N2Africa Podcaster no. 14
May and June 2012

Introduction
Apart from our normal mix of news and developments in N2Africa, we’re delighted to welcome Jeroen Huising as N2Africa Project Coordinator based with CIAT-TSBF in Nairobi. Many of you will know Jeroen as he has worked with TSBF in Nairobi for many years on various projects – including coordinating the GEF funded Below-Ground Biodiversity project and more recently the African Soil Information Service (AfSIS). Jeroen is currently completing tasks for AfSIS and will take some well-deserved holiday before he starts with N2Africa 1st September.

Ken Giller

Alastair Simmons, N2Africa’s Communication, Knowledge and Project Management Officer and currently the acting Project Coordinator, comments on the project moving forward

Advice given to someone undertaking a lengthy writing task.

Always end one session by writing the points you will begin with next time. When the ideas are flowing but you have to stop to do something else, note down what you will do first next time, so you can easily recall what you intended, check it and get back into completing the task more quickly.

It is good advice. Not least because a large project like N2Africa, involves many people continuously creating, undertaking and exchanging multiple tasks. Of necessity, some of these tasks must stop, to allow others to start, but… and here’s the catch, most must be completed for our success.

It is challenging. Made more so because between tasks stopping and starting up again, the world never stands still, things change, people come and go.

As a ‘development to research project’, N2Africa stands for change and opportunity. Over its four-year lifetime, its purpose is to understand how to transform the lives of thousands of smallholder farmers in Sub-Saharan Africa.

It is perhaps not surprising then that on this journey, we will require a cycle of different capabilities and structures for the leadership, management and coordination of the project to meet both the changing demands and our emerging understanding.

In September, we welcome Jeroen Huising to the new role of Project Coordinator, he writes,

“I am absolutely delighted to take up the position of the N2Africa coordinator because N2Africa is one of those projects that has the potential to deliver on the promises to reach hundreds of thousands of farmers and generate an impact on the livelihoods of these farmer’s households. I believe I have something to contribute to the project, having lead several larger projects in the past, the ‘conservation and sustainable management of below-ground biodiversity’ project probably being the most relevant.”

Jeroen is a graduate of Wageningen University with a major in tropical soil science and a second major in development economics and international affairs. His PhD research was very much about geo-informatics and ways in which GIS and remote sensing can be used in monitoring land use changes in a structured and systematic manner. He is sensitive to the processes involved in observation and data recording, data analyses and interpretation.

I am looking forward very much to working with Jeroen. Not least because of his undoubted capacity to support two of three of the things that I wrote down at the close of our recent Leadership and Steering committee meeting in Nairobi in May, in preparation for the opening of the next
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I noted that in October, we need ‘to check on the work of M & E, taking account of partner engagement and provision’. I noted too, that we must ensure the veracity, delivery and consistency, of the field data from research, D & D and M & E, so that it can feed into the ‘higher level’ more ‘holistic’ R & D; we need to be more reflective and to initiate new activities in different countries to test approaches to D & D and M & E’.

Alastair Simmons

N2Africa Malawi bids farewell to Joseph Mhango

N2Africa in Malawi has lost Research Officer Joseph Mhango to the Seed Trade Association of Malawi. It was a difficult decision for him to make, and a hard one for us to accept, however we understand he cannot miss this opportunity to gain new skills and expertise. Joseph is applauded for having taken on far more than the tasks listed in his terms of reference, including leading our attempts to get rhizobiology work going here in Malawi as well as undertaking all agronomy trials on his own, when it became evident that our local partners were not willing to do the work. It will be difficult to find someone to fill your shoes, Joseph, but we wish you all the best in your new career. Muyende bwino, tikufunirani zabwino zonse!

Anne Turner

Towards getting more legumes in smallholder farms of Western Kenya

Introduction

In Western Kenya less than 30% of the farm area is planted with legumes which limits the amount of nitrogen fixed by the legumes that can be beneficial to companion or subsequent crops. Successful BNF by legumes in the field depends amongst others on agronomic management, where plant density plays an important role. This prompted Margarida, an MSc Student from the University of Nairobi to test different intercropping patterns of maize and soybean to identify the practices that maximize BNF, increase yields and improve livelihoods of smallholder farmers of Western Kenya.

Research setting

Margarida is conducting a study to identify suitable planting densities of soybean and maize in the midland and upper midland zones of Western Kenya. The objective is to assess the effect of varying soybean and maize planting densities on the yields of both crops as well as on the yield from subsequent maize. Three planting densities of maize:soybean (1:1, 1:2 and 1:3) are being tested with three soybean varieties (SB 25 (NAMSOY), SB 132 (SC SQUIRE) and SB 118 (TG x 1987-18F)). As the area falls within the Striga infested zone, IR (imidazolinone-resistant) maize is used in the trials. Biomass, BNF, yields of current maize and soybean and yield of subsequent maize as well
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Margarida at one of her experimental sites in Mumias

On the left density 1:2, in the middle density 1:1 and on the right density 1:3 at Butere site (midland zone) during 2012 long rains growing season

as costs involved are recorded to evaluate the effectiveness of the systems and to determine the appropriate intercropping patterns for smallholder farmers. Margarida started her field work in the 2011 short rains growing season (September-December) and her work continues into the current 2012 long rains growing season (March – June 2012).

Preliminary results indicate that in both zones, maize: soybean planting density 1:3 provides the best soybean biomass yield (in the range of 2,000-4,000 kg/ha, depending on soybean variety and location) whereas the density 1:2 provides high grain yield of both crops (above 2,000 kg/ha of maize and 1,300 kg/ha of soybean). The research is ongoing and final results will be presented as an MSc. thesis due in September 2012.

Margarida Simbine and Freddy Baijukya

Exploring potential of tillage methods on combating mid-season drought in soybean in West Kenya

My name is John Okoth, a MSc student at Edgerton University-Kenya funded through a N2Africa scholarship. I have just completed my field research looking at potential of tillage methods on combating mid-season drought in soybean in West Kenya. In this part of the country, mid-season drought is contributing to a great reduction in yields of most crops. Cereals and grain legumes are most affected crops when drought sets in the middle of the season. Availability of irrigation water and irrigation technologies are limited and unaffordable to smallholder farmers, hence there is a need to develop appropriate soil-water conservation technologies, among which tillage methods.

For two seasons (long and short rains growing seasons of 2011), I conducted experiments to assess the potential of two tillage methods (conventional tillage and no till) on soil moisture availability, yield and yield components of three soybean varieties in three agro-ecological zones of West Kenya namely, the Lake Basin, Midlands and Upper Midland. Results indicate that in sandy soils no till leads

Above ground biomass (kg ha⁻¹) of three soybean varieties as observed at Rarieda site, West Kenya in early and late planted plots during 2011short rains growing season

<table>
<thead>
<tr>
<th>Time of planting</th>
<th>Soybean varieties</th>
<th>Nyala</th>
<th>SB19</th>
<th>SB20</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Tillage</td>
<td>No till</td>
<td>Tillage</td>
<td>No till</td>
</tr>
<tr>
<td>Early planted</td>
<td>1117ᵇ</td>
<td>483ᵃᵇ</td>
<td>597ᵃᵇ</td>
<td>263ᵃ</td>
</tr>
<tr>
<td>SD</td>
<td>494</td>
<td>228</td>
<td>413</td>
<td>125</td>
</tr>
<tr>
<td>Late planted</td>
<td>353ᵃ</td>
<td>537ᵃ</td>
<td>483ᵃ</td>
<td>813ᵃᵇ</td>
</tr>
<tr>
<td>SD</td>
<td>51</td>
<td>222</td>
<td>146</td>
<td>261</td>
</tr>
</tbody>
</table>

Means with different letters in a row are significantly different p>0.05; SD = standard deviation of means
Kenyan Outreach Update: Breakthroughs in many areas

West Kenya enjoys two growing seasons per year and we are presently engaged in the 2012 long rains. Twenty-five dissemination partners have installed 50 demonstrations, distributed BNF technology kits to 8000 new households and are preparing for 25 farmer field days to be held between 18 June and 15 July. In addition, we have over 6500 Progressing Farmers that are growing soybeans on at least 0.2 ha. Several mechanisms for input supply are being explored including credit for purchasing BIOFIX inoculant and Sympal fertilizer from MEA Fertilizer Ltd. through rotating funds via repayment in grain to farmer associations and the training and short-term provision of credit to local agro-dealers stocking these products for the first time. Our first attempts last season to arrange credit through local banks and crop insurance did not succeed, largely because we did not provide sufficient time to meet their many, and sometimes changing, requirements but efforts in this area continue. Promasidor (a major soybean buyer in Kenya) stepped in at the last minute and purchased inputs for deployment to cooperators by its buyer, Smart Logistics.

One exciting development is field experimentation with experimental inoculant strains for soybean and climbing bean identified by the University of Nairobi MIRCEN. Seven candidate elite native rhizobia are being compared to three industry standard strains in the field for the first time. In this way, the best rhizobia recovered from farmers’ fields last year are now being returned to them for evaluation. MIRCEN is currently examining the suitability of these strain for both promiscuous and specific soybeans in potted soils. MIRCEN has also developed a simple bioassay that screens candidate elite strains for competitive ability as well as effectiveness at BNF. Results from these efforts are expected by mid-August and cooperators in other countries are invited to help us compare the best strains under a wider range of conditions. Concerns over the increased expression of soybean rust are being met both by fungicide application and identification of resistant varieties.

Syngenta provided outreach partners with sprayers and training in the strategic application of Amistar. SeedCo variety Squire appears particularly resistant to rust. These advances, combined with cereal-soybean rotation promise to keep rust in check. Our management recommendations for soybean were formalized into a 27-point best-practices checklist, translated into Kiswahili and 12,000 copies printed.

Market access is now assured among participating communities. Last season, 25 sets of grain processing kits consisting of scales, moisture meters, tarpaulins and branded sacks were deployed to outreach partners. At harvest, Smart Logistics announced interest in purchasing soybeans and 16 cooperators responded by bulking and selling 217 tons of soybean worth $142,000 while retaining 78 tons of seed for planting in the current season. UNIDO is opening three soybean processing centers in west Kenya requiring 18 tons of grain per month, and looks to N2Africa cooperators as suppliers. These products will be distributed by the Red Cross as famine relief foods throughout Africa. One of our challenges this season is to reinforce soybean processing at the community level. Cooperators have developed a number of products including fried soy nuts, protein fortified flour, roasted soy beverage and soymilk. Soymilk is now being prepared in several local communities using a simple mince-and-press technique requiring an initial investment of $70 and offering a return of 5 to 1 (see photo and table). Pronounced nutritional benefits of soymilk were noted among malnourished children receiving three 300 ml servings per day. The Mama Soybean Shop has opened in Luanda town by Kleen Homes and Gardens that specializes in processed soybean products including delicious fruit-soybean milk yoghurts. Clearly, soybean enterprise has taken root among Kenyan smallholders with multiple opportunities and benefits to rural communities.

Paul Woomer for the West Kenya Outreach Team
A simple five-step procedure for local production of soymilk.

<table>
<thead>
<tr>
<th>Step</th>
<th>Process</th>
<th>Cost/Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1: Soak</td>
<td>Wash and soak 1 kg of soybean in 2 l clean water for 4 to 6 hours</td>
<td>- $0.50</td>
</tr>
<tr>
<td>Step 2: Mince</td>
<td>Pass 3 kg soaked soybean through mincer, add 5 liters clean water, mix</td>
<td>- $0.24</td>
</tr>
<tr>
<td>Step 3: Press</td>
<td>Transfer mince to clean cloth and press between two heavy pots, drain</td>
<td>- $0.08</td>
</tr>
<tr>
<td>Step 4: Boil</td>
<td>Filter soymilk, boil for 5 minutes, recover 2 kg press cake for grit or animal feed</td>
<td>+ $0.37</td>
</tr>
<tr>
<td>Step 5: Package</td>
<td>Cool and place 6 liters of soymilk in clean container or add tea and sugar and market (consume) as “African sweet tea”</td>
<td>+ $3.40</td>
</tr>
</tbody>
</table>

Soy milk making using the mince-and-press technique

1) apparatus assembled for only $70. 2) soaked soybeans. 3) minced soybeans. 4) soybean press cake. 5) soymilk after boiling.

News from DRC

1. Formation des ménages dans la transformation du soja en lait et cakes pour la nutrition familiale à Ihimbi

La transformation du soja en lait intéresse plus les femmes car ce sont les femmes qui s’occupent de la nutrition des enfants et de toute la famille comme on le voit sur cette photo la participation des femmes est très remarquable. Les femmes sont contentes d’apprendre qu’avec le soja on peut avoir plusieurs recettes pour améliorer la nutrition familiale.

1. Household training in transformation of soybean into soymilk and cakes for domestic nutrition in Ihimbi

It is mostly women who are interested in soymilk making, since women are responsible for nutrition for children and for the whole family. The picture shows the high participation of women. The women were keen to learn that, with soybean, there are several recipes for improving household nutrition.
2. Visit of experimental trials during a farmer’s field day organised in season 2012 B in Mushinga by partner DIOBASS

A field day is not only an opportunity for mutual exchange and enrichment between farmers practicing the technologies developed by N2Africa, but also an opportunity for diffusion of these technologies among those who are not yet familiar with them. During this field day, for example, the police commander based in Mushinga, who was invited to participate in the field day, was determined that his family, as well as the families of all police officers based in Mushinga, would join the N2Africa project. A request for land had been made to the local chief, so that in the next season A he can participate in the N2Africa activities.

3. Adoption of N2Africa technologies

Mr. Biriringanine Nshamamba technologies (50 years old) and with his wife are partners of SARCAF in the N2Africa project. They rejoice the results achieved by intercropping cassava with legumes. In the 2012 A season they intercropped cassava with soybean and in season B they practiced rotation with common bean in the same plot. At the beginning of the activities their neighbours discouraged them. Despite this, they remained strong and continued on the same track.

Test technology: intercropping cassava with bean. Objective is to increase the area under beans in cassava-bean intercropping systems.
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N2Africa complementing “One Cow for Poor Family” Program in Rwanda

Livestock keeping is a traditional practice of Banya-Rwanda (the people of Rwanda) as it provides families with income especially from sale of milk, meat and offspring. It also provides for manure, which is utilised as a cost-effective fertiliser to revitalise soil quality. Undeniably on the “eyes” of many Banya-Rwandas, having livestock is also a sign of wealth. Following civil strife in 1994, many farmers lost their animals and the livestock population in Rwanda decreased considerable. Under ‘One Cow Per Poor Family’ program the poor and vulnerable families, including genocide survivors, widows, orphans, people with disabilities and people living with HIV/AIDS, are acquiring productive assets in the form of a dairy cow or dairy goat. These groups are also provided with an integrated package of assistance, starting with participatory training that strengthens the social structures and gender equity. At the same time the groups are given in-depth training in sustainable organic agriculture, concentrating on vegetables, maize and beans for human

The picture shows him explaining, to everyone who can hear him, the advantages of this technology. Currently, this family has become point of reference for improved legume seeds and for N2Africa technologies.

He has explained well that by using a micro dose of NPK, organic matter (compost), improved seeds (cuttings, soybean and common bean) and by sowing in rows he has achieved the results visible in the picture, and which he did not expect. You can see them smiling happily, and he and his wife are satisfied. They commit to not returning to the traditional cultivation system and prefer to serve as a model for agricultural intensification for other households.

By Dieudonne Mongane (Farm Liaison officer) and Etienne Bitorwa (Facilitator SARCAF)
consumption; using home-made compost for fertiliser, and welfare friendly livestock husbandry and housing that allows for good livestock management and manure and urine collection for soil fertility.

Although widely supported by Government One Cow per Poor Family” program is facing many challenges among, which is shortage of animal feeds as a result of insufficient land since food and cash crops are granted first priority to the available land. In March, 2012 N2Africa started testing tree fodder legumes (*Leucaena pallida* and *Leucaena diversifolia*) and herbaceous fodder legumes (*Medicago sativa*, *Desmodium intortum*, *Stylosanthes guianensis*, *Stylosanthes scabra*, *Clitoria ternatea*, *Desmanthus virgatus* and *Macroptilium atropurpureum*) for adaptation, productivity, *N*$_2$ fixation and other environmental services such as soil erosion control. We are currently working with 40 households in Gakenke and Kamonyi districts. Our target niches in the farm are farm boundaries and contours bands. Madame Helen Kalekezi, one of participating farmer in Kamonyi has one cow and two goats. With good establishment of test legumes in her farm and their palatability to her animals she is becoming convinced that the our work will help to fill the feed gap while improving crop production from the same piece of land as well as improving performance of her animals.

Freddy Baijukya, Speciose Kantengwa and Innocent Nyamwasa

### N2Africa research meeting – Zimbabwe

On Friday the 18th of May, N2Africa Zimbabwe organized a half-day meeting in Harare, facilitating a comprehensive exchange of N2Africa research experiences within Zimbabwe. Research within N2Africa is intrinsically linked to the D&D efforts and vice versa. Nevertheless it was felt that it would be beneficial to have a focussed research meeting first, before re-engaging with D&D.

There were presentations by the two MPhil students and one PhD student on N2Africa scholarships (Sibonginkosi Dunjana, Tatenda Kainga and Mazvita Chiduwa), the Soil Productivity Research Lab (SPRL, on rhizobiology research), Talkmore Mombeyarara (on the N2Africa agronomy research), Prof. Barbara Maasdorp (from Crop Sciences, University of Zimbabwe, on forage research in general in Zimbabwe) and Prof. Mpepereki who summarized legume research in Zimbabwe and provided some guidance on the way forward.

There were critical questions, lively debates and discussions on the way forward, for example around the repeated characterization of indigenous strains of rhizobia. All agreed that this meeting was an important step in further synchronizing the research efforts and smoothening exchange between research and D&D. More active data sharing and exchange will be initiated, similar meetings will be organized in the future for exchange with D&D and deepening the collaborations in research.

Judith de Wolf & Talkmore Mombeyarara

### Voices from the field

We are seeking to compile a collection of personal stories and narratives from around N2Africa.

Through one set of stories, we’ll profile those who work hard behind the scenes to ensure that N2Africa is a success, by inviting particular N2Africa staff to share their experiences. In this issue, we include one such update, from Speciose Kantengwa who works in Rwanda as a Farm Liaison Officer.

The other stories we seek are narratives from farmers or other partners that help us to learn from the experiences of all involved in the N2Africa project. We want to learn about - the ways that farmers innovate and adapt N2Africa technologies; the factors that lead to success or failure; what assists farmers to locate and use approaches; and what obstacles stand in their way. Essentially, we want to hear of all those stories you might tell your partner or your friends at the end of the day about the things that surprise you. If you have any such stories, please email office.n2africa@wur.nl by 01 08 12 and we will follow up with you. Our aim will be to follow up interesting leads in detail, to obtain well-grounded narratives that we can use as part of our Monitoring and Evaluation (M & E) and as the basis of a series of short films, to be shot in the last quarter of this year, illustrating the work of N2Africa.

Alastair Simmons
What does an N2Africa participant do on a “normal N2Africa day”?

As a farm liaison officer, a daily work comprises of various duties. The starting point is the planning of seasonal activities for each project partner based on milestones per objective before the beginning of each cropping season. From there a work plan is prepared which has to be followed with scrutiny. For a FLO, a monthly schedule is prepared based on the work plan of each partner, with an updated weekly plan to accomplish what is in the seasonal plan.

On daily basis, visiting partners of the project, or giving a phone call to find out if everything is going as planned, if there is any problem, how to handle it on time. Also to remind them about the N2Africa activities based on the work plan established by the partner. Regular field visits are also part of the daily activities. This comprises of installing demonstration plots with lead farmers, leading participatory evaluation of field trials, and conducting training sessions for local facilitators on various subjects as they are identified.

Every beginning of the day or at the last hour of the day, consulting the weekly or monthly or seasonal plan, to find out if everything is going smoothly as planned. Before starting activities planned for the day, consulting e-mail to see if there is nothing else more urgent from the work stream leaders than what is on the daily schedule, and do the same before closing the day.

At the end of the week, review what was planned for the week, how it was fulfilled, if there had been a problem and how it was handled so that the same difficulty does not occur again. Plan for the following week implies also to update the seasonal work plan, request funds for activities to implement, or follow up on budget allocation from CIAT to different partners.
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The woodland is full of people, over 50 of them, all busy harvesting and collecting mushrooms. Every so often a small group goes off on their own in the woods to look for mushrooms. The mushrooms are the main source of income for the people in the village. They sell the mushrooms in the city and earn about 10 Euros per day. The mushrooms are cooked and served in the evening at home. The village is called Vila, it is a small village in the southern part of Tanzania. The village is located near the border with Mozambique.

The village is surrounded by a beautiful forest, which is full of wild mushrooms. The mushrooms are very valuable and are used as a source of income for the people in the village. The mushrooms are picked and sold in the city, where they are sold for about 1 Euro per kilogram. The mushrooms are cooked and served in the evening at home. The village is called Vila, it is a small village in the southern part of Tanzania. The village is located near the border with Mozambique.