

N2Africa Podcaster no. 9

September 2011

Introduction

When working across eight countries in West, East and southern Africa we always have plenty to report! Whilst the cropping season is heading for harvest in West Africa a new crop has emerged in East Africa and sowing preparations are fully underway in southern Africa. And of course the strong seasonality in Africa means that there are always issues of getting ready for the next season or crop marketing throughout the year. In this issue of the Podcaster we requested inputs from the different countries, and many of the contributions focus on market linkages, value chain analysis and agricultural fairs. Several of the articles provide insights from a broader value chain analysis that Joseph Rusike of IITA is currently conducting for N2Africa. We also provide links to a consultancy report on gender in N2Africa

by WOCAN, together with how this will be incorporated with our activities. Putting markets and gender alongside each other highlights some of the challenges that remain, and that differ across countries, in empowering smallholder farmers to consolidate their production so that it can reach the market, and in assisting women in doing this.

The final articles discusses bioprospecting for rhizobia in East and Central Africa and some links to other projects are indicated at the end. As always we encourage you to send in your own items of news so that we can share them with our global community.

Ken Giller

Progress in soyabean marketing by N2Africa in Kenya

An important N2Africa milestone relating to dissemination activities is linking at least half of the participating communities to markets before the end of Year 2 (Milestone 4.3.3). In Kenya, we have undertaken this goal in a systematic



manner. First the demand for soyabeans was assessed and likely buyers contacted. There are more than 40 companies in Kenya utilizing soyabean as an industrial raw material with national demand estimated at 150,000 tons per year and meeting part of this deficit offers an excellent market entry opportunity. Nearly all of these soyabeans are being imported from Brazil, Uganda or India; the key is to convince Kenyan

buyers that local soyabeans can be reliably substituted for imported ones and delivered to factory gates at a lower price. Some of these buyers processing between 40 and 80 tons per week are extremely interested in this opportunity with one such buyer issuing a 4000 ton tender for February 2012 (Promasidor, makers of SOSSI textured vegetable protein, see photo).

Next we must assure that this demand be met and that necessary inputs are available. N2Africa scientists formulated a fertilizer blend for symbiotic grain legumes (Sympal 0-23-16 with S, Ca and Mg) that was commercialized by MEA Fertilizers Ltd and marketed for about US\$ 0.63 per kg in 2, 10 and 50 kg bags. MEA also produces BIOFIX rhizobium inoculants packaged in 20, 50 and 100 g sachets available at a cost of about US\$ 12.20 per kg. In this way, we are able to meet the fertilizer and inoculant needs of the project's "progressing" farmers.

A more difficult challenge is the availability of soyabean seed because it is not commercially available, rather it must be bulked by project partners. Smart Logistics is a Kenyan company that provides quality control, grain bulking and transportation services to food processors in Kenya and has partnered with N2Africa and Promasidor to meet the transportation services to food processors in Kenya and has partnered with N2Africa and Promasidor to meet the announced tender. Smart Logistics, assisted by our sister TL2 project, announced it would buy quality soyabean seed





Table 1. Inputs, services and costs of two contrasting credit schemes recently launched in Kenya. Prices and costs in Kenya Shillings (KSh 92 = US\$ 1)

Item	Collective Marketing model			Individual Micro-finance model		
	quantity	price	cost	quantity	price	cost
Soyabean seed (kg)	10	n.a. ¹	0	10	55	550
BIOFIX inoculant (sachet)	1 (50 g)	55	55	1 (100 g)	110	110
Sympal fertilizer (kg)	10	58.5	585	20	64	1280
Fungicide (Artea & Amistar)	not included		0	1	745	745
Crop Insurance ²	not included		0	262.5	2.51	754
Knapsack spray pump	available from group		0	0.01 ³	10000	100
Collection centre equipment	not included		0	0.01 ³	4000	40
Inputs Total			640			3578
Transportation/Finance Costs			60			322
Credit extended per 0.5 acre			700⁴			3900⁵

¹ farmers provide 10 kg seed worth KSh 460 and prepare 0.5 acre of land to become eligible for participation. ² crop insurance covers 75% of expected crop yield. ³ every group of 100 farmers share a sprayer and grain processing equipment. ⁴ participants repay credit by returning 20 kg of grain to group organizers. Loan deducted from crop sales to Smart Logistics. ⁵ Loan deducted from crop sales to Smart Logistics.

for US\$ 0.61 per kg, about 20% above the world market price. N2Africa designed a technology package to process and test these seed (see photograph) and N2Africa cooperators responded by assembling about 39 tons of seed worth about US\$ 24,000. Twenty (80%) N2Africa outreach cooperators in 10 counties of west Kenya participated in soyabean seed processing and sales. The twist is that Smart Logistics did not take physical possession of the seeds, rather it left them with N2Africa grassroots groups to replant the following season in order to meet the Promasidor tender.

Together, Smart Logistics and N2Africa designed two contrasting input supply and marketing models; one more comprehensive based upon microfinance opportunity to individual farmers and another less complex approach enabling local farmer groups to extend inputs on credit to members and then market their resulting surplus (see Table 1). The microfinance approach includes part ownership in a sprayer and chemicals to precautionary control soyabean rust as well as enrollment in a climate-based crop insurance program involving partnership with Syngenta. The collective marketing approach has provided sprayers to farmer groups and offered training in disease identification and treatment (again by Syngenta) but assumes that farmers will diagnose and treat pest and disease according to local conditions and will bear the risk of crop failure.

The current growing season has just begun in west Kenya with 1500 households growing 300 ha of soyabeans

participating in collective marketing and an additional 1260 micro-financed households cultivating 483 ha. The collective marketing model is being explored by 71% of our partner groups and the microfinance option undertaken by 25% of them. Because of its reduced inputs and services, the collective marketing model is expected to yield about 1100 kg grain per ha, offer net returns of US\$ 102 per half acre and provide a return on investment of about 14:1 (not including seed, fungicide and labor costs) while the microfinance approach should offer 1750 kg per ha, US\$ 134 per 0.5 acre field and 4.3:1 return, respectively. All together, we hope to market 1175 tons of soyabean worth about US\$ 602,000, but this is extremely speculative until we see how the season progresses. Clearly, the N2Africa Dissemination team in Kenya has forged key links with private sector input suppliers and buyers and is undertaking an ambitious plan for marketing soyabeans early in Year 3. The team has made less progress, however, in developing market linkages for climbing bean, its other target grain legume. This discrepancy is due to the strong local demand for beans in west Kenya leading to higher prices throughout the year compared to larger urban areas. Future attempts at marketing climbing bean will focus upon shelled fresh beans that command a much higher market price through the creation of a network-wide interest group during Year 3. Smart Logistics has already expressed interest in working with us in this area as well.

Paul Woomer (N2Africa Project), Edgar Kadenge (TL2 Project), Jane Wanza (Smart Logistics) and Paul Rose (Promasidor)



Major players of grain legume value chain in Nigeria identified

Dr Joseph Rusike, the N2Africa value chain specialist was in Nigeria 17th-30th July to conduct a rapid rural appraisal for legume value chain in the country. During this period, Dr Rusike met and interacted with a wide range of stakeholders in the country's legume value chain. His survey carried him to some of the major cities within the moist savanna agro-ecological zone, such as Kano, Zaria, Kaduna, Jos, Makurdi and Abuja. In the course of his survey, Dr Rusike discovered that because demand for soyabean in Nigeria cannot be met by local production, soyabean aggregators and millers import soyabean into the country from other neighbouring countries – Benin Republic, Cameroun and Chad. His survey also uncovered some of the major actors in the soyabean value chain in Nigeria.

Grand Cereals Limited, Jos, is the largest buyer and processor of groundnuts and soyabeans. The company mills 36,000 tons per annum of groundnuts and 100,000 tons per annum soyabeans. If farmers market more groundnuts, the company can process 100,000 tons of groundnuts per year. It has recently installed a fish feed extruding plant to produce high quality surface feeds with capacity of 3 tons per hour giving an annual capacity of 22,500 tons.

Sunseed Nigeria PLC, Zaria, is another major player in the purchase and use of soyabeans, crushing 70,000 tons per year. The company regards the poor availability of soyabeans, especially during the last 2 years, as the major constraint to its operation and foresees no problem of market even if farmers were to double the production of soyabeans because the demand for soyabean is very high.

Fortune Oil Mills Nigeria Limited, Kano, processes 17,000 to 20,000 tons per annum of groundnuts and 30,000 to 90,000 tons per annum of soyabeans depending on relative prices of soyabean meal and oil to soyabean grain prices and availability. Installed milling capacity of soyabeans is 100,000 tons per annum. The company holds inventory stocks of soyabeans for meeting its requirements for the next 5 years. The company sometimes acts as a commodity trader and sells soyabean grain to other millers or crude oil and soyabean meal and cake for further value addition by other processors depending on seasonal price movements.

Yakasai Oil Mills Kano processes 3,000 tons per annum groundnuts and 1,000 to 3,000 tons per annum soyabeans. This company is planning to install a solvent plant with a capacity for 60,000 tons of soyabeans per annum. Currently, they sell crude oil to other millers, soyabean cake to poultry feed manufacturers and sometime raw soyabean grain unexpressed to sister companies.

Representatives of all of these companies state that a major constraint they face is a sustainable supply of grains. They particularly identify the lack of capability to supply raw grains (large volumes, consistency, quality, and price) as a major problem. This throws up a paradox in the sense that farmers in rural communities often complain of lack of access to markets, especially for soyabean. While the presence of these millers and their stated ability to mop up any excess that may arise from increased production is good news, more needs to be done to properly link the smallholder farmers directly to the millers. Most of these companies do not have time and resources to invest in organizing smallholder farmers into contract growers; others who had previously made attempts reported that contracting with farmers was too much of a headache. For instance, Yakasai Oil Mills has had previous experiences with USAID and PrOpCom (Promoting Pro-Poor Opportunities in the Commodity Service Market) project interventions to link farmers with end-users in order to cut out middlemen and improve marketing efficiency. The interventions could not be implemented because of the limited soyabean production by farmers.

Based on the information emerging from Dr Rusike's survey, it is obvious that efforts at improving the linkage of smallholder farmers to market will require a multi-pronged approach. There is the need to increase average yields both in terms of total acreage cultivated and yield per unit area. First year results from the activities of N2Africa have shown that average on-farm soyabean yields have been increased from about 1000 kg/ha to 2000 kg/ha. Second, farmers need to be trained on postharvest handling of products so that they produce quality grains that can receive premium prices. These include activities such as sorting, grading, storage, and the capacity to warehouse properly. There is also the need to organise farmers at the community level to be able to collect a minimum quantity of grains at identified collection points such that evacuation to factories can be done in a cost-effective manner. Buyers cannot efficiently deal with numerous farmers widely dispersed over large geographical areas each marketing 1, 2 or a few bags of produce. There is a need for one body to assemble products to a minimum of a delivery truck load. Thus the challenge for NGOs and interventions, such as the N2Africa project, is to organize farmers to produce quality grains that can attract premium prices in the markets and also organise them into commodity associations that allow them to aggregate their products in sufficient quantities that allow producers to come in and evacuate the produce to the factory.

Abdullahi Bala and Joseph Rusike

Linking farmers to markets: Experiences from groundnuts farmers in Mudzi district, Zimbabwe

It had become a norm for smallholder farmers in Mudzi district that after harvesting their groundnuts they would struggle to get a remunerative market for their produce. In most cases, the farmers ended up selling their produce at very low prices to opportunistic buyers. The farmers were not organized implying that they lacked the capacity to negotiate with the buyers or store their produce until prices would become favorable. In addition, the farmers also did not have access to value addition options. This lack of organization meant that the farmers lacked access to market information (especially on prices), access to remunerative distant markets and knowledge on how they could do their farming as a business. However, the 2010/11 season brought a turning point to the farmers in Mudzi's Ward 12, one of the wards where the N2Africa project is working.

The close collaboration between the IFAD and N2Africa teams resulted in the establishment of 10 collective marketing groups (Rural Group Enterprise, RGEs) in ward 12 in March 2011. A total of 10 RGEs with a minimum membership of 10 N2Africa farmers were formed. This arrangement polarized farmers as some (the pessimists) thought CIAT was the buyer while others (optimists) were willing to give it a try. Eventually when the formation of the groups materialized, some RGE members had already started disposing their unshelled groundnuts to the Grain Marketing Board (GMB) at \$400/ton. This is despite the fact that the GMB is traditionally known for delivery payments very late. For instance, in the previous season, some farmers who delivered their produce to GMB did not get their payments till today. Furthermore, the RGEs felt that the use of the spring balancing scale was very suspicious as it could be tampered with resulting in underweights.



Figure 1: Time to secure their load: RGEs tighten the ropes which secured their groundnuts. [Pictured by Byron Zamasiya]

The project team facilitated a link between the RGEs and the market through timely provision of market information on prices and trading terms of most buyers in the capital Harare. CIAT also provided the RGEs with a digital balancing scale, empty bags and twine. Based on the information on market prices and trade terms, the RGEs agreed to shell their nuts. They chose to sell their nuts to Monakem Investments which was offering a spot price of \$750/ton



Figure 2: Time to pocket proceeds: The sales committee watch Mark from Monakem counting their payment [pictured by Byron Zamasiya].

upon delivery in Harare. The RGEs concurred to bring at least one 50kg bag of shelled groundnuts per household. This would translate to 5 tons for the 10 RGEs. During a meeting on the 27th of June at Makanjera Business Centre in Ward 12, the RGEs established two committees namely a quality control and marketing committee. The quality control committee worked on assessing the quality and grade of the nuts before they were weighed and bagged. On the other hand, the marketing committee worked on transport arrangements. They hired a lorry at a cost of \$150 to ferry their produce to Harare which lies 238 km away. On the 28th of June, they finally sold 2.945 tons to Monakem Investments in Harare. The project team members helped the farmers to negotiate with Monakem to raise their price to \$780/ton since their nuts were of a high grade.

Monakem requires 2 tons of nuts per day implying that there is a ready demand for groundnuts from the RGEs. Sharing of sales proceeds was done on the 29th of June during a feedback meeting. The RGEs agreed that their major obstacle in their pursuit of marketing was lack of knowledge on marketing, negotiation skills and lack of organization. For the 2011/12 season, the RGEs have pledged to commit more land to groundnuts as they are now assured of markets.

Byron Zamasiya and Isaac Chabata



Putting Nitrogen Fixation to Work for Smallholder Farmers in Africa: Rapid Appraisal Value Chain Surveys in Rwanda and South Kivu, DRC

Introduction

A rapid appraisal value chain survey was carried out in Rwanda and South Kivu, DRC, from June to July 2011. The study was carried out using a questionnaire interview survey of the value chains participants, including government researchers, extension agents, seed development units, poultry feed manufacturers, soyabean processing firms, non-governmental organizations (NGOs), and government decision makers. The questionnaire was designed to elicit information on the role of the four target grain legumes (common beans, cowpeas, groundnuts and soyabeans) in smallholder farm household strategies for incomes, food security, nutrition, sustainable natural resource management (NRM) and gender; production areas and trends; commercialization; value chain structures; opportunities and constraints for grain legume-led growth; and specific research interventions to relax constraints and generate impact. The sample was drawn from each country's list of public and private organizations engaged in research, farmer training and extension, seed production and distribution, finance, farmers' organizations, and output marketing and policy making on the focus legumes. A total of 20 interviews were conducted in Rwanda and 17 in South Kivu, DRC. Secondary time series data were collected from ministries of agriculture on release of new varieties; area, yield, and production; and market prices.

Role of the target grain legumes in smallholder farmers' strategies for incomes, food security, nutrition, sustainable natural resource management (NRM) and gender equity

The value chain participants' survey revealed that in Rwanda and South Kivu common beans and soyabeans play important roles in smallholder farmers' strategies for incomes, food security, nutrition, natural resource management and gender. Common bean is the most important legume for household consumption and for earning cash income. Beans are grown by most farmers throughout the country. Most of the main dishes consumed daily are prepared using common beans. Rwanda has together with Uganda and Eastern Democratic Republic of Congo some of the highest per capita consumption of common beans in the world. Because common beans are a basic food staple and cash income earner for rural households and families have few alternative cash crops, beans are very important in strategies for assuring household food security. Common beans are the primary source of proteins rather than animals. Beans play a major role in nutrition. Because the land frontier is closed and households need to use legumes in rotation with other crops for sustainable land management especially given high fertilizer prices, beans are important for NRM. Turning to gender equity, tradition-

ally common beans are a woman's crop. This is because beans are grown as an intercrop with staple food crops and this reduces conflicts in land use. During commercialization, beans become a marketable commodity and women get disposed. Consequently, beans need to be promoted through interventions in their value chains with other crops that can take over their traditional roles under the control of women.

Cowpeas are less important for incomes, food security, nutrition, NRM and gender equity. This is because there is insignificant production, marketing and consumption of cowpeas. Past agricultural development programs have not introduced, evaluated and promoted cowpeas.

Compared with common beans, groundnuts are a minor crop. Groundnuts have minimal roles in farm incomes, food security, NRM and gender. Groundnuts are commonly grown in few and small quantities. Groundnuts are traded in the market mostly as green fresh pods and if marketed as dry grain they are processed into flour. Groundnuts are consumed mostly as a sauce with cassava and cassava leaves. Consequently, groundnuts have a more critical role in food security and nutrition in areas where they can be competitively produced and supplied to markets. In these areas they have an important role in gender equity similar to that of common beans.

Soyabeans are the second most important grain legumes after common beans. But their full potential is still untapped. Soyabeans have very important roles in NRM because they contribute to biological nitrogen fixation and they respond to inoculation with rhizobium. Because soyabeans are a major source of protein they contribute to combating malnutrition especially among children. Soyabeans are much used by women especially pregnant women. When soyabean is cultivated for the household's subsistence requirements, women control the management and decision making of its production, utilization and consumption. But during commercialization men dominate the decision making and control of incomes.

Production by geographical area

In Rwanda, common beans are grown in all areas of the country, depending on the varieties. But the Northern and Western Provinces are the most important surplus production areas for climbing beans and bush beans. The Northern Province has high altitude climatic (rainfall, temperature) and soil conditions that are favorable for climbing beans. More than 50% of soils in the Northern Province are volcanic soils. Beans in these areas are grown in competition with Irish potatoes. By contrast, the Eastern Provinces are characterized by lower rainfall, higher temperatures

and poorer soil fertility conditions that favor bush beans. Because of recent improvement in production technologies, climbing beans can now be profitably produced in the middle and low altitude areas. But low rainfall limits production. Because climbing beans have a longer agricultural cycle than bush beans and can be harvested as high as three times within a cropping season, they produce higher yields. Consequently much of the common beans are climbing beans. The most important areas of surplus production for groundnuts are in the Eastern Province: Bugesera, Ngoma, Kayonza, Gatsibo, Nyagatare, Rwamagana and Kirehe. The underlying reasons for the importance of these production areas are favorable rainfall, temperature and sandy soils. Soyabeans are produced mostly in the Southern Province (Muhanga, Kamonyi, Huye, Ruhango, Gisagara, Nyaruguru, Nyamagabe and Nyanza) and the Western Province (Rusizi, Nyamasheke, Karongi, Ngororero and Rutsiro) and the Eastern Province (Bugesera, Kayonza, Nyagatare). This is because the soyabeans are more adapted to less favorable rainfall than beans and rainfall, temperature and loamy soil conditions in these areas are suitable for soyabeans. When beans is not responding well soyabeans respond well because of biological nitrogen fixation. In the Northern Province the most important constraint on soyabean production is altitude. Soyabeans cannot be competitively produced at an altitude above 1,800 meters above sea level. Another factor is that there are several soyabean production projects in these areas being implemented by non-governmental organizations. These include the Clinton Hunter Development Initiative-funded project, CARITAS and TROCAIRE-funded Duhamic-ADRI maize-sorghum-soyabean flour, Conseil Consultatif Des Femmes (COCOF) and Association Rwandaise pour la promotion du Developpement Integre (ARDI) projects. These projects are contributing to increasing knowledge and skills for soyabean growers, especially agronomic practices and use of inorganic fertilizers. The projects are establishing soyabean processing factories to act as a pump to pull technologies through the system.

In South Kivu, the most important areas of surplus production of common beans include North Kabare, Bunyakiri, Burega, Idjwi (Kula Kula near Rwanda), Rusizi plain, Mwenga and Walungu (Kamanyola). These areas are important surplus production areas for beans because they are endowed with soils, altitude and weather conditions (two seasons allowing two agricultural cycles per year) suitable for bean production. In addition there is land for expanding the area planted to common beans. In South Kivu most of the productive regions are under rebel control. Most common beans come from North Kivu, particularly Ruchuru and Masisi. The soils in these areas are volcanic and fertile. The most important areas for cowpeas are North Kabare though the crop is produced in small marketable surpluses. The major areas for groundnuts are North Kabare (Katana), Bunyakiri, Kalehe, Uvila and Nyangezi.

These areas have sandy soils and weather conditions suitable for groundnuts. Most of the groundnuts marketed in South Kivu come from Goma. The important areas for surplus production of soyabeans are Idjwi, North Kabare (Biravia, ktana, Kabumba, Luhihi), Kalehe and Katana. These areas have volcanic soils and two seasons per year which result in high yields of soyabeans. There have been projects implemented in these areas to promote soyabean production and processing. Soyabeans is also sourced from Ruchuru and Masisi in North Kivu.

Therefore the selected N2Africa target impact zones coincide well with the most important staple grain legumes food sheds. This will likely result in better targeting of interventions at the intersection of major forces driving change and development in the agricultural production systems and thereby facilitate appropriate responses.

Opportunities for grain legume-led growth

Value chain participants reported that opportunities with significant potential to expand grain legume-led growth for common beans, cowpeas and groundnuts lie in sale of dried grains to domestic rural and urban markets as well as regional markets. Aggregate market demand far exceeds current supply for the four legumes in Rwanda and South Kivu. In Rwanda significant opportunities for grain legume-led growth are in exploiting markets in rural areas and urban centers because all Rwandese consume beans as a staple food (especially institutional buyers such as schools, prisons, and hospitals); national strategic reserves of the Ministry of Agriculture; and regional markets in Eastern Congo, Uganda, Tanzania, Kenya, South Sudan and Somalia. Opportunities exist to expand production to supply the local procurements of the World Food Programme Purchase for Progress. There exists a common bean processing factory in the Southern Province producing pre-cooked packed beans. These beans are being exported to Southern Sudan. There are few opportunities for groundnuts. This is because consumption is limited mostly to urban consumers who buy and eat groundnut as a snack and paste for flavorings. Opportunities exist for expanding soyabeans production to supply formal processors, including Sosoma Industries, COCOF, and Soyco. The bulk of the soyabean is currently being used by informal urban processors to produce flour for human consumption and feed for poultry, dairy and pigs. These informal processors are supplied through grain store traders in Nyabugogo market. Currently there is not enough production to meet the demand. Most of the soyabean is imported from Uganda and North Kivu and South Kivu in DRC and Tanzania.

In a similar vein, in South Kivu opportunities for common beans are in supplying to markets in rural areas and urban centers including Bukavu, Uvira and mining towns in the DRC and regional markets in Rwanda, Burundi, Uganda,

Kenya, South Sudan and Somalia. For soyabeans opportunities are in processing plants including Murhesa factory, Centre Olame. Also informal processors in urban centers

especially Bukavu producing poultry feed and blended flour, flour for flavorings, soyabean coffee, roasted nuts and tofu for human consumption.

Joseph Rusike

Rural farmers display value added products at Processed Products Fair, Harare, Zimbabwe

Zimbabwe Adding Value to Sustainable Agriculture (ZAVSAP) is a network of 9 local NGOs in Zimbabwe that promotes agro-processing, utilization and marketing of processed products among smallholder farmers of Zimbabwe. Three of the 9 member NGOs are N2Africa partners: Cluster Agriculture Development Services (CADS), Community Technology Development Trust (CTDT) and the Lower Guruve Development Association (LGDA). ZAVSAP organized a Processed Products Fair in Harare on the 15th and 16th of July, 2011. All the three organisations facilitated the attendance of their beneficiaries at the Fair which has now become an annual event. The fair was held under the theme “*Processed products for healthy living and improved livelihoods*”.



Figure 1: Guest of Honour Minister of Health, Dr. Henry Madzorera

The fair was officially opened by the Deputy Minister of Health who said “While food processing still has the main objective of **providing a safe nutritious diet in order to maintain health**, other aspects, particularly the **generation of income** for the producer and seller, have become increasingly important. The overall potential of agro-processing and marketing is huge. It can reduce wastage, enhance food security, improve livelihoods for low-income groups and empower women.”



CADS facilitated catering of traditional lunches during the two-day event. The menu included various products made from legume crops such as sugar free cakes, snacks, cowpeas and sweet potato muffins, pies and fritters.

were over 60 unprocessed and 200 processed products at the CADS stand-alone. Some of the products on display were also available for sale.

Farmers showcased various products they grow varying from cereals to legumes and horticultural crops. There



Figure 2: Traditional foods in daily diets



Over the years, farmers have reverted to traditional foods as a way to combat malnutrition as well as to mitigate the impacts of HIV and AIDS. Farmers came from far to share experiences, to learn from their peers and to explore market opportunities for their products. The fair was held also to promote marketing of agricultural produce as a livelihood option. A total of 750 people had attended the fair by the end of the second day. CADS is also promoting the introduction of traditional foods in the diets of institutions such as schools, hospitals and prisons. The aim is to influence consumption patterns so that families can also include traditional foods in their diet. Some of the legumes produced in Goromonzi district were donated to Chikwaka district hospital. CADS has initiated value addition trainings to enable farmers to add value to crops and improve nutrition at the household level.

The farmers are now able to make various products from soya beans such as pies, fritters, mince and coffee. They also make a sweet potato drink and groundnut cakes and muffins. Men are also being targeted and they are participating in greater numbers in the value addition trainings. Zimbabweans are increasingly becoming aware of the need to eat healthy foods to enhance household nutrition security.

CTDT is promoting the use of solar drying on legume vegetable crops to avoid loss of nutrients through direct sun bleaching. This is achieved through the use of a metal solar drier which was developed 9 years ago with the input of local farmers. Development of the solar drier was stimulated by the need to preserve vegetables for long periods before use. Farmers working with CTDT also showcased different processed products that are produced from soya beans, sugar beans and cowpeas. These included traditional foods such as cowpea fitters, rupiza (grinded cowpea), mutakura (boiled maize with groundnuts or cowpeas or bambaranuts), and solar dried cowpea vegetable leaves among others.

Farmers from Guruve district had their products to showcase and for sale: this demonstrated the usefulness for farmers to be trained in agro-processing.

From this food fair, it was discovered that there is need for farmers to learn new ways of processing their products for value addition and find output markets where they could sell their products.

Catherine Chahweta (CADS) and Isaac Chabata (N2Africa)



Figure 3: New products produced by farmers

La diffusion des variétés améliorées pour l'amélioration des condition de vie des agriculteurs au Sud Kivu

A récolte, les agriculteurs procèdent à l'évaluation participative du rendement pour le test des différents paquets, chaque agriculteur apprécie à la fois la technologie et la variété.



Ensuite suivront les activités post récolte : Les agriculteurs formés sur stockage et transformation des produits.



Pour une valeur ajoutée les produits soja est transformé en lait, tofu, biscuits.

Dieudonne Mongane and Jeanmarie Sanginga

Translation

The distribution of improved varieties for raising the standard of living of farmers in Sud Kivu

- After harvesting the farmers did a participatory evaluation of the yield of the different packages tested, each farmer values both the techniques and the varieties used

N2Africa participates in the 8th National Agriculture Fair

N2Africa Project participated in the National Agriculture Fair which was organized by the Malawi Chambers of Commerce and Industry. The fair was held in Blantyre City from 25th to 27th of August 2011. The agriculture fair was officially opened by the President of the Republic of Malawi, Ngwazi Professor Bingu wa Mutharika.

At the fair, whose theme was 'Value Addition for Increased Economic Returns', N2Africa showcased amongst other things the following item:



En fin les producteurs se constituent en fédération pour l'organisation des ventes groupées au sein des dépôts et le développement du warrantage s'installe progressivement pour lutter contre l'usage des mesures non standards qui défavorisent les producteurs.



Unité locale pour la vente.



- Then the post harvest activities follow: the farmers talking about storage and processing of the yield
- For adding value, the soya is processed into milk, tofu and biscuits
- Finally the producers form a federation for collectivesale from the depots. Depot receipts were developed that help to fight against the use of non-standard measures that discriminate against producers
- Local selling point

N2Africa Project activities;

Under grain legume processing, the foods that were prepared were;

Cowpea products: Cowpea and cassava stew, dried cowpea leaves with groundnut flour, basic cowpea stew, steamed cowpea snacks and fried cowpea snacks.

Groundnut products: glazed groundnuts.

Bean products: bean sprouts

Soyabean products: soyabean milk and soya crunchies.

N2Africa also displayed plants of soybean cowpea and common bean in pots for farmers and all to see. N2Africa booklets (“Biological Nitrogen Fixation and Grain Legume Enterprise: Guidelines for N2Africa Master Farmers” and “Grain Legume Processing Handbook: Value Addition to Bean, Cowpea, Groundnut and Soyabean by Small-Scale African Farmers”) were also showcased.

The N2Africa booth attracted over 250 people. The second day was Farmers’ Day when farmers are brought to the agriculture fair by organizations. Farmers wanted to learn more on the availability of different soybean varieties. They were also interested in the diversity in the grain legume foods that were prepared and most people did not know that bean sprouts are edible and that cowpea could be prepared in so many different ways.

Gloria Kasongo



Figure 1: the IITA Malawi team at the Agriculture Fair

Promoting market linkages between N2Africa farmers and legume buyers in Malawi

Preparations for N2Africa 2011/12 growing season commenced on 1st July 2011 in Malawi. The IITA/CIAT team began with sensitization meetings with farmers in almost all the project sites and the activity is still ongoing. The sensitization meetings covered several topics including capacity building of farmer groups, demonstration plots, supervision and data collection, monitoring and evaluation and marketing.

On marketing, N2Africa has linked up with the CIAT lead and IFAD funded project “Increasing smallholder farm productivity, income, and health through widespread adoption Integrated Soil Fertility Management (ISFM) in the Great Lake Regions and Southern Africa” and has planned to link farmers to output markets for the legume crops being promoted (soyabean, groundnuts, common bean and cowpea). Improved farmer – market linkages should provide an incentive for farmers to adopt legume crop production technologies being promoted under N2Africa. This will also improve the livelihood of farmers through increased incomes realized from the market links. Farmers



A cross section of farmers captured during the sensitization meeting in Salima, Chinguluwe EPA. July, 2011

have also been encouraged to form marketing groups so that they can market their produce collectively.

As a first step on market linkages, CIAT in collaboration with IITA conducted an assessment of legume quality specifications which are demanded by buyers in various markets. This was done prior to the sensitization/planning meetings with farmers. The idea for the assessment was to prepare farmers to meet the market demands through training. It was also an opportunity to start discussing with buyers on the possibility of contract farming with the farmers under N2Africa.

The assessment revealed that the legume crops which are being promoted by the project have a readily available market in Malawi. Most of the buyers visited indicated that they buy large quantities of these legumes each year. They also indicated that farmers can directly access the output markets.

The project has already had some success in market linkages. About 110 farmers from Dowa have been registered to produce groundnuts and soyabean seed for NASFAM on contract. It is expected that the contract with NASFAM will be finalized by the end of September 2011.

The project has also registered some farmer groups with a Market Information System called Esoko (www.esoko.com – operational in eight countries in Africa) which provides market information (commodity prices, interested buyers) through text messages sent to mobile phones. More farmer groups will be registered with Esoko this season.

Brenda Soho (CIAT) and Anne Turner



Response to WOCAN report ‘Enhancing gender responsiveness in Putting Nitrogen to Work for Smallholder Farmers in Africa (N2Africa)’

We appreciate the efforts made by the WOCAN consultants, Mary Njenga and Jeannette Gurung, in compiling the report (link) on enhancing gender responsiveness in the N2Africa project. It made us reflect upon the way in which the project aims to act upon gender issues and made our position clear. In essence, the N2Africa project is mainly operating in a gender accommodative mode – rather than a gender transformative one. We acknowledge the role of gender norms and inequalities in society and seek to develop action that adjust to and often compensate for them, yet we do not have an active strategy to alter the norms and inequalities in society. Gender transformative interventions would focus much more on change of gender norms and challenge and address the distribution of resources and power relationships in society (between women and others in the community). Although it is not explicitly stated in the report, in many ways the consultant seems to suggest that N2Africa should be gender transformative in its actions (see for example gender indicator no. 23, 33, and 35).

In general, N2Africa aims for sustainable interventions and therefore it is inevitable that we seriously pay attention to gender. However, the project does not have the means nor objective to change society, instead we work to make a positive, sustainable change in farmers’ lives – men and women.

Gender research in N2Africa - going beyond target numbers for reaching women

The N2Africa acknowledges the importance of women in agricultural production, household food security and income. The project recognizes that in aiming to ensure long-term sustainable impact it is of crucial importance to address explicitly the needs of women farmers, processors and marketers and to develop specific strategies for meaningful inclusion of women in project activities to ensure women benefit from the project. The project team has therefore embraced the target of at least 50% women involvement in all farmer-related activities of the project, as formulated in the project proposal. Moreover, the NGO WOCAN has recently published a study on improving the gender responsiveness in the N2Africa project.

In each of the areas where N2Africa works, the situation regarding gender and agriculture, and legume production and processing in particular, is different. The baseline survey in N2Africa has provided useful insights in the different roles of women and men in the control land and produce from this land. Baseline data from Nigeria for instance (Table 1), suggested that men almost entirely control land use and the use of the produce from the land, especially in the action sites in the north (Kano State and northern Kaduna State). In Rwanda on the other hand

Staff of both N2Africa and partnering organisations has sufficient experience and knowledge to be aware of the relevant issues around gender and act upon those. From the consultancy report it also became evident that often-times the project needs to be more explicit to highlight its efforts and approaches with regards to gender.

The project will not add indicators for monitoring and evaluation, we believe the existing indicators sufficiently cover gender aspects of the project and the M&E tools are gender sensitive. Additional information would have to be collected through a limited number of case studies. We will however report more on activities involving women, effect on women of particular interventions, and add a more explicit gender perspective to all reporting. The participatory evaluation of agronomy trials will be elaborated and students will be engaged for some studies on for example questions on increased legume production affect differently on livelihoods of men and women farmers and other household members. We will seek internally and locally for expertise to further increase the gender awareness in all dissemination materials developed.

Judith de Wolf

(for the full response to the WOCAN report including a list of gender indicators see here)

(Table 2), women more often control the use of land and the use of the harvest from the land than men, while men are more frequently involved in off-farm income generation.

Table 1. Control over land use and harvest by household members in different action sites in Nigeria (% of all fields).

	Kano State		Kaduna State (north)		Kaduna State (south)	
	Land use	Harvest	Land use	Harvest	Land use	Harvest
Wife	0.0	0.5	0.0	0.0	4.9	5.3
Husband	99.9	99.4	97.9	94.8	58.5	54.7
Both	0.1	0.1	0.8	5.2	34.3	37.7
Owner	0.0	0.0	1.3	0.0	2.3	2.3

Table 2. Control over land use and harvest by household members in Rwanda (% of all fields).

	Land use	Legume crop harvest	Non-legume crop harvest
Wife	24.5	32.4	28.4
Husband	9.2	4.4	6.1
Both	62.1	59.1	64.4
Others (e.g. child)	0.7	0.7	1.1

A project such as N2Africa widely promoting the cultivation of grain legumes for domestic consumption and sale is likely to affect gender balances. This impact is likely to greatly differ between the areas where N2Africa works. In northern Nigeria where men strongly dominate farm activities, it can be hypothesised that men are likely to capture most of the direct benefits from increased sales of legume grain, even if activities specifically targeted to women farmers are undertaken by the project. In the more southern mandate area in Nigeria (southern Kaduna State) women probably have more opportunities to directly benefit from increased legume production and sales. In Rwanda, where legumes are primarily grown for domestic consumption, the benefits from increased legume cultivation are likely to spread rather equally over women and men. The impacts are unlikely to be static over time. Past experience demonstrated that when production of the grain legumes increases in response to market opportunities – and substantial amounts are sold by farmers – men often take over the cultivation and marketing of the grain legumes. Thus typical women's food security crops become men's cash crops. This may also become the case as a result of N2Africa's activities aiming to improve the marketability of legume grains in the target countries.

Given the large investment in dissemination activities and the scale of the activities, N2Africa offers unique opportunities to learn more about how agricultural development projects affect gender disparities, household income and assets across different countries. Such understanding will be helpful in current and future legume-based development projects to improve targeting of technologies and reach gender targets. Such work will also contribute to the general understanding of gender relationships in rural Africa. A number of key research questions that could be addressed with such studies have been formulated:

1. How does the promotion of legume-based technologies affect income and assets of households of smallholder farmers in different parts of Africa and how does it affect disparities between sexes within the household?
 - Who in the household controls and who carries out the various steps involved in legume production, processing and sale?

Rhizobial Bio-prospecting in East and Central Africa

Bio-prospecting for rhizobia is an important component within the work plans of Objective 3 researchers, but one that is open to innovative approaches. This activity (3.2) requires that a rhizobium germplasm bank be established and characterized in order to document the biodiversity of rhizobia in Africa and a culture collection maintained among multiple laboratories as a future genetic resource. Ironically, the term "bio-prospecting" does not appear in the

- What is the role of grain legumes for household nutrition and income generation?
 - How is the income generated by the sale of legume products re-invested in the household?
 - How do changes in household income translate in changes in assets and how is this affected by the sex of the household member who controls sale and income?
2. How can legume-based technologies be targeted to specific groups of farmers or in specific environments to enhance the impact of the current and future legume-based projects on gender inequalities and asset disparities?
 - Where do opportunities exist within the N2Africa project to have a strong impact on these issues?
 - What are the underlying factors (e.g. related to type of technology, market access, agro-ecology, culture, extension approach) determining the project's success in addressing these issues?
 - How can this knowledge be used to improve the design of future proposals?
 3. Which indicators related to changes in assets or (control over) household income are most suitable to assess the project's impact on people's lives and ability to escape poverty?
 - Do indicators of child nutrition give strong evidence for women's control of income? Given that child nutrition indicators can reveal change within months of dietary improvement these could be more sensitive than income indicators.
 - Does re-investment of income – in farming, in education or in alternative enterprises – give the best insights into farmers strategies to escape from poverty?

The project aims to set up a series of detailed gender studies in a number of contrasting action sites could provide such learning in the next year. The depth and the number of sites targeted with these studies will depend on funding and available human resources.

Linus Franke, Judith de Wolf

original project document and it was first envisaged that we simply collect nodules from non-inoculated plots of agronomic experiments as the only source of the required 2000 isolates. This task was to have been completed by the First Quarter of Year 2 but was delayed owing to the need to better develop cooperator's laboratories. The recent 18 month project report states that 340 isolates have been cultured from 17 legume host genera, leaving this task

overdue and only 17% completed. Most of these isolates were obtained by the East and Central African (ECA) Hub and some valuable lessons were learned in the process. While collecting nodules from non-inoculated field experiments is valid, so too is collecting from natural legume communities, particularly from hosts belonging to the same genera or tribe. Another approach is to collect nodules from hosts growing in stressful environments. For example, in Kenya we organize sampling campaigns by agro-ecological zones and have isolated from tidal mud flats and sand dunes, acid soils and extreme elevations as a means of sourcing tolerance to salt, low fertility and low temperatures, respectively. It is more productive to sample seedlings in the understory of perennial legumes and, in the case of seasonal re-sprouting perennials, it is extremely difficult to recover nodules unless the uppermost lateral roots are exposed and carefully uprooted. Experience suggests that the best place to source hosts and nodules is within semi-cultivated wetland margins as this niche supports a diverse array of cultivated and wild legumes that are nodulated throughout the year and these nodules occur close to the soil surface owing to a high water table. When sampling in drainage ditches, one should be particularly wary of snakes. Local farmers often show interest in nodule collection and may volunteer their assistance and crop plants, and care should be taken to explain the role of root nodules to them in return. Guidelines for rhizobial bio-prospecting were developed for the ECA Rhizobiology Training Course and are available from the Project Leader to others upon request. One urgent need in this area is the development of a project-wide system of labelling and cataloguing rhizobia isolates that both brands N2Africa



Nodule recovery from wild *Vigna* sp. growing in a sand dune of coastal Kenya

but also provides recognition to countries and laboratories contributing to the culture collection. Now that the laboratories have been upgraded, isolating and characterizing rhizobia remains an important overdue activity by project scientists during Year 3.

Paul Woormer

Video from in Cote d'Ivoire by Adako Moudiongui

Culture du Soja en milieu paysan. Conception et Scénario de Dr Adako MOUDIONGUI produit par Yao Alexis Haccandy PACIL/FIDA Bouaké Côte d'Ivoire 2002. Participation du Groupement de femmes de Bodokro (Béoumi) et le Groupement de jeunes d'Adikro (Brobo). (i) Méthodes culturelles; (ii) Biofertilisation du soja par inoculation; (iii) Production et conservation des semences de soja en milieu paysan. (iv) Transformation du soja pour la consommation domestique (préparation des mets courants, bouillies de sevrage); (v) Avis des producteurs sur la biofertilisation

compréhension de l'inoculation la nodulation (BNF); (vi) Rentabilité de la culture soja biofertilisé avec l'inoculum

Here is a link to a video on smallholder soyabean production and inoculation research in a country not covered by N2Africa. Great to see the enthusiasm of others for a common goal!

Ken Giller

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