricultural production was obtained from the Federal Ministry of Agriculture and Rural Development.

### 4.2 Focus Group Discussions

Five Focus Group Discussions (FGD) were carried out, consisting of 60 value chain actors (40% women) selected from Biu, Hawul, Kwaya Kusa, and Bayo LGAs. Different actors in the different segments of the cowpea, soyabean and groundnut value chains in the four LGAs were involved.

### 4.3 Key Informant Interviews

Semi –structured question guides were also used to follow up on selected value chain actors and supporters who were not involved in the FGDs. Key informant interviews were conducted with selected individuals, aggregators, input suppliers, financial institutions and service providers, researchers, extension workers, local traders, trading companies (based in Lagos), local processing cooperatives, and policy makers in the public sector.

### 4.4 Collection of Primary Data

Primary data was collected at the household level. Value chain household level questionnaire was used to engage a total of 300 farmers (40% women and youths inclusive) selected from 15 communities in the four LGAs. Such data covered among others farm size and ownership, challenges faced by youths and women, local processing and different end products, policy performance indicators, etc. Also, production costs, commodity prices, and other relevant information to determine the cost structure to some extent.

### 4.5 Analysis

Analysis was carried out using value chain maps to determined relationships, functions and cost structures. The field data collected were analysed using SPSS and Ms excel formats to ascertain gross margins and profitability of the chain actors. Though some information was not readily available but outcome of analysis gives an indication of incentives or disincentives in the various value chains.

### 4.6 Scope

The study covered the cowpea, groundnut and soyabean value chains in Biu, Hawul, Kwaya Kusa, and Bayo Local Government Areas (LGAs) of Borno State. Understood the current status of these value chains and looking into every segment of these value chains to providing opportunities for youth (female inclusive) to engage in agri-business (input supply, value addition, etc). Three weeks of field work, value chain analysis and debrief session to N2Africa staff in Nigeria with a presentation of first





findings to the staff during a gender workshop held in Kano. In addition, meetings were held with NGOs, selected value chain actors and supporters. Some of these are Sasakawa (SG 2000), TAMASA project, NIRSAL project of Central Bank of Nigeria, Federal Ministry of Agriculture & Rural Development (Abuja), producers of final products of grain legumes (especially soyabean and groundnut) for the domestic markets in Borno State.

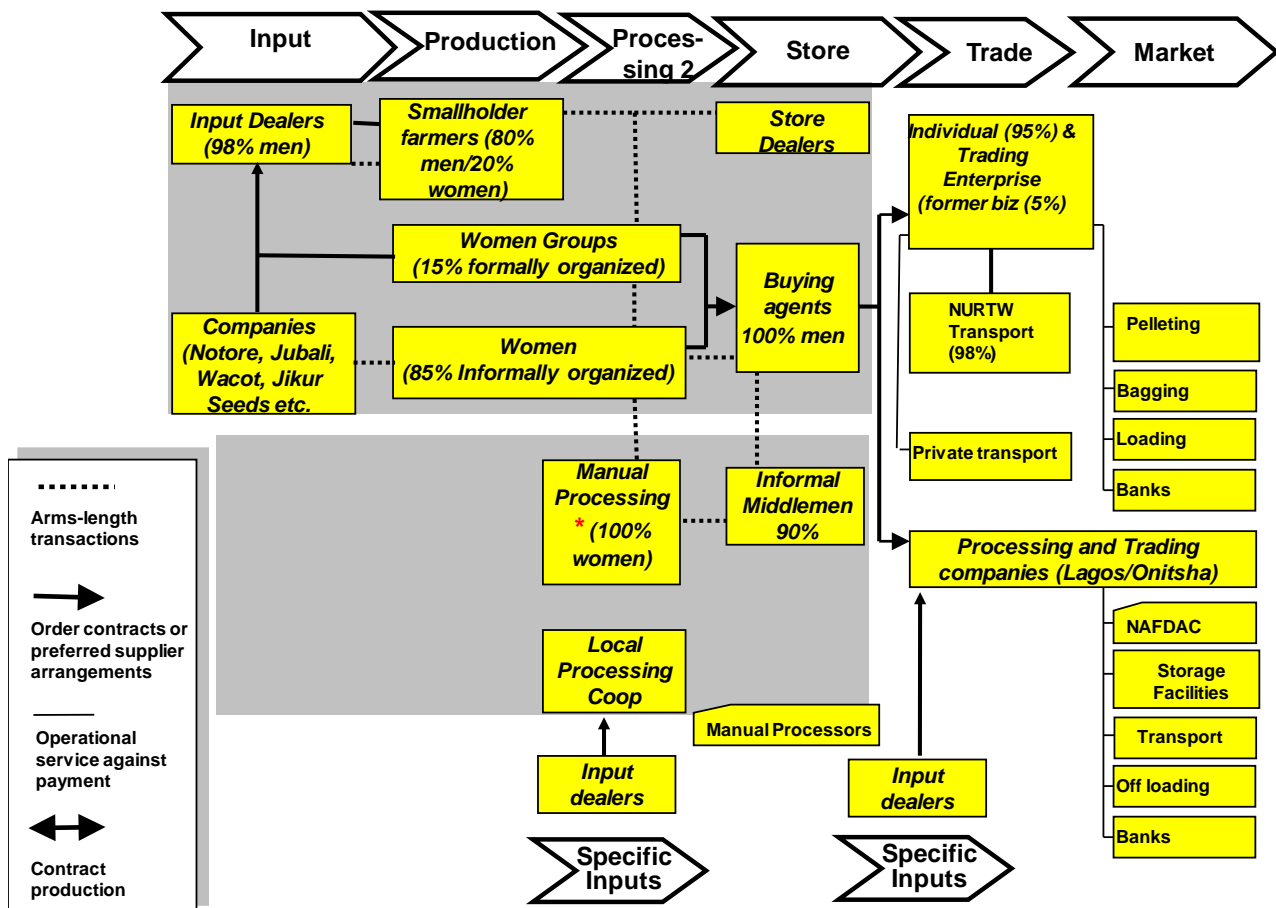


## 5 Findings

### 5.1 Identified Value Chains and Markets

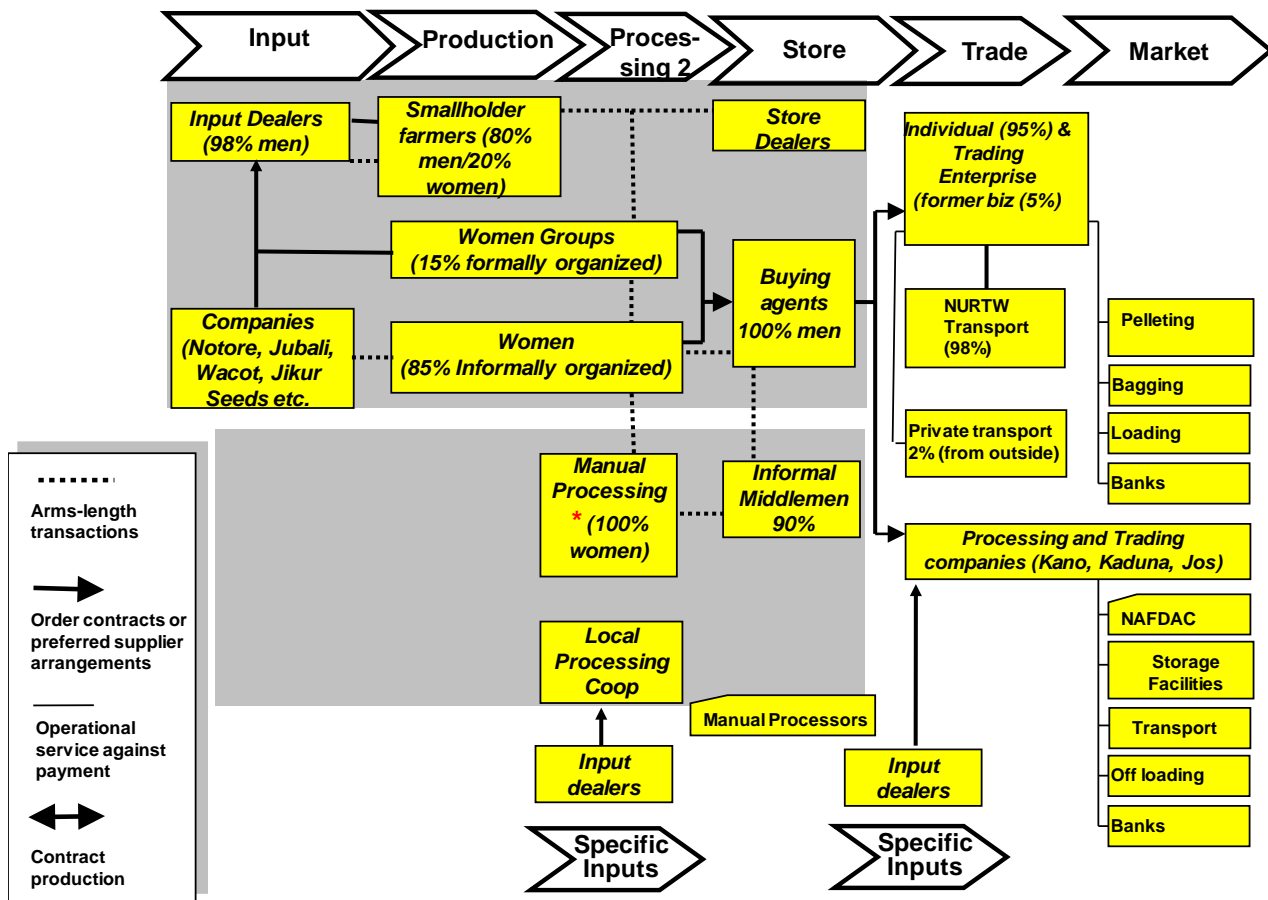
Several actors were involved in the analysis. These actors include small enterprises, farmers 'cooperatives, women groups, and several individual actors in the grain legumes value chain analyzed. Main value chain supporter in Borno State aside N2Africa is BOSADP, while some enterprises like Jirkur Seed and Debero Company are rendering embedded services with their outgrowers, Mirnga Farmers' Cooperative and Savanah Agro Coop Society are also rendering specific services to support various farmers in the cooperatives. Figure 1 below shows the existing relationship at micro level between these actors in cowpea and soyabean value chains. This is in relation to supporters and target output markets.

Relationship at micro level (Cowpea)





**Relationship at micro level (Soybeans)**



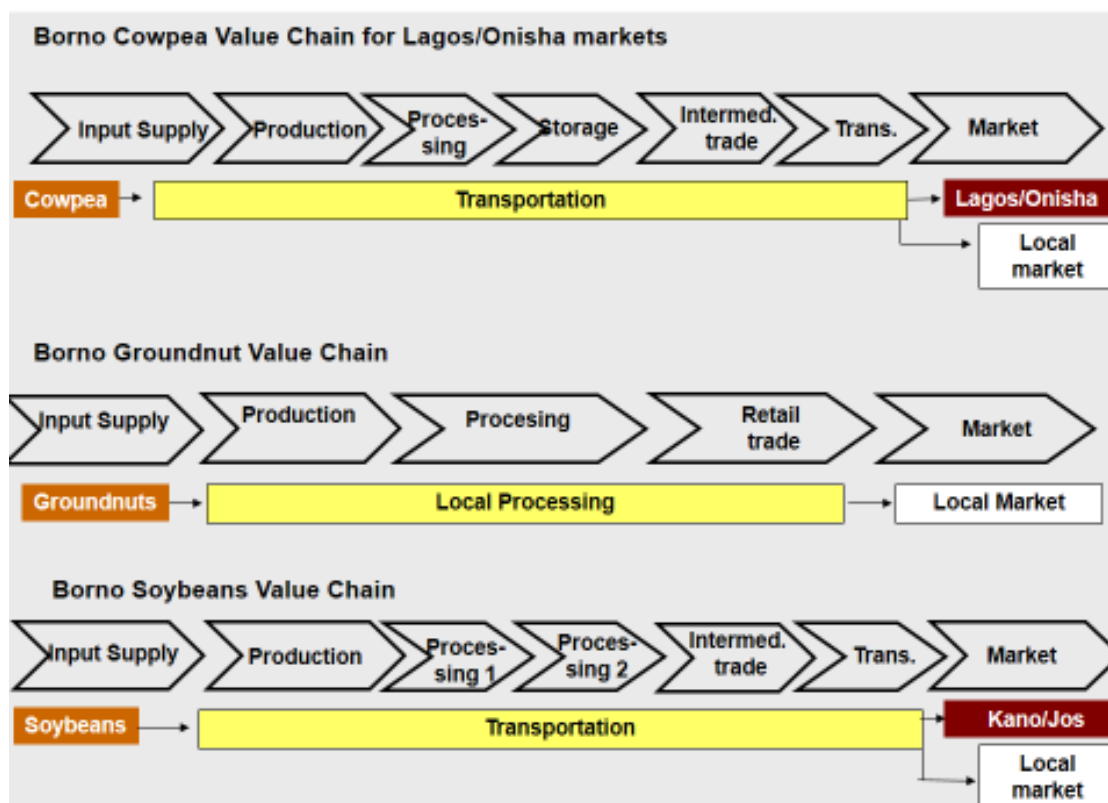
Source: Author's research

Figure 1: Relationships between actors and supporters for grain legumes in Borno State

From **Error! Reference source not found.** above, the following can be observed:

- Fragmented channel involving linkages of individual micro-enterprises in production and local processing (basically women) through middlemen and/or local buying agents with downstream enterprises. The dotted lines indicate on the spot-market based on arm-length business transactions without former relationships. Smallholder farmers and women into local processing are at the receiving end due to weak bargaining power and very low value added at the production and local processing stages.
- Lots of informal individual and cooperatives of women supply downstream enterprises via local buyers and middlemen with grains and processed products. Value added for these individual cooperative groups of women in terms of monetary values are not encouraging.
- Most of the agreed business arrangement and transaction as indicated in contract production above are based on arrangement of local traders and middlemen/local buyers, smallholder farmers and middlemen/local buyers and local traders and buyers based in Lagos, onisha and Agwu. However, these transactions are based on verbal agreement and these are used to set prices for every season.

The three value chains of grain legumes were identified with five final markets, processing for local market (groundnut value chain), local and industrial markets (soyabean), while cowpea value chain is for local and Lagos/Onitsha markets. These various markets are represented in **Error! Reference source not found.** below:



Source: Author's research

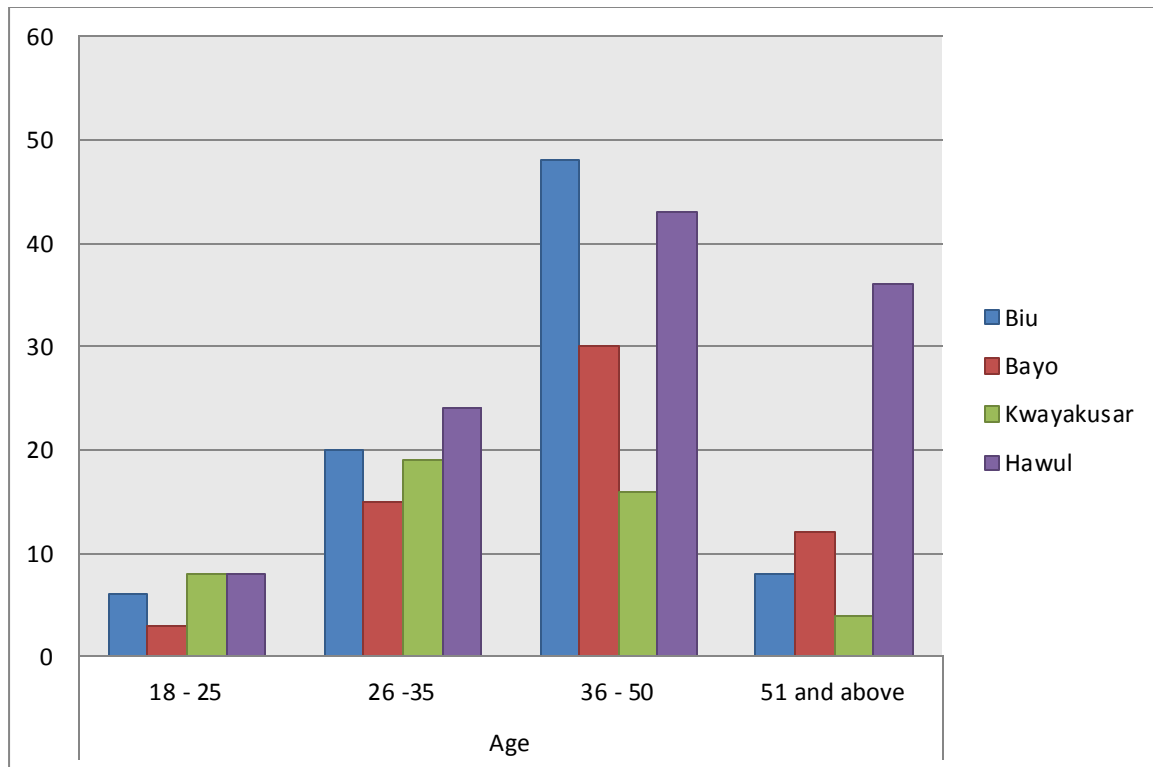
Figure 2: Analyzed Markets for Grain Legumes in Borno State

Smallholders' producers and local traders handle more than 80% of all the domestic marketed grain legumes in Borno State. This marketing system is characterized by:

- Sale of grains directly to consumers
- Very low compliance with safety and quality standards
- Diffuse market structure consisting of many middlemen and small-scale buyers
- Large involvement of women in local processing, intensive manual labour and unorganized transport system
- Business environment is difficult and women much more affected

## 5.2 Production Potential in Selected LGAs

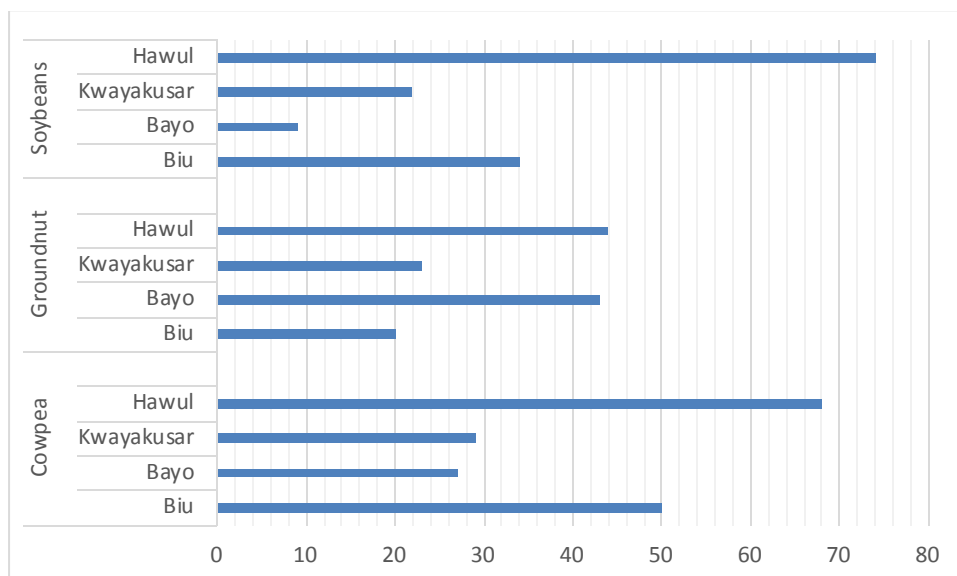
Borno state is populated with 4,171,000 people (Acaps, 2015) with 48.1% female. This is an opportunity for production with large portion of fertile land. The possibilities to engage more people in production are high. Use of technologies for both production and processing will enhance participation of more people particularly youth, who is 39.9% of the total population in Borno State. Ages of youth involved in grain legumes all the LGAs of study are within the range of 36- 50 followed by ages 26- 35 which are much more active across the grain legumes value chains in the LGAs, see **Error! Reference source not found.** below.



Source: Author's research

Figure 3: Ages of respondents involved in grain legumes in Borno State

Aside this, Hawul LGA is much more active in the production of all the grain legumes. See **Error! Reference source not found.** below which shows the rate of production of the legume grains across the LGAs. This shows Hawul has lots of opportunities in terms of age advantage and high potential in involvement in the three value chain.



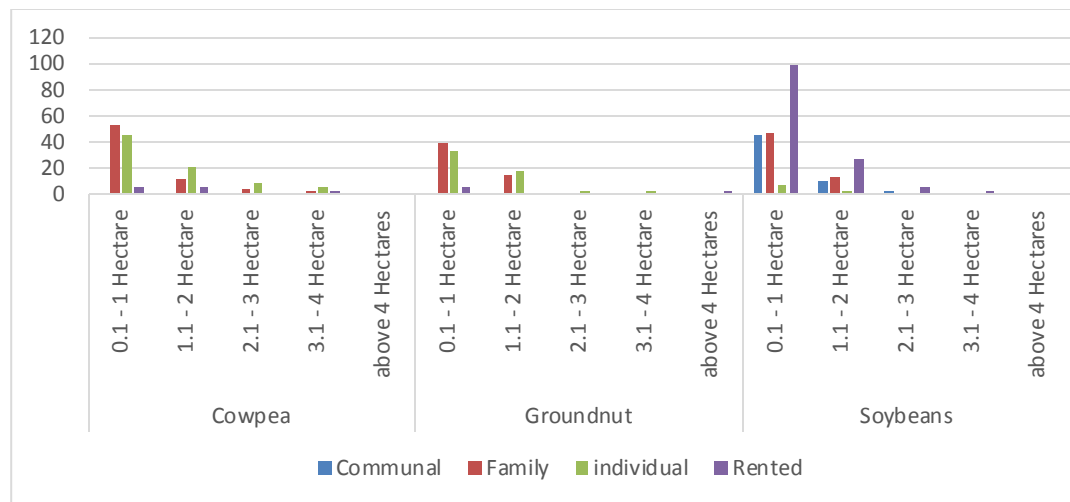
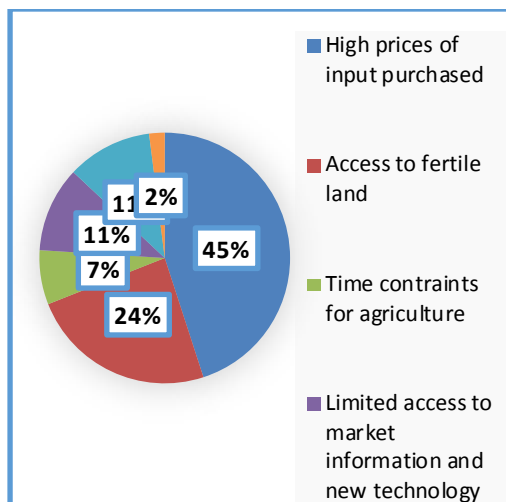
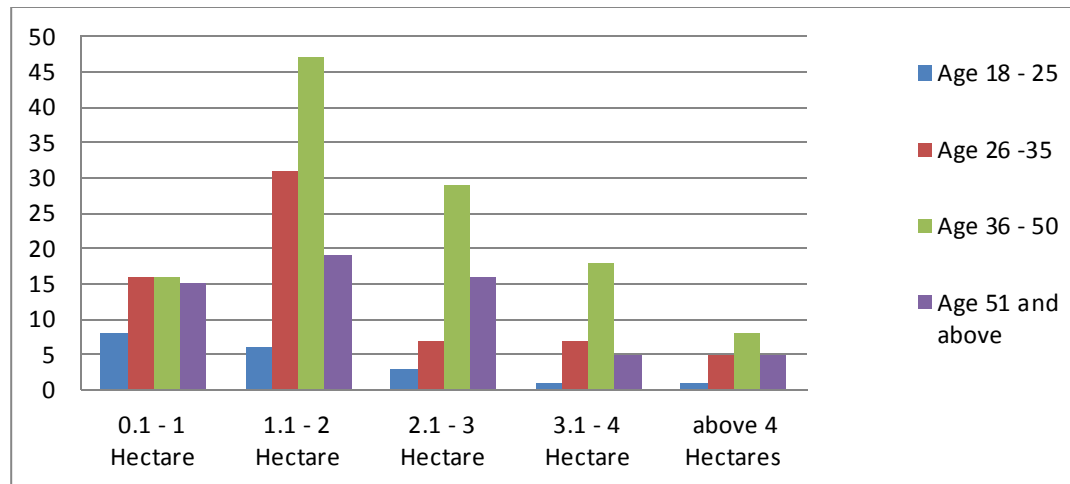
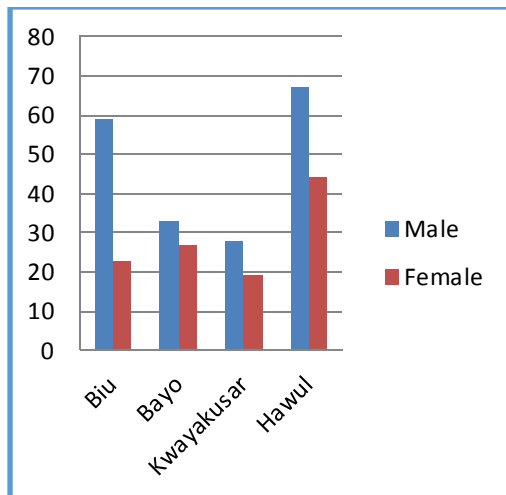
Source: Author's research

Figure 4: Rate of production of legume grains in selected LGAs



### **5.3 Access to Land and Youth Involvement**

Total farm sizes available to respondents were also examined. This was compared to the age of respondents in order to ascertain youth access to land for production in grain legumes. Even though some of the respondents confirmed availability of fertile land for production, available fertile land cannot be assessed due to Boko Haram insurgency that made people to feel secure in some locations. However, figure 4 below confirmed that respondents between the ages of 36- 50 mostly have access to land. This is followed by ages 26- 36, which is mainly youth category (women inclusive).



Source: Author's research

Figure 5: Access to land by different category of respondents



## 5.4 Gender Based Constraints

Women play a unique role within the chain helping in planting, harvesting and postharvest operations and value addition. They are primarily responsible for processing soy beans at the household and also engage in micro soy processing. This presents a major opportunity for interventions targeting poverty reduction, women empowerment as well child and maternal nutrition. There are other challenges that accompany access to land for cultivation particularly, for women who are much more affected and are craving for having access to fertile land as such access will reduce cost of production per hectare for women. **Error! Reference source not found.** indicates the major challenges faced by women. 45% of respondents indicated that their major challenge is purchase of inputs at higher prices compared to men. This made many of the women suggesting the need for improvement of their capacity in order to be able to render some of the services (particularly, spraying) themselves. This is followed by 24% relating to access to fertile land, which is linked to Boko Haram insurgency. However, the indication of 7% which they hardly have time for agricultural practices confirmed paying higher fees for labour. This is because women are much more pre-occupied with reproductive related issues. 11% indicated for two issues; limited access to market information and new technology and not being involved in donor activities respectively. This indicated the need for strategy to include women in activities by considering penitent issues relating to them for active participation. 2%, which is the least of the challenges (late information on planned activities). This is an aspect to be addressed as it will help to include women and improve their capacities. There are several other issues relating to women and youth that were discovered in the analysis based on respondent and also from the FGD held with women. These are summarized below:

### 5.4.1 Land Ownership for Women

Data shows women ownership of land is basically through inheritance, followed by use of in-house land for production of small land area for grain legumes. Only 10% of the respondents owned the land by purchase. This is represented in Figure 6.

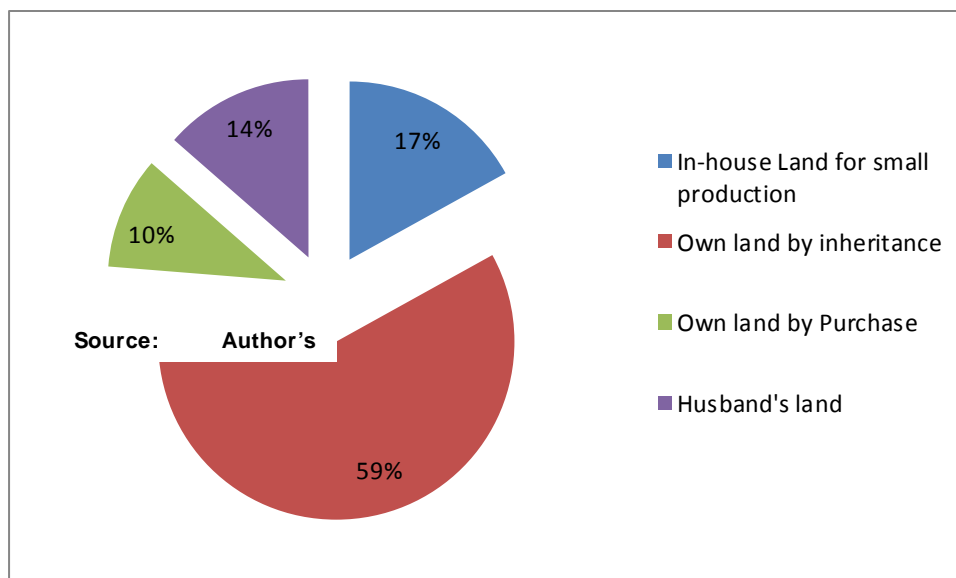
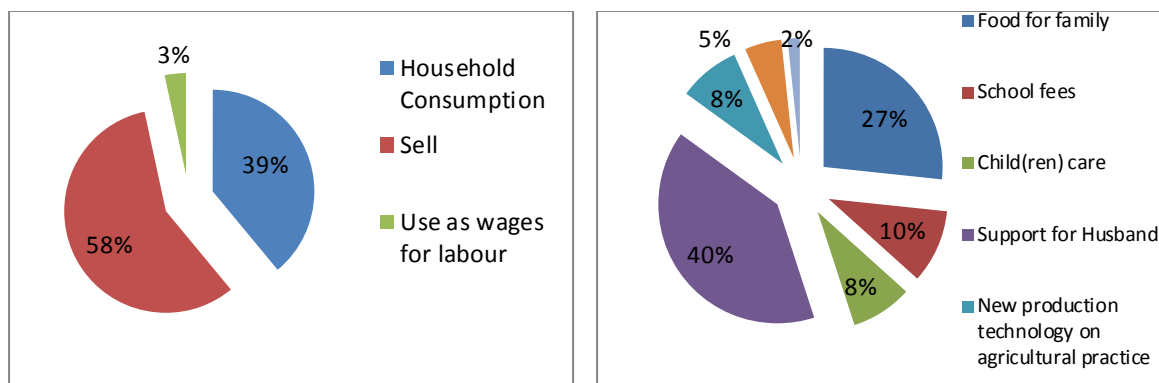


Figure 6: Land ownership by women

### 5.4.2 Production and area of investment

Women are into production of grain legumes for household consumption, use as wages for labour and also sell 58% of what is produced in order to earn additional income. However, 67% of income earned by women is used to support the husband directly and spent on food for the family. This is reflected in the figure below:





Source: Author's research

Figure 7: Women production usage and expenditures

### 5.4.3 Local processing of Grain Legumes by Women

Women are fully engaged with local processing of various products all over the LGAs visited in Borno State. Cowpea is much more being utilized for processing, followed by groundnut and soyabean respectively. Most of the women engaged in processing utilized an average of 1- 25kg. of grain legumes per week, 89% of the women respondents said local processing brings them more income (less than 126 USD per week and this represents the total sales) even though the labour involved is intensive. These processed products are being consumed mainly by school children. It is the cheapest means of protein and being consumes by various people across the LGAs. For examples, the various grain legumes are mainly used at households as basic blend for nutrition;

- Cowpea is mainly consumed as paste (akara) that is whipped into a batter, seasoned with fresh pepper, salt and onions and deep fried (FAO, 2000). It is being processed by women into another delicacy called ' moin-moin' widely consumed by every household. The cowpea grains are also heavily boiled to be softened with mixture of some local ingredient for consumption at household level. These products are thriving in the market and being patronized by many people in restaurants, market places, used during local ceremonies etc.
- Soyabean is also processed into various soy cheese, tom-brown, soy milk, soy moin-moin, soy chin-chin, soy dawa-dawa, soy kunzaki, soy kunu, soy akara. It is another source of protein at household level as commercialization aspect of it is still not as versatile as cowpea and groundnut
- Groundnut is also processed by women into various products that are thriving in the local market in Borno State. Popular among these products are kuli-kuli, which its processing pattern has been improved by women over the years. It can now be seasoned with chili pepper with some local seasoning that makes it attractive for consumption. The product is mainly being consumed by school children who most times being packaged by their mothers for them as additions to their lunch while in school.

### 5.4.4 Constraints Identified during FGD with Women

Some other constraints were identified during FGD in the field. The consequences and root causes of the various constraints were analyzed and sustainable interventions to tackle them also recommended. Details of this are in annex 3. Value chain maps developed for the various grain legumes were validated with the women as gaps on women involvement were noticed and updated. Table 3 below gives updated information on various challenges affecting women and youth and opportunities explore the challenges.



Table 2: Challenges and opportunities for women and youth in Borno state

S/N	Challenges for women & youth	Opportunities
1	<ul style="list-style-type: none"> <li>Low capacity on use of chemical/fertilizer</li> </ul>	<ul style="list-style-type: none"> <li>Platform of existing women's cooperatives</li> <li>Existing youth spraying gangs</li> <li>Existence of N2Africa trainings and dissemination activities to focus on women cooperatives</li> </ul>
2	<ul style="list-style-type: none"> <li>Machines/poor local processing techniques</li> <li>Reliance on inefficient traditional technologies for production</li> </ul>	<ul style="list-style-type: none"> <li>Existence of local fabricators (Youth)</li> <li>Existing companies and fabricators for improved technologies</li> </ul>
	<ul style="list-style-type: none"> <li>Quality of processed products</li> </ul>	<ul style="list-style-type: none"> <li>Existing traditional method of processing (build upon these methods)</li> </ul>
3	<ul style="list-style-type: none"> <li>Default on credit accessed from banks is very high</li> </ul>	<ul style="list-style-type: none"> <li>Private sector existence (Jirkur, Debiro, etc) to develop inclusive business models to access loans from Bank of Agric</li> <li>Existing committee in Borno that approved disbursement of loans (via Bank of Agric in Biu) to 84 youths to learn about the strategy for repayment and incorporate into the business models</li> </ul>
4	<ul style="list-style-type: none"> <li>Profile of buyers/ companies not known</li> </ul>	<ul style="list-style-type: none"> <li>Selected value chain actors can give some limited information on some companies</li> </ul>
5	<ul style="list-style-type: none"> <li>Difficulty in accessing credit from financial institutions due to high rate of default</li> </ul>	<ul style="list-style-type: none"> <li>Link up with ongoing national initiatives with keen interest in Borno State (ATA, CBN etc)</li> <li>Follow up with committee in Borno that approved disbursement of loans for partnership development to support the youth involved</li> </ul>
6	<ul style="list-style-type: none"> <li>Limited involvement of youth in value chain activities (mainly in animal husbandry/poultry)</li> </ul>	<ul style="list-style-type: none"> <li>Use of soyabean for feed formulation for poultry</li> </ul>
7	<ul style="list-style-type: none"> <li>Impact of labour on women</li> </ul>	<ul style="list-style-type: none"> <li>Labour saving technology in place by N2Africa (Nigeria)</li> </ul>

Source: Author's research

## 5.5 Quantification of Production, Pricing and Marketing

The grain legumes sector lacks effective coordination between producers and marketers as most of the grains is in the informal market. Production is tied to a specific supply contract but based on verbal agreement. Even the traders dealing with trading companies in Lagos and Onitsha only based their transaction on mutual agreement and trust, agree via communication on phone and exchange money via banks. One of the disincentive for producers is this lack of coordination and information vacuum



and this gives advantage to middlemen to speculate the price. It was discovered from respondent that price setting is 61% determined by the local buyer. This is possible because the local buying agents serve as source of market information for new prices. Respondents confirmed they are 90% relied upon to give information on changes in prices. (See figure 8 & 9 below).

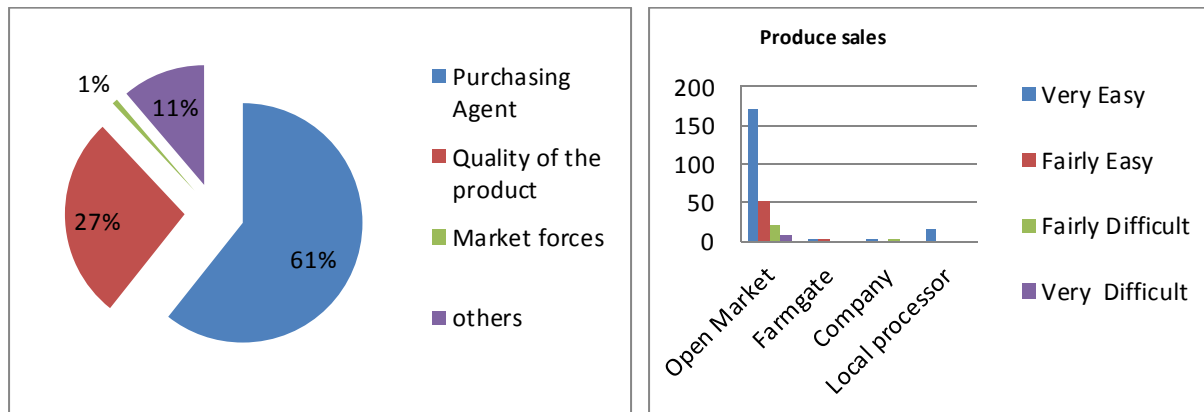
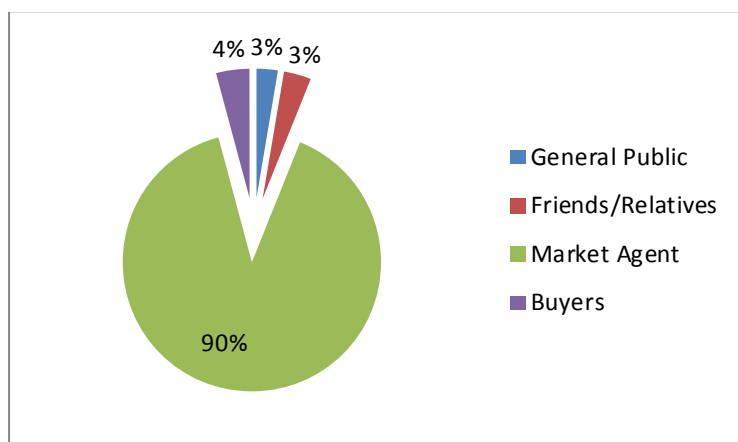


Figure 8: Produce sales and price setting for grain legumes in Borno State

Producer with quality produce are also able to influence price. Market prevailing prices at farm gate seems not realistic as local buyers determine this (see figure 9 below). Buyers' influence is possible because they use the opportunity of pre-financing the producers to dictate the price. Price is determined ahead of season when farmers are pre-financed. Even though most of the respondents have preference for open market sales, which was confirmed as the easiest, they ended up selling their produce at farm gate because of pre-finance of the local buyers.

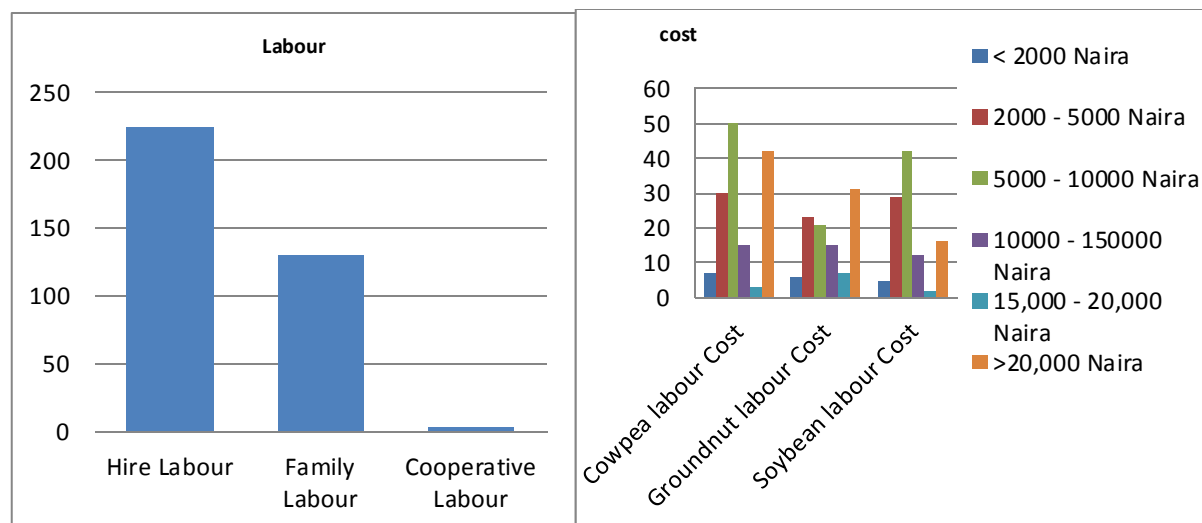


Source: Author's research

Figure 9: Information sources on new market prices in Borno State

## 5.6 Labour and other Market Challenges

Respondents in the various communities and LGAs in Borno State labour as one of the critical inputs for production that is expensive. Labour seems to be more expensive for women (youth inclusive) who paid additional 5-10% more than men. This is because of time constraints which made them to concentrate more on reproductive activities (see figure 7). Hired labour is mostly used, followed by family cooperative labour. Family labour involves efforts of women in their husbands' farms. Most of the farmers spent between 2,000 -10,000 Naira as labour cost per hectare on all the grain legumes. Labour cost is lower for cowpea and soyabean respectively and groundnut attracts higher prices for labour (see figure 10).



Source: Author's research

Figure 10: Sources of labour and cost in Borno State

### 5.7 Rating of Market Challenges

Predominant challenge relating to market for farmers is the quality parameters of buyers. This is used to determine prices and farmers confirmed they are not aware of these parameters but only being told at the point of purchase. This has contributed to low prices which was also mentioned as a serious challenge. Another challenge is there is more supply than demand and few buyers are available at village level to buy up these grains. High transportation cost has been because of impassable roads. Farmers trek very long distance to their local market or pay a very high fare for transportation. Most farmers ended up selling their produce to the middlemen and buyers who dictated the prices using pre-finance and quality parameters set themselves as yardsticks.

Farmers' preference for sales of their products is at the open market or direct sales to processors. However, this is not possible because of they do not have fund of their own to upscale production and it is only Jirkur Seed that works with selected out grower farmers and they have price advantage because of the arrangement.

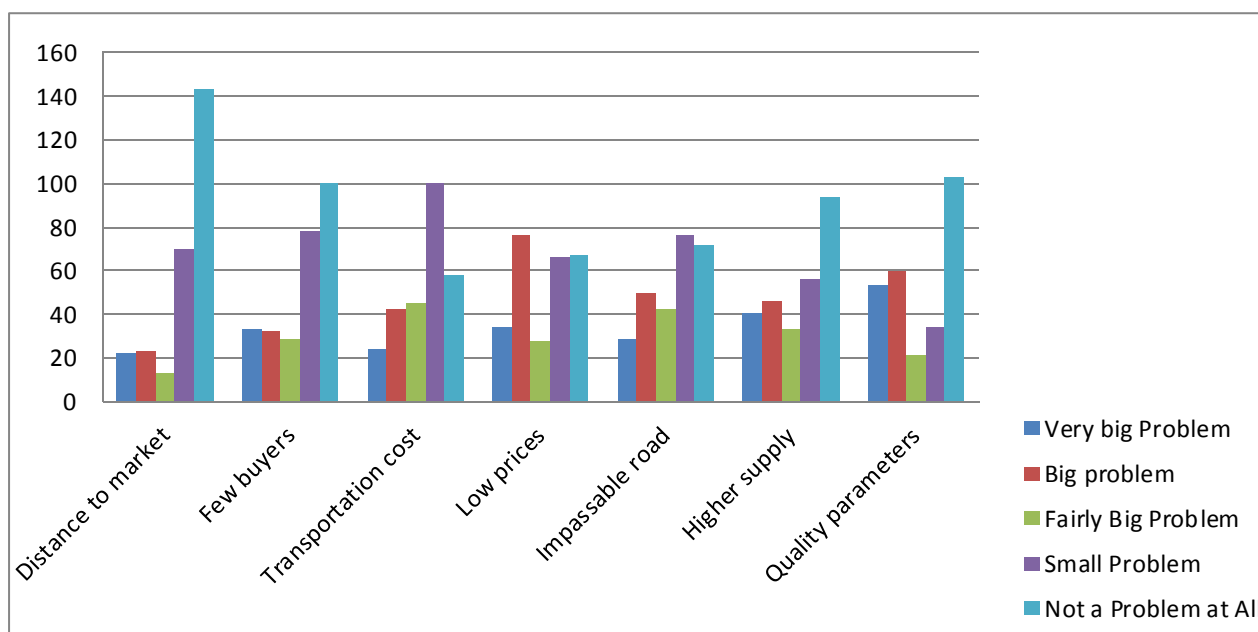


Figure 11: Market challenges faced by farmers in Borno State



## 5.8 Relationships of Farmers with Input Suppliers

Farmers relate effectively with input suppliers in the open market. There are no business link between them and input suppliers. However, selected farmers prefer direct purchase from known suppliers and one of the reasons for this is quality assurance of the product purchased. Similarly, Jirkur Seed and Debiro Company are engaging farmers on a business model that assist farmers to get inputs (seed, fertilizer, and pesticides) from them and the cost is deducted on supply of their farm produce. Mirnga Farmers Coop and Savannah Agro Cooperative Society also utilize this approach strictly for their members. Alhaji Bukar Dalbi (notable trader and chairman of Market Association in Biu) and Tijani Hassan render embedded services by providing input (fertilizers, pesticides and seeds) to farmers. They confirmed farmers are pre-financed (cash for labour and inputs in form of cash) by them in order to ascertain getting produce from them in the coming season. This arrangement has been working with them over the years without any formal agreements but based on mutual trust.

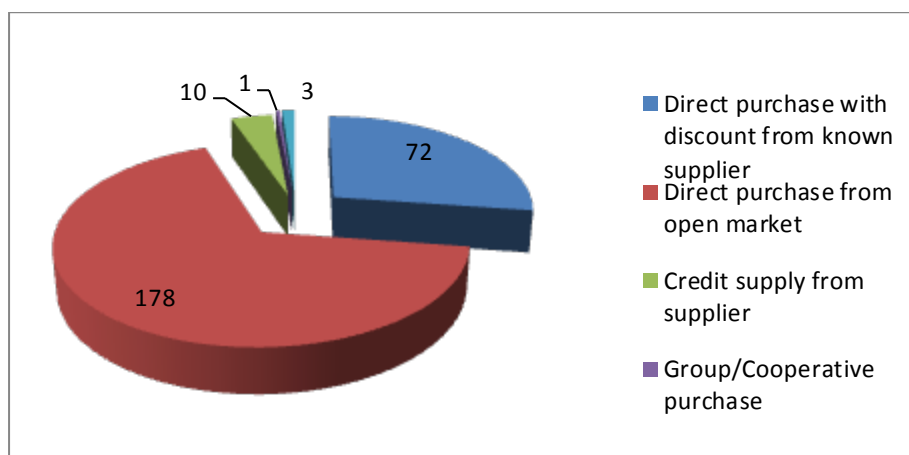


Figure 12: Farmers' relationship with input suppliers

## 5.9 Storage System

Storage facilities in the local communities are very limiting compare to volume of produce harvested by farmers. 70 -80% of grains harvested are sold out rightly while 20-30% of the grains are kept till when cash will be urgently needed. Many of the respondents confirmed the usage of PICS bags for storage at household level but do not use them for sales purposes. PICS are being used for storage of remnant of grains to be sold when cash will be urgently needed. However, many of the farmers confirmed that the price of PICS for 300 naira per bag is too expensive as they prefer to use ordinary sack of 100kg. which is sold for 100 naira. Very few of the farmers use drums and jute bags for storage. There are no specific stores as many of the farmers use the same room for the storage. It was confirmed that theft and rats invasion are easily controlled when you keep the grains closely.

Some farmers also use Mud rhombus and thatched rhombus (structures made of mixture of dry grasses/clay and stem cuttings of grasses respectively), see figure 13 below. These structures can store between 500kg – 9,000kg of grains depending on the size. However, their defects are easy infestation by pest particularly, the thatched rhombus easily failed when the grasses used failed (Adejumo and Raji, 2007). Phostoxin pellets and a powdery form of chemicals (name unknown and container not shown) are used for storage by both farmers and mainly by traders who transport cowpea to Lagos.

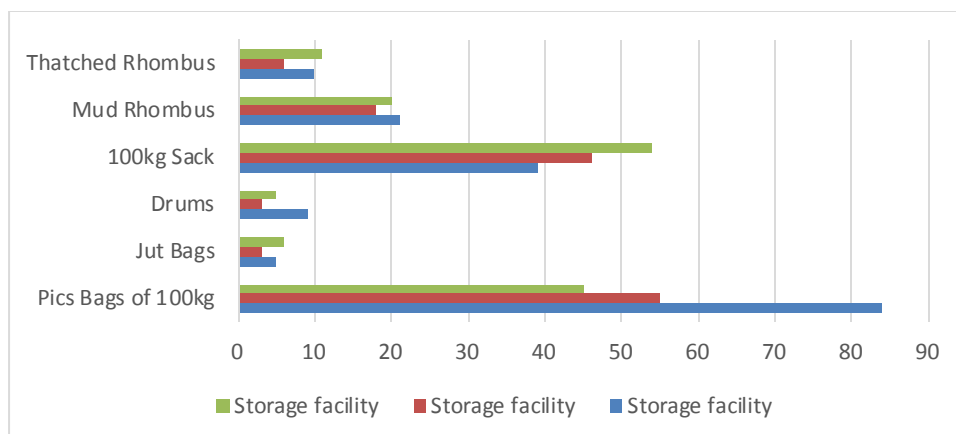


Figure 13: Storage system and method Farmers' relationship with input suppliers

## 5.10 Policy and Regulatory Reform

There are no specific policies identified that are related to grain legumes as they are all inclusive within the framework of agricultural policies in the states. The federal government also is also supporting many states in Nigeria with some specific policies to develop many sectors. Some of the policies identified in Borno State include. 82% of respondents are not aware of any policy supporting grain legumes while 18% admitted to be aware of some policy related issues affecting agricultural at federal and state levels. Some of the policy issues relating to Borno State include; policy on youth empowerment by Borno State government (selected youths sent to Malaysia to learn different agricultural practices and development of construction value chain for youths within Borno State) and Policy framework developed for local rice processing in southern Borno and policy on production of wheat in Lake Chad Basin (LCB). Also some of the recent policies of the FGN relating to Borno State include; NIRSAL project of CBN, commodity zoning (Guinea corn development zoned to Borno State), Agricultural Transformation Agenda (ATA) support for development of seed sector.

## 5.11 Difficulty in Accessing Loans for Agriculture

The high cost of borrowing and timely access to capital remains a challenge for agriculture in Nigeria. One of the commercial banks engaged during FGD in Borno State confirmed official allocation to develop loans portfolio for agriculture in the state. However, this has not been forthcoming because it is difficult to recover loans from farmers. Bank of Agric (BOA) confirmed this with deficit of 36 million naira yet to be recovered from various farmers and cooperatives in Biu axis alone. Even though data on bank lending to the grain legumes sector are not available but the manager of BOA, Mrs. Sarah Amos Umaru in Biu confirmed the readiness to give loans to farmers particularly, youth and women if certain conditions are jointly met. Similarly, the Loan Officer of Keystone Bank, Mr. Bulama Adamu confirmed the same information and emphasized on the need for more commitment to agriculture by the CBN in order to guarantee the loans to be given out to farmers. BOA confirmed giving a total sum of 6,300,000 million naira to loans to 42 youth in Borno State. The loan was given at 12% interest rate inclusive insurance. Interest draw back will be paid by CBN if the loans are repaid on time.

Access and high cost of credit continues to hamper growth of sector. This impacts raw material availability for local processors of grain legumes, timely cultivation, post-harvest, access to tractor and other machinery services, etc. One of the immediate next steps is for farmers to be identified by banks by opening accounts and to encourage those already linked to relevant banks to keep up building their profile to ease access to loans whenever the opportunity comes.

## 5.12 Other Key Findings

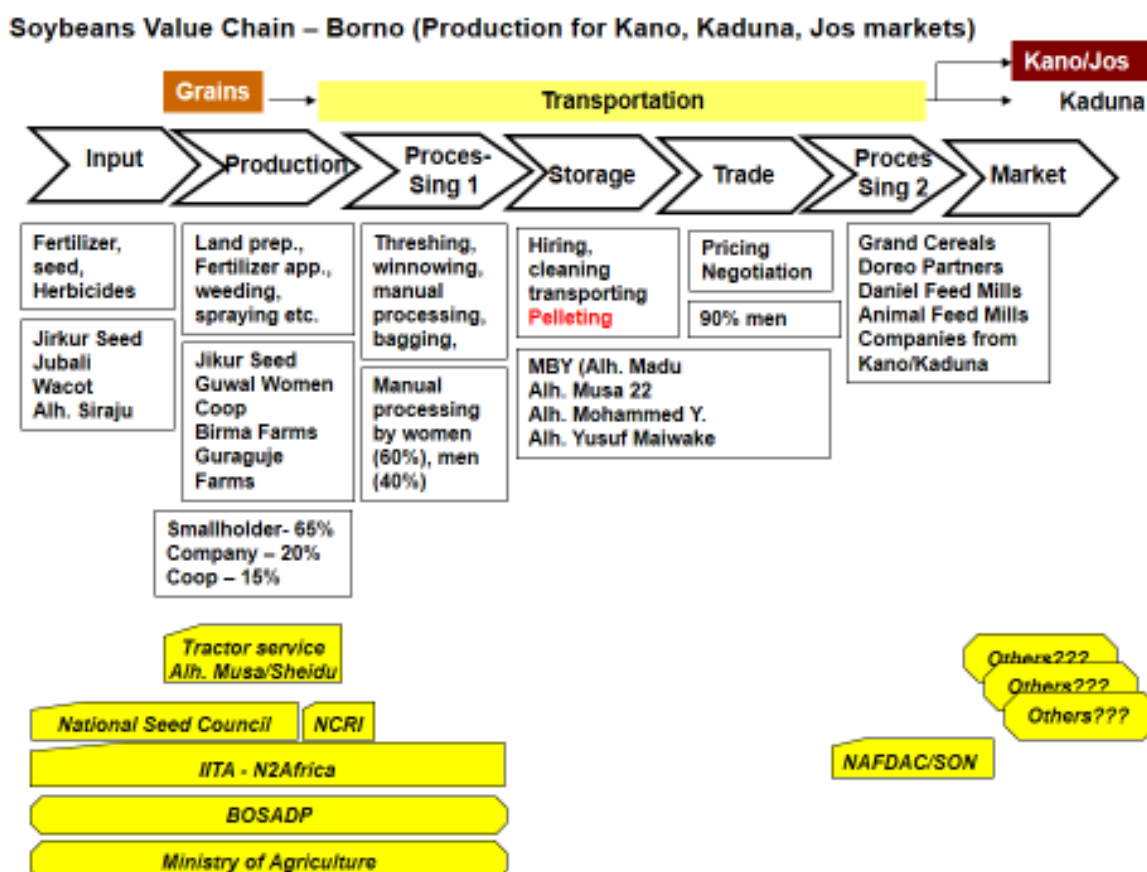
- **Productivity:** Productivity was generally found to be low and pervasive along the chain due to factors such as low scale economies, poor farm yields, poor machinery and inadequate finance among others.

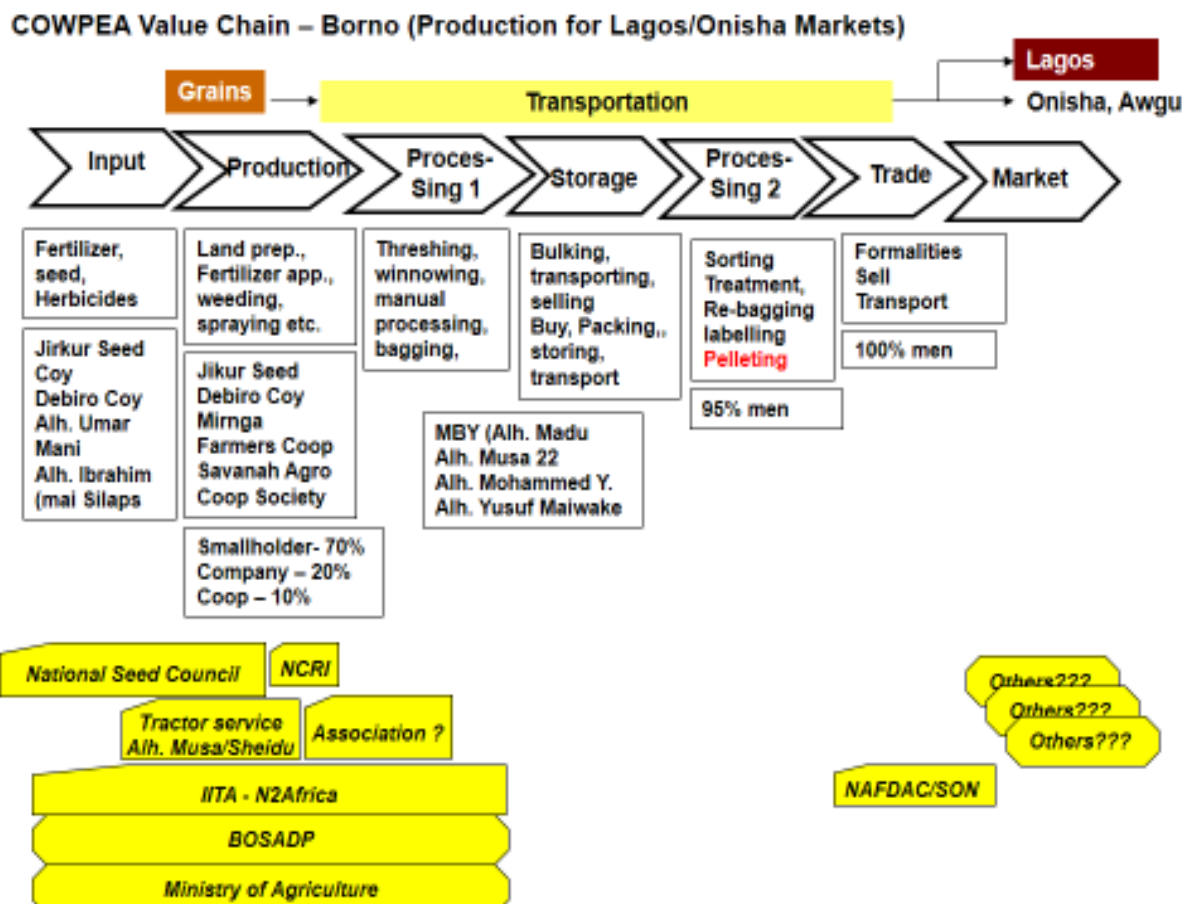


- **Mechanization:** Deficit in supply of tractor service is high coupled with non- availability of critical machinery required for achieving optimum land preparation and plant spacing requirements. This negates farm productivity and produce competitiveness.
- **Unutilized capacity:** The result of inadequate raw materials, many local grain legumes processors are unable to operate at installed capacity. This affects their overall profitability and product competitiveness.
- **Standardization:** The informal micro processing business, mostly dominated by women is fraught with many food safety challenges. Non adherence to strict hygiene standards and use of potentially harmful chemicals for storage is of major concern. Additionally, adoption of new processing technologies and equipment that ensures higher yield and improves consumer confidence should increase demand and expand the market for these products.
- **Capacity Building:** There are critical gaps among producers, key technical support service providers and other service providers that need to be bridged. There is a major capacity deficit which must be augmented in order to realize the potential identified with the sector.

### 5.13 Maps and Structures of the Value Chain

The three VCs of soyabean, cowpea and groundnut are mostly a mix of formal and informal operations at the up and down stream segments. The existing value chain maps are as below





Source: Author's research

Figure 14: Soyabean and Cowpea value chain maps

### 5.13.1 Key Chain Actors (Operators, Supporting Actors, Functions and Roles)

Key chain actors include input suppliers, producers, local and industrial processors, wholesalers, retailers and consumers. There are no supply contracts with major processors, wholesalers hold stocks for future demand from outside of Borno State without contracts and operate also in commodity markets locally where retailer traders who serve the local processors constantly interact with each other without any former arrangement. Some wholesalers particularly in Biu grains market, operating from major markets also doubled as retailers raking profits from both segments of the chain.

### 5.13.2 Power Relationship between Actors

Farmers do not have any bargaining power as commodities are sold ahead of production. The pre-finance models operational by both middlemen and wholesalers who also deal directly with farmers are instruments used to control prices. The hoarding of produce by farmers would have being used for bargaining but they only hold between 20- 30% of the produce. Market intermediaries such as wholesalers and distributors with Lagos and Onitsha contacts were observed to wield the most power along the chain due to their connections with major producing and demand centres outside of Borno State.





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### 5.13.3 Partnerships and Collaborations

Very few successful partnerships or collaborations within the chain were observed. Although many initiatives are informally ongoing and these can be used to further stimulate trust and increased cooperation among chain actors. This will help to take care of high degree of mistrust and opportunism currently exists among chain actors. Partnerships will cut across most of value chains as the same actors are observed working in all the value chains. For example, Jirkur seeds, Jubali, WACOT etc. are all active in all the three value chains

### 5.13.4 Key Products and Markets

There are many products in the value chains. For soyabean, the most visible soy based value added products in Borno State include soy bean milk, oil, soy cheese, tombrown, soy milk, soy moin-moin, soy chin-chin, soy dawa-dawa, soy kunzaki, soy kunu, soy akara, and many soy based local dishes eaten widely across Nigeria. However, the key markets identified are the animal feed/poultry industry and human food markets (processed soy oil) having larger share of the market. For groundnut, processed products include; kuli-kuli (groundnut cake), Yaji (groundnut flour mixed with spices, pepper and salt) Dankwa (groundnut flour mixed roasted cereals and spices) etc. while Cowpea grains are mainly processed and consumed as cake (akara), moi-moi, pan cake, buns, chin-chin, and porridge.

### 5.13.5 Trade Terms

The predominant method of payment was cash and few transactions through banks. Credit sale is very limited and occurs only within the upstream actors of the chain perhaps due to inadequate and high cost of credit access from financial institutions. As most chain actors are self-financing, high credit exposure could mean limiting working capital at any given time besides default risks. Trust, ability to honour repayments and long standing relationships are key factors for accessing credit sales.

### 5.13.6 Women's Role

Women were found to dominate the informal value adding component of the chain due to their vast experience in local processing of the various VCs. Though they face similar challenges for women manual labour which is negatively impacting on the women and hence the need for labour saving technologies will help them to break-even. The value addition roles present unique challenges and opportunities for targeted interventions that have multiplier effect on local processing are highly imperative for women.



## 6 Conclusions and Recommendations

The mission arrived at the following conclusions:

The potential of grain legumes in Borno State can effectively be used to improve on livelihood of people and create job opportunities for the youth. In order for this to be achieved, there is need for proactive measures of establishing linkages that will be sustainable beyond the life span of the project. The need to link up with many players outside of the state to be involved in the on-going activities is highly imperative. BOSADP is playing a critical roles and the need to work with appropriate authorities to fund some of the activities of BOSADP is important. If this is not feasible, Involvement of BOSADP should be limited to facilitation roles, while the youth should be gradually supported to commence rendering some services alongside doing business themselves. If their capacities are improved in this direction, they would certainly continue and sustain the trend after exit of N2Africa. Based on this background, N2Africa intervention in grain legumes value chains in Borno State has contributed directly and indirectly to stimulating growth and development of a viable and competitive sector in the long term, the following are recommended for consideration by the project:

### 6.1 Capacity Building

It was identified during this study that all three tiers producer organizations lacked the capacity to deliver on their respective mandates. Most of these associations were either, non- existent, dormant or weak and relied on a few individuals to keep running.

Building the capacity of select producer associations with viability prospects and exposing them to best practices could motivate them to play lead advocacy roles and better champion the course of leveraging resources to growth of their members. Tailor made basic trainings leading to administrative, financial, and technical, negotiation, **contract management** and operational efficiency would enhance the outlook and growth of various grain legumes VCs.

Technical and business capacity building among relevant public sector institutions particularly, BOSADP personnel and other service providers such as banks providing various services to identified viable business opportunities must be pursued as current gaps may not enable them facilitate growth and development efficiently.

### 6.2 Financial Access for Youth

Access to capital remains a major challenge for most chain actors particularly youth (women inclusive) who occupy the bottom of the chain. While BOA, farmers' cooperatives and selected local traders ease this challenge by directly providing or facilitating input credit, the cost of credit remains high and amounts accessed are inadequate to cover the entire production cycle. Women local processors on the other hand are unable to access required working capitals, negotiate competitive interest rates and long term investment capital.

There is the need to identify financial products that meet the requirement of key actors and facilitate access in adequate amounts under partnerships with relevant stakeholders. Financial products such as LPO financing, working capital financing and equipment leasing with reasonable loan tenures must be directed at the sector to stimulate purchase of imported hybrid seeds, machinery, produce aggregation and storage. Development of standard business plans for investment (warehouses, machinery etc.) in order to facilitate credit arrangements with commercial banks or MFIs and establish buyer-supplier long-term relationships to reduce the risk of defaults (contracts of delivery) and negotiate with financial institutions particularly, BOA for simplified preconditions for credits. Micro leasing programs could also be directed to improve access to simple planting equipment by smallholder farmers as this could impact positively on plant population and higher yield.

### 6.3 Standardization and Food Safety

The informal micro processing sector lacks any meaningful operating standards and food safety enforcement regime. Though the NAFDAC and SON do undertake some surveillance of artisanal food processors and vendors, the processing technology and hygienic conditions characterizing these



operations remain a challenge. The reported use of unapproved chemicals for storage of grains by selected actors is a major food safety concern.

N2Africa could facilitate dialogue among key stakeholders such as standards authority, relevant and other public and donor funded programs to improve access to improved processing technologies, establish and set up the regulatory framework for approved standards. Capacity building among micro-processors particularly, women could be pursued as part of the above.

#### **6.4 Public Private Partnerships**

Due to growing urban demands, the need to transform the informal marketing system to formal processing systems is highly imperative as this enhances creation of jobs for women and youths, increase income of smallholder farmers as well as public revenues. Therefore, the need for strategic actions and partnerships will help to handle numerous challenges on pests and diseases control, mitigation measures for droughts, high cost of inputs, poor market information and infrastructure, etc.

Public private partnerships (PPPs) hold the potential to addressing current infrastructure deficits, improving crop yields through the test piloting and adoption of improved higher yielding varieties. N2Africa can support efforts at building a robust PPP within the agribusiness space to facilitate integration of youth in doing business. This will include stakeholders that are relevant for agribusiness opportunities already identified to support youth in Borno State. Jirkur seed company, Debiro Company, Mirnga Farmers Coop, Savanah Agro Cooperative Society, Alhaji Bukar Dalbi and Tijani Hassan are possible entry points for partnership development that will benefit youth and women tremendously.

#### **6.5 Low-Cost Storage Facilities**

Promote creation of low-cost storage facilities at village level to enable local processors to benefit from seasonal price fluctuations and to reduce losses. Train group members in appropriate storing methods and to appreciate the benefit of using PICS bags and appraise the use and efficiency of Mud rhombus and thatched rhombus for storage of grain legumes.

#### **6.6 Develop Joint Upgrading Plans**

Develop a joint strategy to promote the grain legumes and define a medium-term action plan with lead actors that will coordinate different upgrading plans with deliverables. Activities that will help the in upgrading measures are listed in the actionable recommendations (Annex 1).



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## Annexes

### Annex 1: Summarized recommendations per value chain segment

S/n	Input Provision and Production Constraints	Upgrading action plan activities	Expected effects	Lead actors	Resources Needed	Role of Government	Support if needed from whom, what area
1.	Lack of improved seeds	Facilitate seed production with selected lead farmers	Availability of improved seed varieties	BOADP/Jirkur Seed	Funds & Improved seeds	Through BOSADP/Min of Agric & creating enabling environment	Government/Private Sector.
3.	Fake and adulterated chemicals and fertilizer	Elimination of fake & adulterated fertilizer through the appropriate agency	Improvement in yield or output grain legumes	Government/Association of input providers PFA, SON, NAFDAC & other regulatory agencies		Ensure all regulatory agencies play their role.	NAFDAC, SON, Police & other regulatory agencies
4.	Farmers inability to access loan from banks (MFBs & Commercial Banks)	Facilitate inclusive business model to access to loans at competitive interest rates (one digit)	Increase in volume of production and easy financing of operations	Financial institutions e.g. Bank of Agric, NIRSAL, Jirkur Seeds, Debiro, Mirnga Farmers Coop and Savannah Agro Cooperative Society and N2Africa	Loans & credit facilities	CBN and NIRSAL project to be used to consolidate the process. FGN – Commercial Agric loans State Govt. – Micro credit	Bank of Agric, MFBs & Commercial Banks/NIRSAL
6.	Low level of farm mechanization	Facilitate Provision of more farm machineries and equipment or private services	Expansion of cultivable area and increased efficiency	Debiro, private sector tractor hiring service (Alhaji Bukar Dalbi and Tijani Hassan)	Financing, machineries & equipment	FGN to give priority to Youth and women in Borno available machineries & equipment in the ministry can be released for use	N2Africa
7.	Weed control, Pest & diseases infestation	Train youth and women on spraying techniques hygienic means of using chemicals for weed/disease control with CropLife	Availability of disease free grain legumes & production losses will be reduced	CropLife, BOSADP	Capital, agro-chemicals & support fund for CropLife	Availability of BOSADP staff to be used for further replication of training later	Government and private sector/extension services



8.	Near absence of farmers groups and co-operatives	Facilitate group/cooperative formation	Access to loans to finance their activities either from Bank of Agric or Commercial Banks	Jirkur Seed, Debiro, Alhaji Bukar Dalbi and Tijani Hassan, Mirnga Farmers Coop and Savanah Agro Cooperative Society	Capital, farmers & extension services	Government agency is support via sensitization & massive awareness programmes	Extension services From BOSADP, N2Africa
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S/n	Processing Constraints	Upgrading action plan activities	Expected effects	Lead actors	Resources Needed	Role of Government	Support if needed from whom, what area
1	Limited knowledge on various method of local processing of potato grain legumes	Take inventory of existing local products and train local processors (mainly women/youth) on best practices on handling and processing of these products	Better attractive and consumable legume products and improvement on nutrition of Borno people	Ministry of agriculture/B OSADP (Home Economics dept.), N2Africa	Expertise & finance	Use staff to be involved in the training for replication at own cost	Food Companies to be involve as corporate social responsibilities (CSR)
2.	Lack of processing factory	Facilitate identification/ investors 'interest towards establishment of functional & efficient small and medium scale processing facilities processing factories in Borno	Demand for grain legumes will increase – through value addition, packaging & consumption	Government, and private sector	Capital, human resources raw materials & processing machines	Provide enabling environment	Government/priv ate individuals
3.	Lack of storage facilities affects supply to processors	More research and development on effectiveness of existing storage facilities and low-cost storage systems for local producers for steady supply to processors	Steady & even supply of grain legumes to processors will be achieved	Alhaji Bukar Dalbi and Tijani Hassan	Finance for establishment of efficient storage	Support fund for youth on establishment of storage facilities	Government/priv ate sector
4.	High cost of processing facilities	Facilitate youth involvement in sourcing for facilities to establish processing facilities	Availability of storage facilities will be achieved	Government & private sectors	Capital, storage facilities	Suitable government tax policies should be adopted to reduce high cost of import duties/tariffs thereby making availability of processing equipment	Government & private sector



5.	Insecurity in the country discourage local/foreign processors	Information provision towards ongoing approach to curtail security situation in the Borno State	Create enabling environment for emergence of processing facilities	Government Security agencies and individuals	Finance, security, gadgets & security personnel	Security sector should be energized to stimulate processors to invest favourably without fear or intimidation	Government/private individuals
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S/n	Trade/Market Constraints	Upgrading action plan activities	Expected effects	Lead actors	Resources Needed	Role of Government
1	Lack of knowledge on the nutritional value of locally processed grain legumes (soyabean and groundnut particularly)	Sensitize of local processors and selected consumers on the nutritional value of legumes Develop package of practice for locally processed grain legumes' products	More market awareness and increase in demand for grain legumes to be consumed locally	N2Africa in conjunction with selected women cooperatives	Nutritionists and finance	Support Ministry of Agric, BOSADP & media organizations
2	Scarcity of legume products for use during off season	Train women on market making projections on raw materials needed based on sales output	Steady/even supply of locally processed products to the market by women	N2Africa in conjunction with selected women cooperatives	Storage facilities & capital	Support Ministry of Agric, BOSADP & media organizations
3	Collection of Multiple taxes from traders/women processors	Facilitate public private dialogue (PPD) between local traders, women processors and board of internal revenue in respective LGAs	More participating in marketing & reduction in marketing cost resulting to more profit maximization	Government and its agencies (Police, L.G.A Officials e.t.c)	Resources persons, blue print policy framework	Enforce suitable tax policy and provide enabling environment to operate successfully and suitable tax policy to encourage local traders and women into processing



**Annex 2: List of actors in general FGD on various VCs (Cowpea, Soyabean and groundnut)**

S/No	Name	Organization	Phone No.	Email Address
1	Hussaini Abdullahi	Mirnga farmers Ass.		
2	Tijani Hassan	Soyabean marketers association		
3	Ali Samaila Wakawa	Min. of Agric Biu, Zonal		
4	Mrs. Nancy M. Wakawa	Jirkur seed company ltd		
5	Amy Dasika	Alheri cooperative, Marama		
6	Bulama Adamu	Keystone Bank		
7	Florence Ibrahim	Groundnut processor		
8	Hadiza Isah	Groundnut Marketer		
9	Mohammed A. Isah	Soyabean seed producer		
10	Harira Haruna	Soyabean farmer		
11	Binta A. Achara	Guwal development Fadama society		
12	Jummai Auta	BOSADP BIU		
13	Hussaini I. Chado	Bank of Agriculture		
14	Sarah Amos Umaru	Bank of Agriculture		
15	Alhaji Bashir Hassan	Zonal Agric officer, Biu Min.of Agric		
16	Alhaji Ibrahim Abaye	Chairman fertilizer Ass.		
17	Usman A. Musa	Deputy Chairman Fertilizer Ass.		
18	Ibrahim A. Kida	BOSADP		
19	Alhaji Umar Mani	Input Dealers Ass. (Pesticides)		
20	Sule Bukar	Zonal manager BOSADP, Biu		
21	Danjuma Esbon	Soyabean marketer		
22	Lahji Dalibi	Cowpea marketer		
23	Umar Sanda Ali	Cowpea marketer		
24	Ali Mustapha	Groundnut Producer		



**Annex 3: Gender based constraints, consequences, causes and interventions proposed**

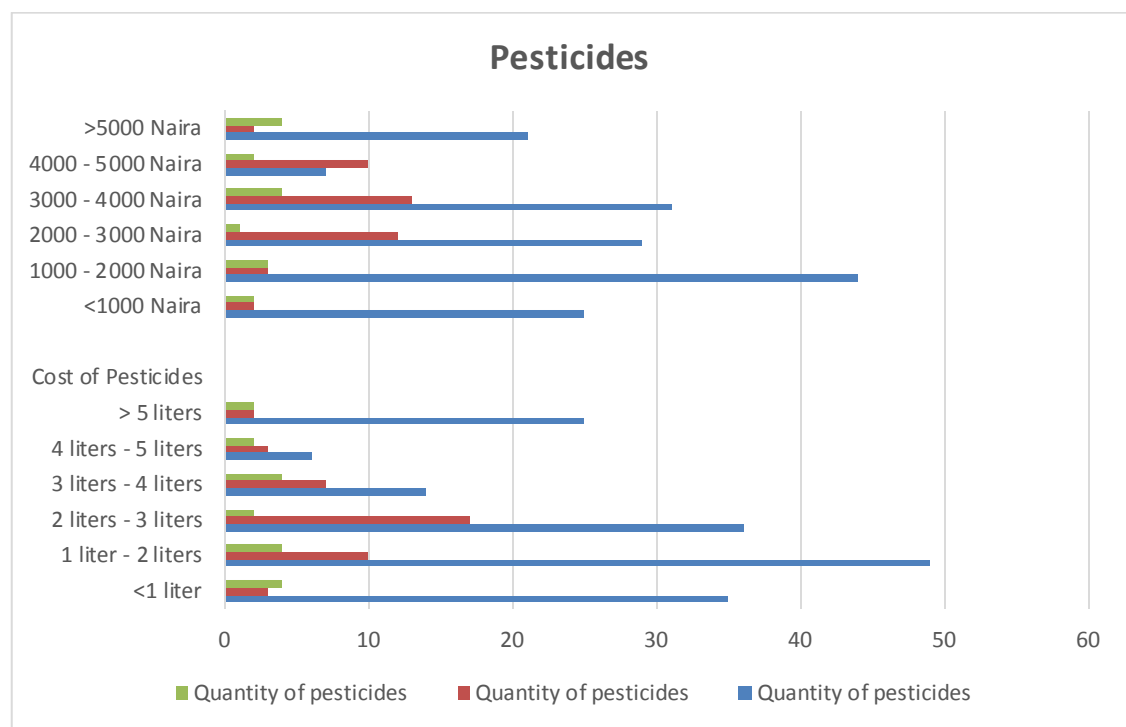
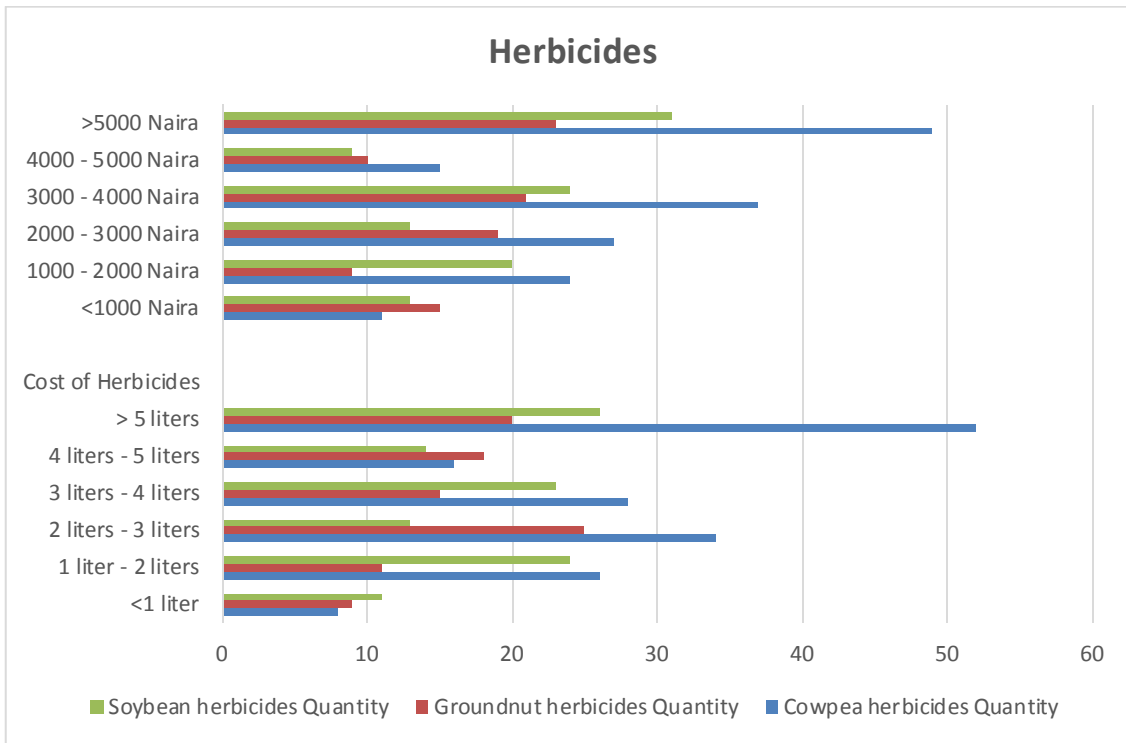
<b>Value Chain</b>	<b>Gender Based Constraints</b>	<b>Consequences</b>	<b>Causes</b>	<b>Interventions</b>
<b>Soyabean</b>	<ul style="list-style-type: none"> <li>• Lack of technical knowledge on local processing of soyabean</li> <li>• Nutritional value of soyabean not known to women</li> <li>• Access to fertile land</li> <li>• Access to financial product for women</li> <li>• Limited capacity to identifying quality seed</li> <li>• Access to market information</li> <li>• High cost of labour (harvesting), paying higher fee than men</li> </ul>	<ul style="list-style-type: none"> <li>• Discourages women from participating in farming and processing activity</li> <li>• No value addition and leads to sales of farm produce to middlemen/local buying agents out rightly</li> <li>• Bad quality seeds lead to low yield and loss of investment</li> </ul>	<ul style="list-style-type: none"> <li>• Inadequate knowledge of chemical application by women and quality seed identification</li> <li>• Marginalization of women by men</li> <li>• Stringent loan procedure</li> <li>• Distance of fertile farm land from town and insecurity</li> </ul>	<ul style="list-style-type: none"> <li>• Women should be trained on chemical handling/application and quality seeds identification</li> <li>• Sensitization/advocacy visit at community level involving community/religious leaders in relation to women participation in farming activities</li> <li>• Women should train on how to use organic manure to improve the fertility of their farm lands</li> <li>• Government should provide women with soft loan with little or no interest on farming and processing activities</li> </ul>
<b>Cowpea</b>	<ul style="list-style-type: none"> <li>• Labour input higher than profit for local processing</li> <li>• Access to finance</li> <li>• Infertile farm land</li> <li>• Know-how on chemical applications</li> <li>• High cost of labour</li> </ul>	<ul style="list-style-type: none"> <li>• Loss or farm produce gets destroy</li> <li>• Discourages women from participating in farming or processing activities</li> </ul>	<ul style="list-style-type: none"> <li>• Inadequate awareness of chemical application method by women</li> <li>• Distance of fertile farm land from town and insecurity</li> <li>• Stringent loan procedure</li> <li>• High competition in</li> </ul>	<ul style="list-style-type: none"> <li>• Women should be trained on chemical handling/application and quality seeds identification</li> <li>• Sensitization/advocacy visit at community level involving community/religious leaders in relation to women participation in farming activities</li> <li>• Women should train on how to use organic manure to improve</li> </ul>

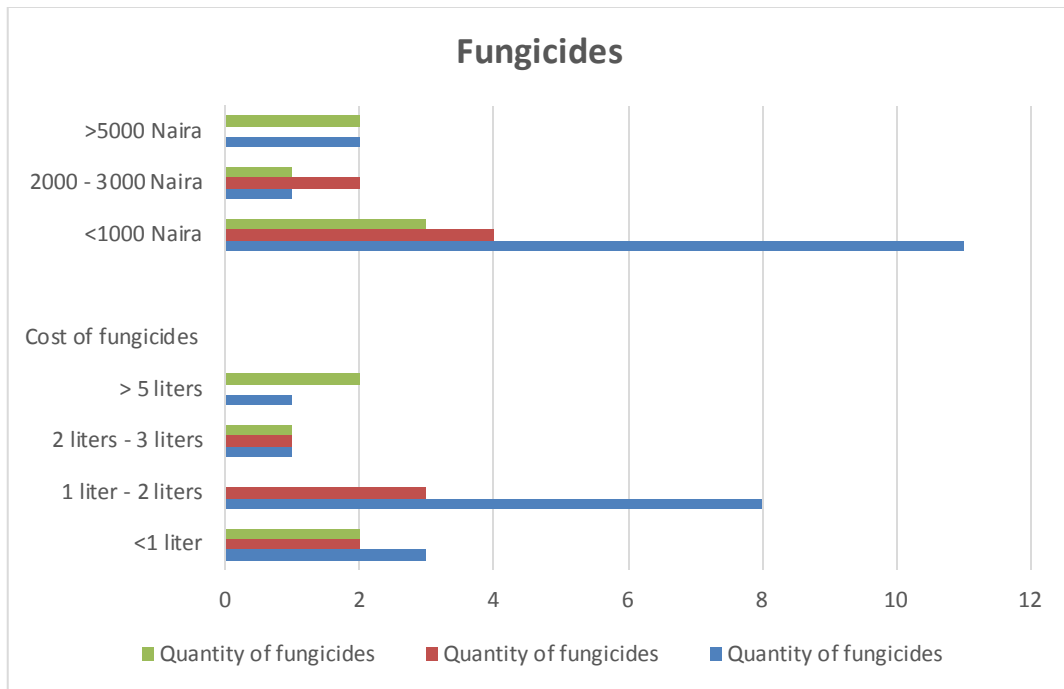


Value Chain	Gender Based Constraints	Consequences	Causes	Interventions
			labour demand • Every house hold is able process locally	the fertility of their farm lands • Government should provide women with soft loan with little or no interest on farming and processing activities
Groundnut	<ul style="list-style-type: none"> <li>• Lack of market information</li> <li>• Difficulty in local processing</li> <li>• None access to market by husbands</li> <li>• Access to land and tillage operation equipments</li> <li>• Technical know-how on application</li> <li>• Access good quality seeds</li> <li>• Manual shelling affects women's hands</li> </ul>	<ul style="list-style-type: none"> <li>• Discourages women from participation in farming or processing activities</li> <li>• Farm produce get destroy or lost</li> <li>• Bad quality seed leads to low yield and loss of investment</li> </ul>	<ul style="list-style-type: none"> <li>• Distance of fertile farm land from town and insecurity</li> <li>• Lack of access to improve technology for local processing</li> <li>• Inadequate awareness of chemical application method by women</li> <li>• High competition in demand for tillage operations equipments</li> <li>• Inadequate knowledge on quality seeds identification by women</li> <li>• Marginalization of women by men</li> </ul>	<ul style="list-style-type: none"> <li>• Women should be trained on chemical handling/application and quality seeds identification</li> <li>• Sensitization/advocacy visit at community level involving community/religious leaders in relation to women participation in farming activities</li> <li>• Women should train on how to use organic manure to improve the fertility of their farm lands</li> <li>• Government should provide women with soft loan with little or no interest on farming and processing activities</li> </ul>



**Annex 4: Cost and quantity of herbicides and fertilizers**

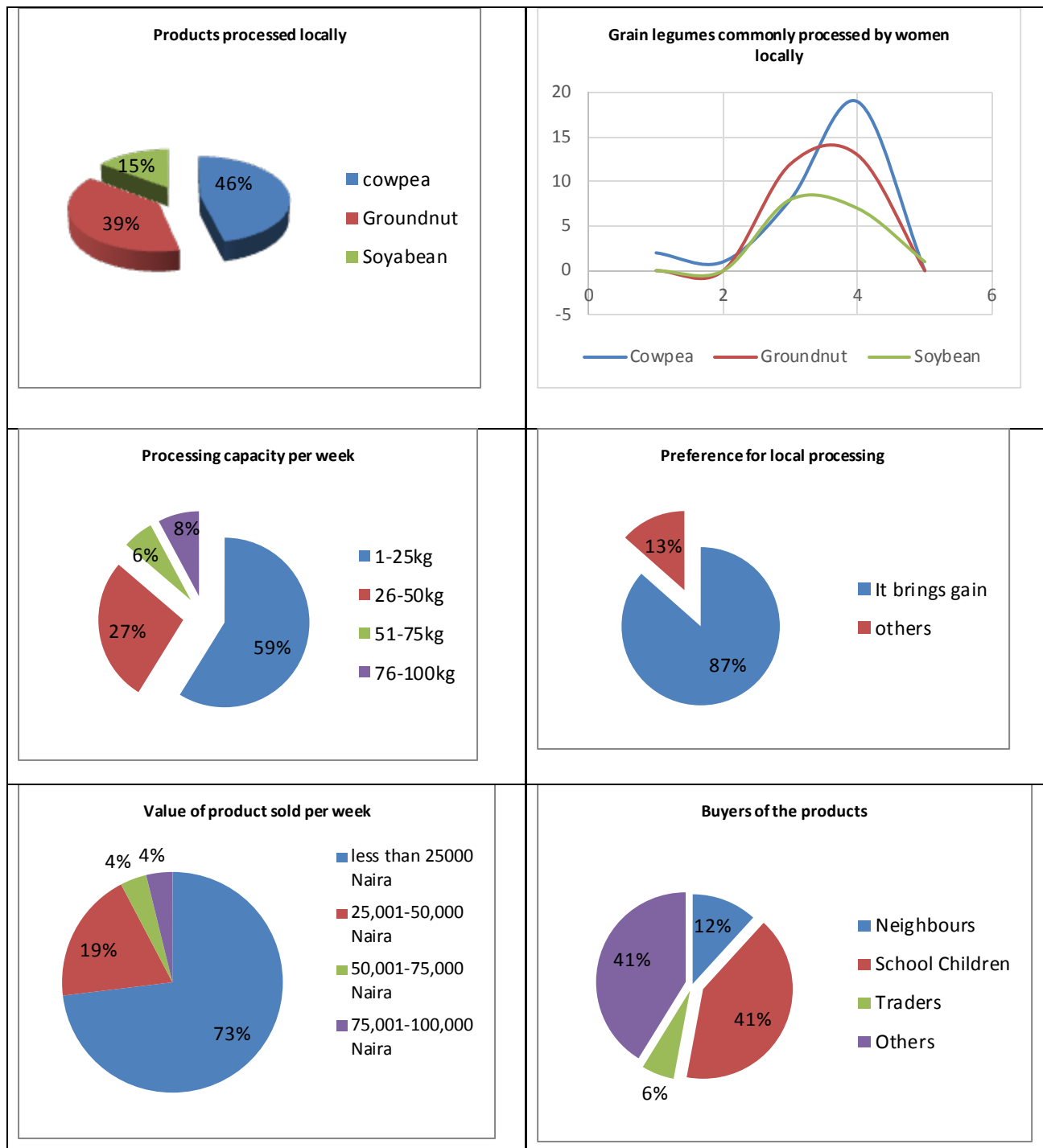




Source: Author's research



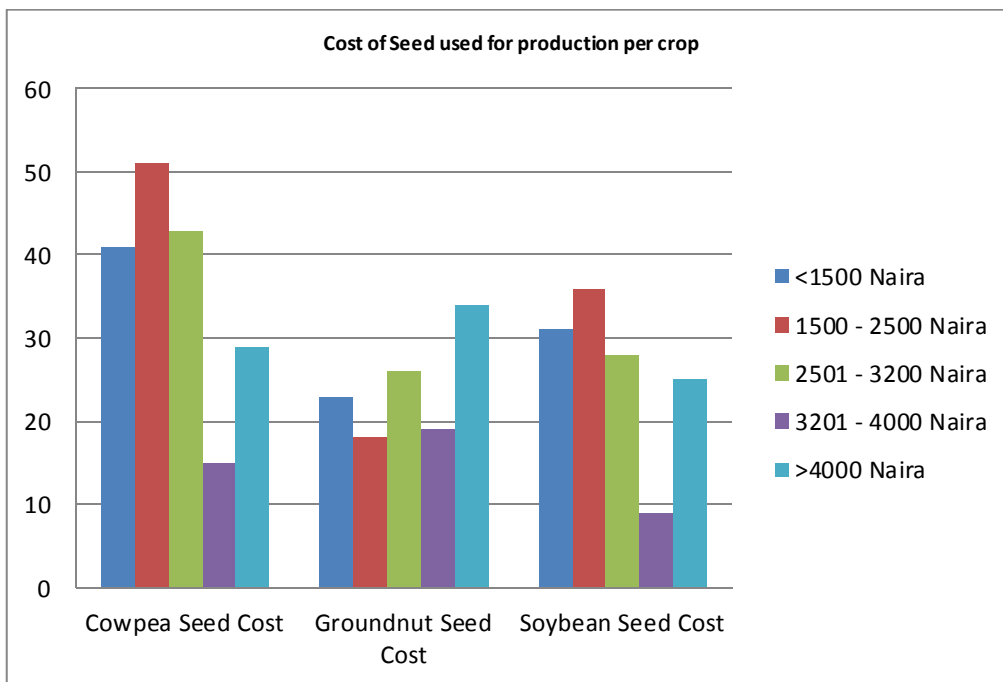
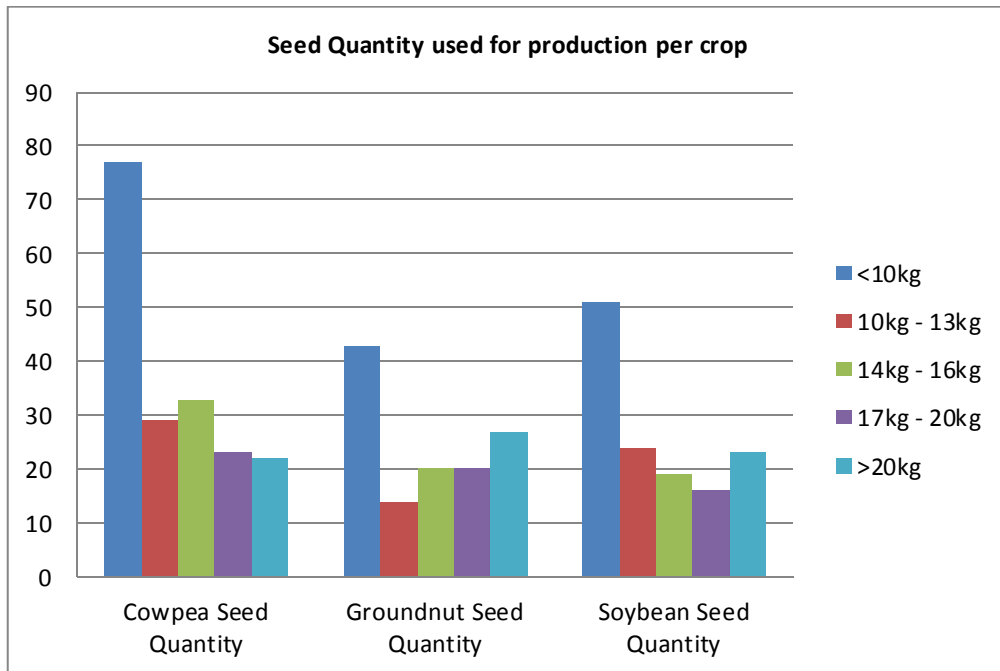
**Annex 5: Selected cost for local processing of grain legumes in Borno State**



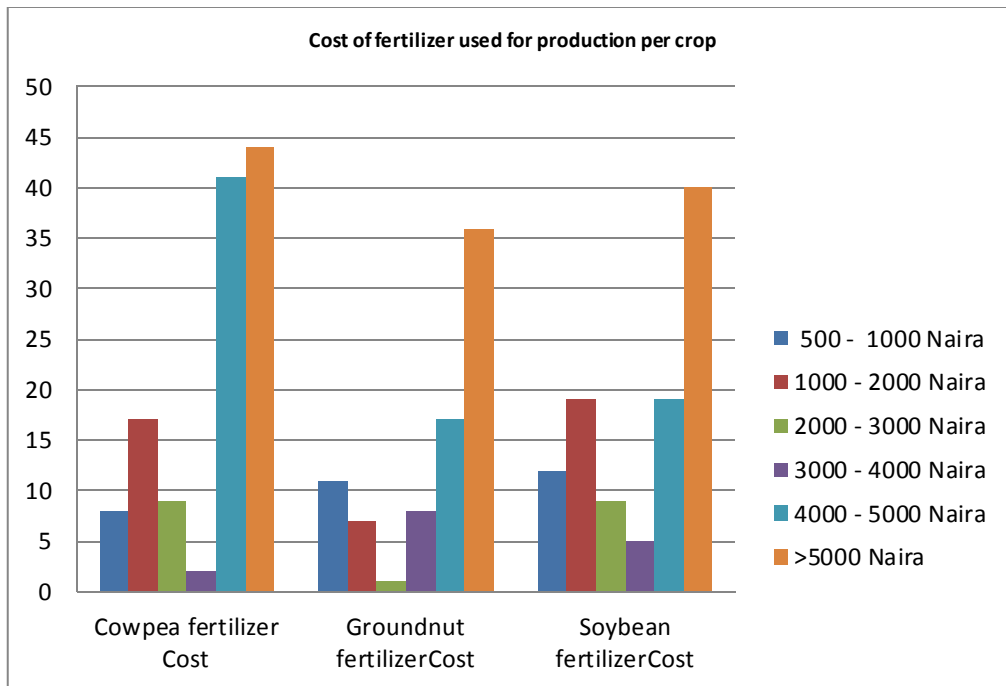
Source: Author's research



**Annex 6: Cost and quantity of seeds and fertilizer**









## Annex 7: Guides for focus group discussions

# Focus Group Discussions (FGDs) Towards Analysis of Cowpea, Groundnut and Soyabean Value Chains in Borno State

June - 2015

### Introduction

This guide contains a series of focus group discussion (FGD) tools developed as part of the diagnostic phase in assessing the cowpea, groundnut and soyabean value chains (VCs) in Biu, Hawul, Kwaya Kusa, and Bayo Local Government Areas (LGAs) of Borno State. Aside looking into every segment of these value chains more attention will be given to providing opportunities for youth (female inclusive) to engage in agri-business (input supply, value addition, etc). The assessment will inform the next steps in this direction. Semi-structured question guide will also be used for more scooping with other numerous value chain actors

### Objectives of the FGDs:

- Characterize the context, and actors perspectives of the current situation with respect to production, market channels and actors, and flows of inputs and outputs along the marketing chain
- Using value chain maps, identify constraints, barriers to participation by youths and women, opportunities for value chain upgrading and expansion, and associated risks with particular regard to domains of production, local processing, industrial processing, etc.
- Characterize the possible forms and functions of actors along the value chain by way of looking at challenges and opportunities, identifying key indicators to be factored into upgrading interventions with detailed action plans for further follow up
- To complement household level data, using questionnaires to follow up to the field

### Methodology

#### Sampling

**Farmers:** Aim to do at least 5 FGDs, consisting of 60 value chain actors (40% women) chosen from different segments of the value chains in the four LGAs mentioned above. These LGAs are project area of N2Africa and communities are selected in these LGAs in consultation with N2Africa staff. The communities chosen in these LGAs represent: a) pre-commercial rural production to rural consumption and b) relatively more commercial rural production to semi –urban/Urban consumption. Within each LGA, the aim is to randomly select communities that represent the dominant and emerging production systems. A total of about 300 farmers (selected from 15 communities in the 4 LGAs). The aim is to have a relatively homogenous group of farmers.

Table 1: Selected LGAs and communities

SAMPLING QUESTIONNAIRE FOR ADMINISTRATION		FARMERS		FOCUS GROUP DISCUSSION 1			FOCUS GROUP DISCUSSION 2	
LGAs	Communities	Male	Female	Cowpea	Soyabea n	Groundnu t	Women	Youth
Bayo 60	Briyel	12	8					
	Wuyo	12	8					
	Teli	12	8					



Biu 80	Mirnga	15	10					
	Yamarkumi	15						
	Ndukuku	12	8					
	Tum	12	8					
Hawal 100	Marama	12	8					
	Kwayabura	12	8					
	Hema	12	8					
	Mbulatawiwi	12	8					
	Vina Dam	12	8					
Kwayakusar 60	Wandali	12	8					
	Guwal	12	8					
	Gusi	12	8					
	Total	<b>300</b>		<b>30 (12 women, 18 men)</b>		<b>20 (8 women, 12 men)</b>		

The farmers will be randomly selected from a typical village community representing the site production system identified through N2Africa staff<sup>23</sup>. To ensure gender balance, gender specific issues are raised and 40% must at least be administered to women

#### Team composition for FGDs

Five groups will be facilitated in 2 sessions in 2 days, each groups comprising:

- ❖ Facilitator: Explains and guides the discussion, cross checks the analysis templates, and writes key notes on flipchart for all participants to see.
- ❖ Note taker: Detailed documentation of the discussions; notes observations during the session; cross checks the analysis templates, reminds the facilitator about missing issues. The note taker should also record any controversies in the discussions, contentious issues, how group makes decisions or reached consensus, any notable differences in responses or discussions between different groupings e.g. men, women
- ❖ Observer: This role will be played by N2Africa staff to cross check the analysis templates, reminds the facilitator about missing issues. There will be 2 observers, involving in the five working groups for 2 days

#### Sequence of activities and timeline

The aim is to conduct five FGDs with value chain actors within 2 days. In between, carry out individual interviews with use of semi-structured questions guides and follow up to the farmers in the field with the used of questionnaires.

#### 1. Introduction

The lead facilitator presents the project and why we are here. The objectives of the FGDs are to help us to characterize the context of cowpea, groundnut and soyabean production, processing and marketing, and complement the household survey to be carried out after. This is to determine most ideal useful information and further strategy for interventions. The facilitator should then allow N2Africa staff to introduce the team and their role, agree on “core values/rules and principles” including timing. Facilitate self -introductions. Explain how long the discussion will take, and the logistics (meals etc).

<sup>23</sup> The random selections will be done in close collaboration with N2Africa staff through available list of farmers and where a not available, farmers will be randomly selected at community level by enumerator(s)



## 2. Value chain map

**Objective:** The main objective of this exercise is to understand functions of actors and various supporters by mapping various segments of the value chain, make feasible some social services and land use system within the value chain as well as opportunities and constraints.

**Tools:** Map and focus group discussion

**Activities:** Ask group members to map out their value chain and its key features. The steps below should guide the discussion with community members.

1. The first step always is the definition of the final product. Which product or category of product does the value chain produce?
2. The end market / group of costumers are known and defined
3. The activities / functions currently performed to generate the final product are listed. It makes sense to start from the final sales point (outlet on the domestic market, or exporter) and go backwards listing the production and marketing activities necessary to sell the product on the market.
4. The list of activities / functions needs to be aggregated establishing a sequence of 4 to no more than 7 or 8 chain links - from providing specific technical inputs up to the final sale.
5. As a matter of principle, mapping input delivery and services at the upper end of the chain (before primary production) is restricted to highly specific inputs, making sure to clearly distinguish between the *specific* technology inputs - needed *only* for this product - and other inputs and services of a generic type. The latter are not included in the basic map but added later.
6. After establishing the functional sequence, the main chain/channel is drawn by indicating the types of operators performing the functions. This delivers a linear progression from stage to stage (i.e. no arrows bending left and right). Secondary channels are drawn later, branching off from the main one.
7. It is important to note that the value chain map only includes those operators who become owners of the product. If they source out or subcontract functions to other firms, these are regarded as "operational service providers".
8. If operators take more than one function, the box representing them is enlarged to cover the two or more functional stages they are in.
9. In the case of export products, the border line is indicated between the domestic and foreign operators.

*Note; since a map of each of the value chain has been developed, actors should identify the segment they belong in an exercise before validation of the developed map*

### Expected outputs:

- Validated value chain maps for cowpea, groundnut and soyabean
- Identification of constraints on each segment and upgrading interventions (root cause of every constraint should be determined)
- Identify gender gaps maps and agree means of closing these gaps



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## **Annex 8: Semi-structures interview guides**

### **INPUT COMPANIES**

1. What types of inputs are they selling? (seed, fertilizer, inoculants, etc)
2. What types of inputs are they distributing frequently?
3. What volumes are they selling each year? (disaggregate by major and minor seasons)
4. What price do they sell each input?
5. What percentage of sales is of subsidized input (if any subsidy exists)?
6. How does the subsidized system work? Indicate for each input (if any)
7. Where do they source each input from (region and from who?)
8. What would happen to any of the input provision if the government removed the subsidy?
9. Which of the inputs do you actively promote during field days?
10. Do you work with any agro dealers or last mile distributors?
11. What is your model of operation with the agro dealers or last mile distributors? Or model of getting inputs to farmers?
12. What have been the challenges with the above model?

### **AGRODEALERS/LAST MILE NETWORKS**

1. Can you explain how you work?
2. How do you source your inputs?
3. What is your relationship with the input companies?
4. What sort of inputs do farmers ask for?
5. What sort of inputs do you stock?
6. How is your work financed?
7. What is your relationship with farmers?
8. What model do you use to sell to farmers?
9. Any challenges with farmers accessing specific inputs?

### **PRODUCE BUYER/TRADING COMPANY & REPRESENTATIVE**

1. Where do you get your products from?
2. Do you always buy from the same suppliers?
3. What is your relationship with these suppliers?
4. Do you deal directly with farmers?
5. What are your special requirements?
6. Do you weigh what you buy or it is based on bagging?
7. Do you have storage facilities?
8. When are the seasons for the products?
9. Do you re-sell or utilize the product processing into other products?
10. What fees do you pay to government or other statutory bodies in the state?
11. What is your biggest challenge(s) in sourcing of the products



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## **WOMEN'S GROUPS**

1. When and why was the group formed?
2. How have you been reaching your objectives of forming this group?
3. Do you think you have been at disadvantage because of men are also involved in your kind of activities?
4. What are the areas of disadvantages you had noticed compared to men?
5. What do you think can be done to improve the situation?
6. What is your biggest challenge(s) in farming/business?
7. How will you rate participation of women in supporting activities relating farming/processing/trade
8. Are there policy specifically for women economic empowerment on production/processing/trade etc?
9. Do you have equal access to information, finance, technology, advisory services, extension etc compare to men?
10. Do you possess land, houses or other resources that are legalized in your names?
11. Can you decide on your own which crops to grow?
12. Have you been deprived of any opportunity because you are a woman

## **FARMERS' GROUPS**

1. What was the intention of forming the group?
2. How have you been reaching your objectives of forming this group?
3. What advantages have you enjoyed over time as a group?
4. What is your biggest challenge(s) in farming business?
5. What do you think can be done to improve the situation?
6. How will you rate participation of membership participation in group activities?
7. Do you have access to information, finance, technology, advisory services, extension etc

## **FINANCIAL INSTITUTIONS**

1. What are the analysis of loan classification by sector and lending models?
2. Is there agricultural desk that attend to agricultural related issues/credit?
3. What has been the nature of lending to agriculture in the last 3 years?
4. What is the loan recovery rate and management of default?
5. Do you have any existing modalities of payment system for farmers
6. Do you link up with Agricultural Credit Guarantee Scheme Fund?
7. Do you have some farmers that has accessed interest drawback from CBN through your support?
8. What are specific support services rendering to farmers?
9. What has been the major constraints preventing farmers from access credit in your institution?



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## **GOVERNMENT INSTITUTIONS**

1. *What are policy options towards achieving food security for agricultural production in Borno State?*
2. Are there specific policy option relating to leguminous crops on:
  - Land Acquisitions
  - Input policies
  - Land investment policies
  - Trade policies
  - Food Security Policies
3. Are there short, medium & long-term agricultural policies related to leguminous crops?
4. Are there policies for specific potential areas in Borno State on leguminous crops
5. Are there plan to work on underlying causes of food insecurity to promote alignment to long-term national strategy towards growth and competitiveness of legume sector?

## **DONOR PROJECTS AND NGOS**

1. *What are the core objectives of the project?*
2. *Do you consider gender as an issue in work place, community and society at large?*
3. *What are your specific strategies for gender integration into your activities?*
4. *How do you facilitate inclusive business model for youths and women?*
5. *Do you have youth-women specific indicators to upscale their involvement in the legume sector?*
6. *Are there possibilities of synergies with other projects in order to reach more beneficiaries?*
7. *What are your intending strategies to reach more people in the project?*
8. *Do you have an existing partnership protocols for collaboration in relevant areas in order to avoid overlapping of function and also opportunity to reach more*
9. *How can this kind of partnership kick start?*



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## Annex 9: Quantitative questionnaire

### VALUE CHAIN ANALYSIS OF LEGUMINOUS CROPS IN BORNO STATE - NIGERIA

#### Questionnaire for Value Chain Actors (Soybean, Cowpea and Groundnut)

##### A. PARTICULARS

1. Name\_\_\_\_\_
2. Local Government Area\_\_\_\_\_
3. District/community\_\_\_\_\_
4. Age\_\_\_\_\_
5. Sex\_\_\_\_\_
6. Phone No\_\_\_\_\_
7. Email \_\_\_\_\_
8. Contact Address\_\_\_\_\_
9. Type of Activities (Production, Processing, Marketing etc.) \_\_\_\_\_
10. Do you operate a Bank Account Yes/No and why? \_\_\_\_\_

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##### B. PRODUCTION/POST HARVEST (below questions are for producers)

11. Which of the leguminous crops and varieties? \_\_\_\_\_

Crop type	Variety
Cowpea	
Groundnut	
Soyabean	

12. Why are you growing these varieties of crops? (Give reasons for each crop variety being grown)\_\_\_\_\_

- 
13. What is the total size of your farm in hectare(s)/acre(s)?\_\_\_\_\_

If more than one farm, which ones and corresponding farm sizes

Crop type	Farm size
Cowpea	
Groundnut	
Soyabean	

14. Land ownership (communal, family, individual or rented)\_\_\_\_\_

15. Do you belong to any farmers association Yes/No? \_\_\_\_\_

16. If yes name the association and your benefits from it \_\_\_\_\_





17. Inputs used for production (Indicate per crop inputs used for production)

Input Type	Cowpea			Groundnut			Soybean		
	Quantity per ha	Cost	Source	Quantity per ha	Cost	Source	Quantity per ha	Cost	Source
Seed (Indicate variety)									
Fertilizer									
Herbicides									
Pesticides									
Other farm chemical (e.g fungicides)									
Labour									
Others									

18. What type of fertilizer do you always use?\_\_\_\_\_

19. Why do you use it?\_\_\_\_\_

20. Do you use aflasafe (for groundnut farmers only)?\_\_\_\_\_

21. How did you get it (aflasafe)?\_\_\_\_\_

22. What type of labour do you use?

Labour Tick please

Hire labour

Family labour

Cooperative labour

Etc

23. Type of relationship with your input suppliers (Indicate in the table below)

Type of Relationship Tick please

Direct purchase with discount with known supplier

Direct purchase from open market

Credit supply with supplier

Linked with processor's arrangement for credit supply

Group/Cooperative purchase



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Any other

24. What is the yield per hectare/acre (kg.)? \_\_\_\_\_

25. Cost of Transportation (e.g. from farm to store or from store to market)

Transportation	Cowpea	Groundnut	Soybean
Farm to store			
Farm to market			
Store to market			
Other means			

26. Type of storage facilities \_\_\_\_\_

27. Any treatment before storage? \_\_\_\_\_

28. If Yes, what treatment and why? \_\_\_\_\_

### **C.MARKETING OF PRODUCE**

29. Where do you sell your produce (please tick)?

Open market  
Farmgate  
Company  
Local processor  
Any other

30. How easy is it for you to sell your produce

Very easy  
Fairly easy  
Fairly difficult  
Very difficult



31. How can you rate marketing problems you usually encounter? (tick appropriately)

Marketing problems	Very big problem	Big problem	Fairly big	Small problem	Not a problem at all
Distance to market is very far					
Very few buyers					
Transport cost is very high					
Prices offered is low					
Impassable roads					
There is oversupply of the commodity in the market					
Quality not acceptable to buyers					
Other (specify)					

32. What requirement do the buyer(s) has/have?

Requirement	Cowpea	Groundnut	Soybean
Variety type			
Frequent supply			
Minimum supply of x tons			
Grains colour			
Grain size			
Others			

33. How do you first come in contact with the buyer? \_\_\_\_\_

34. Which of these seasons (peak and off) do you prefer to sell and why? \_\_\_\_\_

35. Who is setting the prices and how are you informed about it? \_\_\_\_\_

36. How does quality of produce affect price? \_\_\_\_\_



37. Who are the Major buyers? (Names, contact no (if possible))

Buyers	Commodity (Cowpea, Groundnut or Soybean)	Specific Name of buyer or company's name	Phone Number (if possible)	Location (base of the buyer)
Retailer				
Local buying agent				
Middlemen				
Company representative				
Coop buyer				
Sales based on pre-finance				

38. Type of relationship with buyers (indicate in the table below)

Type of Relationship with buyers	Tick please
Direct sales to known buyer	
Direct sales to open market	
Credit sales to buyers	
Institutional buyer (school, hospital etc)	
Any other	

39. What is the price difference for farm gate and local market? \_\_\_\_\_

40. Which sales arrangement do you prefer?

Sales Arrangement	Cowpea	Groundnut	Soybean
Local market (any buyer)			
Local market (specific customer)			
Middlemen			
Company representative			
Coop arrangement			
Sales based on pre-finance			
Any other			

41. What is the standard /local measure in use for selling produce -equivalent in kilograms

Equivalent	Cowpea	Groundnut	Soybean
1 mudu (2.5 kg.)			
0.5 mudu (1.25kg)			
1 bag (100 kg.)			
1 ton (10 bags of 100 kg. each)			
Others			



42. What is the price per measurement (equivalent in kilo)?

Price/seasons	Cowpea		Groundnut		Soybean	
	Peak season	Off season	Peak season	Off season	Peak season	Off season
1 mudu (2.5 kg.)						
0.5 mudu (1.25kg)						
1 bag (100 kg.)						
1 ton (10 bags of 100 kg. each)						
Others						

43. How do peak and off seasons affect pricing? \_\_\_\_\_

44. Do you make group sales of produce and why? \_\_\_\_\_

**D.LOCAL PROCESSING (FARMERS' GROUP/COOPERATIVES & INDIVIDUAL PROCESSING)**

45. Category of processor

Processing	Cowpea	Groundnut	Soybean
Cooperative (combine with farming)			
Cooperative (purchase farm produce for Processing only)			
Individual (combine with farming)			
Company (with outgrower scheme)			
Company (with embedded services)			
Individual processor			
Other (pls name)			

46. What is the processing capacity per week? \_\_\_\_\_

47. What products are being processed locally? Mention them \_\_\_\_\_

48. What quantity of raw materials do you processed per week \_\_\_\_\_

49. Why preference for local processing rather than selling commodity directly?  
 \_\_\_\_\_

50. Do you buy from other farmer groups/cooperatives for processing? Yes/No \_\_\_\_\_

51. What is the quantity you buy per week? \_\_\_\_\_

52. What is the value of products sold per week? \_\_\_\_\_

53. Who are the buyers for these products \_\_\_\_\_

54. Type of relationship with the buyers? \_\_\_\_\_



**E. GENDER/YOUTH INCLUSION**

55. Which of the following statement are correct or not correct? (tick appropriately)

Activities in agriculture	Correct	Not correct
Men are primarily responsible for earning income for the family.		
Women are capable of making important decisions by themselves.		
Men can take care of children as well as women can.		
A woman cannot leave home without the permission of her husband.		
It is acceptable for a married man to have his own savings account that he can spend as he wishes.		
Women who run a successful business in the value chain are good role models for boys and girls.		
It is acceptable for a married woman to work outside the home even if her husband is earning enough money for the family.		
A woman is capable of being a producer organization leader.		
Men who help with domestic work are good role models for boys and girls.		

**Questions 55 - 63 are strictly for women (Youths):**

56. Are you part of any cooperative/farmer groups \_\_\_\_\_

57. If yes, what are the conditions of registering with the group? \_\_\_\_\_

58. Who decide your participation in production activity (please tick)?

Yourself	
Husband	
Friend	
Community leader	
NGO or donor project	
Mention others	



59. Which land do you use?

<b>Investment area</b>	<b>Tick please</b>
In-house land for small production	
Own land by inheritance	
Own land by purchase	
Husband's land	
Cooperative land	
Community land	
Others (mention)	

60. Which area do you invest your money?

<b>Source of Land</b>	<b>Tick please</b>
Food for the family	
School fees	
Child(ren) care	
Support for husband	
New production technology on agricultural practice	
Savings	
Diversify into animal husbandry	
Mention others	



61. What do you do with commodity you produced (please tick)?

Household consumption	
Exchange for another goods	
Sell	
Use as wages for labour	
Give out as gift	
Mention others	

62. If exchange for goods, which ones? .....

63. If sold, where, to whom and at what price?

Buyers	Commodity (Cowpea, Groundnut or Soybean)	Specific Name of buyer or company's name	Price/mudu/bag/ton	Location (base of the buyer)
Retailer				
Local buying agent				
Middlemen				
Company representative				
Coop buyer				
Sales based on pre-finance				

64. Mention challenges being face as a woman?

Paying for higher labour	
Buying input at higher prices	
No access to information on new technology	
Not involved in participation in donor activities	
Not having sufficient time for agricultural practice	
No informed about important activities	
Mention others	





65. Tick as appropriate (Sample matrix for women producers)

Activities	Hours																							
	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	1	2	3	4
Cooking																								
Fetching Water																								
Feed livestock																								
Threshing & winnowing																								
Weed husband's land																								
Weed own land																								
Child care																								
Go to market																								
Attend coop meeting																								
Sleep																								
Family laundry																								
Attend ceremonies																								
Self-care																								
Others (specify)																								

**E. POLICY FRAMEWORK**

66. Any awareness of recent government policy or information on commodity? \_\_\_\_\_
67. What kind of policy/information \_\_\_\_\_
68. How has such policy has affected production or local processing \_\_\_\_\_

**G. EXTENSION SERVICES**

69. What type of service(s) are you receiving and what source?

- |                                     |        |           |         |
|-------------------------------------|--------|-----------|---------|
| Services                            | Cowpea | Groundnut | Soybean |
| Access to Inputs                    |        |           |         |
| Market Information System           |        |           |         |
| Access to Finance                   |        |           |         |
| Transportation                      |        |           |         |
| Quality Assurance                   |        |           |         |
| Cooperative Management              |        |           |         |
| Product Development/Diversification |        |           |         |
| Production Techniques               |        |           |         |
| Access to Quality Seeds             |        |           |         |
| Others (pls name)                   |        |           |         |



70. Services rendered whether paid or not and the source?\_\_\_\_\_

Services	Paid	Not Paid	Source
Access to Inputs			
Market Information System			
Access to Finance			
Transportation			
Quality Assurance			
Cooperative Management			
Product Development/Diversification			
Production Techniques			
Access to Quality Seeds			
Others (pls name)			

71. As a result of changes in performance on production and/or local processing, how best will you describe yourself in the statement below?

	Yes	To some extent	No
Use the recommended farming techniques (seeds varieties, soil management etc.)			
Get more harvest than other farmers			
Like to experiment with new seeds or farming methods			
Always try to be the one to try new farming methods			
Farm is on average larger than other farmers			
Wealthy compared to most farmers			
Always use chemical fertilizers			
Children attend private school			
Have another business			
Self-sufficient in food production			
Have a modern house			
Has access to means of transportation			
Use hired labour for most farm activities			
Able to hire tractor/farm equipment			
Have own farm equipment			
Buy inputs ahead of season			

## H. CHALLENGES

72. Challenges encountering in production, Processing or Marketing?



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What challenge will you rank first in the list of challenges above? \_\_\_\_\_

73. Has any of these Challenges taken up by any of the supporters mentioned above, when and how? \_\_\_\_\_

**I. SUGGESTION FOR IMPROVEMENT**

74. Please state ways or means of improvement required for your work in production or local processing \_\_\_\_\_

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**Annex 10: List of Input Companies**

<b>LIST OF SELECTED SEEDS/INPUT COMPANIES IN NIGERIA</b>			
<b>S/N</b>	<b>COMPANY NAME</b>	<b>E-MAIL</b>	<b>PHONE NUMBER</b>
1	Adi Farms	dangabarmela@yahoo.com	08033071709
2	Alganzaki		
3	Boman Farms Ltd	babsboshe@yahoo.com	08036315505, 07058100757
4	Candel	andarubu@candelcorp.com, mhussaini@candelcorp.com	08039162735
5	Champion Seeds	sbikorie@yahoo.com	07037107881, 08028452420
6	Chimande	chimandenigtld@rocketmail.com	08033222226
7	Da-All-Green	yakubuar@yahoo.com	08063416241
8	Daddo Seeds	daddoseed@daddogroup.com	08037003868
9	Dalalinks Res Ltd		
10	Ella Agro Company	ilechi@yahoo.com.	08032875237, 08185117734.
11	Evergreen International	Lewu2001@yahoo.co.uk	08036926999, 08037462520
12	First Let's Farm	firstletsfarmagric@yahoo.com	08034968675
13	Fomidea		
14	Girmal	malikidaniel2010@yahoo.com	08037703520
15	Green Agriculture	agriculture@cgcoc.com.cn	08082268951, 07034179854, 08082268957
16	Greenspore	greensporeseed@gmail.com	08052587570
17	Greenview	greenviewintld@yahoo.co.uk	08035870618
18	Idea-Agro Ventures	agroideal@gmail.com, tswakoma@gmail.com	08030727786, 08036332245, 07060929070.
19	Iyadalim Global	iyaladamu@yahoo.com	08037867666
20	Jabico Ventures		
21	Jirkur Seed	jirkurseed@yahoo.com	08063626110 08086235321
22	Jomas Nigeria Entp	Olusegunaina11@yahoo.com	08069555317, 08028411472
23	Kinkiso	kinkisoventure@yahoo.com	08034356154
24	Kojoli Farms	Ahmed_hb@yahoo.com	08052645849, 07034091015
25	Lumiere Seed	drcuegbo@yahoo.com,	08064688138,



		Lumierecoy@yahoo.com	08087088826
26	Maina Seeds	maina.seeds@yahoo.com	08036150959
27	Mamora	mamoraseeds2010@yahoo.co.uk	08033310291, 08050201730
28	Manoma Seeds	manomaagric@yahoo.com	08039652443, 08065028575
29	Manuwa and Ninah Invt.	Manuwaninahseeds@gmail.com	08065948724
30	Marsa Seed	shehugarki@yahoo.com	08033344540
31	Maslaha Seeds	maslahaseeds@yahoo.co.uk	08033737123, 08066224143
32	Melt down	Meltdawnlimited@yahoo.com	08036302515, 08125992533.
33	Nagari Seeds	nagariseedltd@yahoo.com	08028431210
34	Nagogo Seeds	nagogoseednig.ltd@gmail.com	08028452420, 08091009532
35	Niima Integrated	niimaseeds@gmail.com	08034088432
36	Notore	ivana.osagie@notore.com, tijjani.St.James@notore.com	08033805902, 08159490305
37	Nyan Agric. Ventures	nyamagricventures@gmail.com, musanyamf@yahoo.com	08028814281
38	Ogunrubola Farms		
39	Olam	jagdish.tamak@olamnet.com, regi.george@olamnet.com	08071994030
40	Premier	omidijimathew@yahoo.ca, Mathew_omidiji@yahoo.co.uk, malachi_nathan@yahoo.com, mikekennyoye@ymail.com	08037033225, 08033885883
41	Rahama	rahamaseeds@yahoo.com	08068871060, 07089265355, 08037866616
42	Romarey	romareyventures@yahoo.com	07037132794 08054803954
43	Salami	saladafarm@gmail.com	08134449366, 08023798364
44	Samlak Ventures	saolakojo@yahoo.co.uk	08034671714
45	Savannah Seeds	savannahseedsandlivestock@yahoo.co.uk	08033139794
46	Seed Project	seedprojectcoy@yahoo.com	08094785739
47	Share Seeds	samfag@yahoo.com	08034045872
48	Springfield Agro Ltd	pradeep@springfieldagro.com, madhu@springfieldagro.com	8039753515, 08039753510
49	Sylvanus Ejezia Farms	sylvafarms@yahoo.com	08037644892
50	Tecni Seed Ltd	techniseeds@yahoo.com	08023809270



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51	Teratiga	operations@terratiga.com	08035716863
52	Tirendin Farm	uualiero@gmail.com, tirendinfarm@yahoo.com	08091055399
53	Value Seed	valuseeds@yahoo.com	08033175351
54	Vitae Seeds	stephen@vitaeseeds.com, stephen_pace2003@yahoo.com	08030904487
55	WACOT	pankaj@Clicktgi.net	07064016449
56	Wadata Seeds	wadataseeds@gmail.com	08169051241

Source: Seed Council of Nigeria



**Annex 11: Gross margin for soybean and cowpea**

Cost of Production of 1 ha grain legumes in Borno State										
SOYBEANS					COWPEA					
Variable Cost	Rate	Unit	Cost in Naira/ha	Percentage	Variable Cost	Rate	Unit	Cost in Naira/ha	Percentage	
LAND	2000	1	2000	2.87	LAND	2450	1	2450	2.8	
CLEARING	2000	1	2000	2.87	CLEARING	7440	1	7440	8.5	
HERBICIDE	750	5	3750	5.3	HERBICIDE	750	5	3750	4.3	
RIDGING	20000	1	20000	28.77	RIDGING	5940	1	5940	6.8	
SEEDS	7000	1	7000	10.07	SEEDS	1950	1	1950	2.2	
PLANTING	2000	1	2000	3	PLANTING	3000	1	3000	3.4	
WEEDING 1	5000	1	5000	7.19	WEEDING 1	5000	1	5000	5.7	
WEEDING 2	7000	1	7000	10.07	WEEDING 1	5000	1	5000	5.7	
HARVEST	5000	1	5000	7.19	HARVEST	7000	1	7000	8	
THRESHING	3000	1	3000	4.31	THRESHING	4500	1	4500	5.1	
CLEANING	7500	1	7500	10.79	CLEANING	9220	1	9220	10	
BAGS	1000	1	1000	1.43	BAGS	1500	1	1500	1.7	
TRANSPORT	1000	1	1000	1.43	TRANSPORT	2500	1	2500	2.8	
FEEDING	3500	1	3500	5.03	FEEDING	8250	1	8250	9.4	
					FERTILIZER	5500	4	22000	25.2	
YIELDS	10BAGS	1000KG			10BAGS	1000 KG.				
Total Variation Cost (TVC)			69500					87050		
Total Revenue (TR)	1000	97	97000			1000	125	125,000		
Gross Margin (GM) =			27,500					35,500		



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## List of project reports

1. N2Africa Steering Committee Terms of Reference
2. Policy on advanced training grants
3. Rhizobia Strain Isolation and Characterisation Protocol
4. Detailed country-by-country access plan for P and other agro-minerals
5. Workshop Report: Training of Master Trainers on Legume and Inoculant Technologies (Kisumu Hotel, Kisumu, Kenya-24-28 May 2010)
6. Plans for interaction with the Tropical Legumes II project (TLII) and for seed increase on a country-by-country basis
7. Implementation Plan for collaboration between N2Africa and the Soil Health and Market Access Programs of the Alliance for a Green Revolution in Africa (AGRA) plan
8. General approaches and country specific dissemination plans
9. Selected soyabeans, common beans, cowpeas and groundnuts varieties with proven high BNF potential and sufficient seed availability in target impact zones of N2Africa Project
10. Project launch and workshop report
11. Advancing technical skills in rhizobiology: training report
12. Characterisation of the impact zones and mandate areas in the N2Africa project
13. Production and use of rhizobial inoculants in Africa
18. Adaptive research in N2Africa impact zones: Principles, guidelines and implemented research campaigns
19. Quality assurance (QA) protocols based on African capacities and international existing standards developed
20. Collection and maintenance of elite rhizobial strains
21. MSc and PhD status report
22. Production of seed for local distribution by farming communities engaged in the project
23. A report documenting the involvement of women in at least 50% of all farmer-related activities
24. Participatory development of indicators for monitoring and evaluating progress with project activities and their impact
25. Suitable multi-purpose forage and tree legumes for intensive smallholder meat and dairy industries in East and Central Africa N2Africa mandate areas
26. A revised manual for rhizobium methods and standard protocols available on the project website
27. Update on Inoculant production by cooperating laboratories
28. Legume Seed Acquired for Dissemination in the Project Impact Zones
29. Advanced technical skills in rhizobiology: East and Central African, West African and South African Hub
30. Memoranda of Understanding are formalized with key partners along the legume value chains in the impact zones
31. Existing rhizobiology laboratories upgraded
32. N2Africa Baseline report





33. N2Africa Annual country reports 2011
34. Facilitating large-scale dissemination of Biological Nitrogen Fixation
35. Dissemination tools produced
36. Linking legume farmers to markets
37. The role of AGRA and other partners in the project defined and co-funding/financing options for scale-up of inoculum (banks, AGRA, industry) identified
38. Progress Towards Achieving the Vision of Success of N2Africa
39. Quantifying the impact of the N2Africa project on Biological Nitrogen Fixation
40. Training agro-dealers in accessing, managing and distributing information on inoculant use
41. Opportunities for N2Africa in Ethiopia
42. N2Africa Project Progress Report Month 30
43. Review & Planning meeting Zimbabwe
44. Howard G. Buffett Foundation – N2Africa June 2012 Interim Report
45. Number of Extension Events Organized per Season per Country
46. N2Africa narrative reports Month 30
47. Background information on agronomy, farming systems and ongoing projects on grain legumes in Uganda
48. Opportunities for N2Africa in Tanzania
49. Background information on agronomy, farming systems and ongoing projects on grain legumes in Ethiopia
50. Special Events on the Role of Legumes in Household Nutrition and Value-Added Processing
51. Value chain analyses of grain legumes in N2Africa: Kenya, Rwanda, eastern DRC, Ghana, Nigeria, Mozambique, Malawi and Zimbabwe
52. Background information on agronomy, farming systems and ongoing projects on grain legumes in Tanzania
53. Nutritional benefits of legume consumption at household level in rural sub-Saharan Africa: Literature study
54. N2Africa Project Progress Report Month 42
55. Market Analysis of Inoculant Production and Use
56. Identified soyabean, common bean, cowpea and groundnut varieties with high Biological Nitrogen Fixation potential identified in N2Africa impact zones
57. A N2Africa universal logo representing inoculant quality assurance
58. M&E Workstream report
59. Improving legume inoculants and developing strategic alliances for their advancement
60. Rhizobium collection, testing and the identification of candidate elite strains
61. Evaluation of the progress made towards achieving the Vision of Success in N2Africa
62. Policy recommendation related to inoculant regulation and cross border trade
63. Satellite sites and activities in the impact zones of the N2Africa project
64. Linking communities to legume processing initiatives
65. Special events on the role of legumes in household nutrition and value-added processing



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66. Media Events in the N2Africa project
  67. Launch N2Africa Phase II – Report Uganda
  68. Review of conditioning factors and constraints to legume adoption and their management in Phase II of N2Africa
  69. Report on the milestones in the Supplementary N2Africa grant
  70. N2Africa Phase II Launch in Tanzania
  71. N2Africa Phase II 6 months report
  72. Involvement of women in at least 50% of all farmer related activities
  73. N2Africa Final Report of the First Phase: 2009-2013
  74. Managing factors that affect the adoption of grain legumes in Uganda in the N2Africa project
  75. Managing factors that affect the adoption of grain legumes in Ethiopia in the N2Africa project
  76. Managing factors that affect the adoption of grain legumes in Tanzania in the N2Africa project
  77. N2Africa Action Areas in Ethiopia, Ghana, Nigeria, Tanzania and Uganda in 2014
  78. N2Africa Annual report Phase II Year 1
  79. N2Africa: Taking Stock and Moving Forward. Workshop report
  80. N2Africa Kenya Country report 2015
  81. N2Africa Annual Report 2015
  82. Value Chain Analysis of Grain Legumes in Borno State, Nigeria



## Partners involved in the N2Africa project

