N2Africa Podcaster no. 21

June and July 2013

Introduction

At the beginning of June, a group of about 40 partners from diverse backgrounds met in Entebbe, Uganda to shape the proposal for N2Africa Phase II. We had strong participation from national research organisations, the private sector, local and international NGOs and other international partners. All N2Africa countries were represented. Dr Peter Ebanyat, N2Africa Coordinator Uganda and Makerere University hosted the workshop together with the local IITA office. Participants were charged with contributing ideas to shape the activities of the next phase, and helped to write blocks of text for the proposal. It was an exciting week – with lots of split-out groups on themes and regions – and one very useful session in which the private sector partners were charged with coming up with concrete actions related to "what do you want from N2Africa, and what can you contribute in return?" We were delighted that Charlene McKoin and Vi Shukla from the Bill & Melinda Gates Foundation were present and gave valuable feedback to align our proposed activities with the foundation's priorities. AGRA will partner closely with N2Africa in Phase II and Bashir Jama (AGRA Soil Health) and Anne Mbaabu (AGRA Markets) participated actively in the discussions. Special thanks to all who have contributed to developing the Phase II proposal that will be submitted to the foundation later this week.

Hill sides covered with common beans in northern Tanzania

In this edition of the Podcaster you will find a report on a "N2Africa Science Paper Writeshop" in Wageningen that was attended by 25 students and staff from many countries, updates on dissemination through schools together with World Vision in Malawi, articles showing strong responses to inoculation of common bean and chickpea in Ethiopia and on current activities there, outcomes of a workshop called and hosted by Catholic Relief Services (CRS) in which N2Africa is supporting their 'Soya Ni Pesa' initiative in southern Tanzania, proud partners profiling the new industrial autoclave installed with support from N2Africa at the inoculant production plant in Zimbabwe, as well as some announcements of conferences and courses that will be of interest.

Please keep your contributions for the Podcaster flowing as we're keen to hear your news!

Ken Giller

N2Africa Writeshop, Wageningen, 21-24 May 2013

N2Africa conducted a writeshop in Wageningen, the Netherlands from the 21st to the 24th of May 2013. The objective of the writeshop was to providing participants the opportunity to develop papers in small teams, review each other's draft manuscripts and share ideas – all aimed at improving the quantity and quality of papers produced by the participants in the N2Africa project.

In total 25 participants travelled to Wageningen from the different N2Africa countries. On the first day of the workshop all participants gave a 5-minute presentation on their paper, including the main challenges faced. Thereafter we enjoyed lectures from Peter Griffith, an English language specialist, and Gerrit Gort, a biometrician, both from Wageningen University. During the following days all of us had plenty of opportunities to interact with these specialists in one-on-one sessions or in small groups of people struggling with similar issues.

We were then assigned to review each other's papers paying particular attention to what the language specialist and biometrician had pointed out. After reviewing each individual had to work on their papers to incorporate the comments and corrections that had been made and this was amazingly helpful. On the final day of the workshop each lead author gave another brief presentation on the progress that had been made during the workshop, a timeline was agreed upon and a 'mentor' was assigned to keep track of the progress of the paper.

For me this workshop was helpful in that it helped me improve my writing skills and also my statistical skills. It also enabled me to interact with other participants and get so many helpful contributions which I believe will also help me during the write-up of my thesis for my MPhil studies. I wish we could have more of these helpful writeshops to improve the quality of write-ups that we produce as scientists. My special thanks goes to Professor Ken Giller and his team who made the writeshop possible and successful. I believe every person who attended this write-shop will be a better writer if they put what we learned there into practice.

Tatenda T. Kainga, MPhil Student on N2Africa scholarship, University of Zimbabwe-CIAT Zimbabwe

Going beyond PREA (Participatory Research and Extension Approach)

After two seasons of implementing N2Africa activities in Malawi, the team changed the dissemination approach for sustainability purposes. Previously, the team already worked with the PREA (Participatory Research and Extension Approach) in which N2Africa staff trained Lead/Master Farmers who in turn trained satellite farmers in legume technologies. Now, the team has modified the PREA, empowering Lead Farmers to train School teachers and students in legume technologies.

Why using schools? We believe that using schools has the power to increase the adoption rate of the technologies because each student will not only use the technology to compliment what he or she learns in the subject of agriculture, but also imparts the knowledge to his or her parents. In addition, N2Africa intends to build a future agricultural oriented generation through imparting practical hands-on legume technologies skills. Involving schools is one way of ensuring that the BNF technologies are reaching out to the communities and are utilized sustainably. The partners involved in distributing soyabean seed to schools are Kasungu Catholic Relief Services (CRS) and Dowa World Vision. In Dowa the soyabean seed was distributed to primary schools and in Kasungu to both primary and secondary schools.

Figure 1: Godwin Chihana, a Student, explaining the technologies at the demonstration plots to the farmers and fellow students during the field day

During a field day in Kasungu, participants visited Milenje Community Day Secondary School. Here, Agnes Nyoka, a Lead Farmer in one of farmer clubs in the area, imparted

Figure 2: The Head teacher, Anthony Jere, standing next to the Lead Farmer, Agnes Nyoka (in blue clothes)

Figure 3: Bartholomew Chataika explaining to the students on BNF technologies for Soyabean legume crop

skills on soyabean production practices to staff and students. During the field day, two students explained the N2Africa Soyabean production practices with a practical demonstration plot. The students had established this plot under the leadership of the Lead Farmer. The field day was a real field school, as more questions from the students about soyabean production were answered by the Extension Officers that were present from the N2Africa Secretariat, Kasungu CRS, Malawi Government and other partners.

Gloria Kasongo and Barthlomew Chataika

Use of inoculants to improve soyabean yield and Biological Nitrogen Fixation in Malawi

Soyabean is an important crop in the farming systems in Malawi, particularly as a source of cash and proteins. In addition, soyabean has the potential to replenish soil nitrogen (N) through biological nitrogen fixation (BNF). The N fixed by soyabean can also be utilized by the component crop when used as an intercrop or in crop rotation. However, the potential benefits of soyabean in smallholder farming system are often not realised because of poor agricultural practices.

In the 2011/2012 season, N2Africa worked with farmers in Dedza, Lilongwe and Salima districts of Malawi. In those three agro-ecological zones, on-farm trials were implemented to determine the response of soyabean to inocula-

tion. Six soyabean varieties – Solitera, Makwacha, Nasoko Soprano, Tikolore, and PAN 1867 – were evaluated in soyabean variety trials. In addition, Makwacha was evaluated in soyabean input trials. Biomass and grain yields were used to assess the performance of soyabean in heterogeneous environments as well as to evaluate the response to inoculation with rhizobium. In the trials Biofix legume inoculant, manufactured by MEA Ltd. under licence from University of Nairobi, Kenya, was used.

Our results demonstrated the consistent positive effect of using soyabean inoculant on both soyabean grain and biomass yield across the test sites. Inoculation of soyabean significantly increased grain yield by 53%, from 1317 to 2019 kg/ha for non-inoculated and inoculated soyabean respectively. However, the response to inoculation varied across the different soyabean varieties used, with PAN 1867 producing the largest mean grain yield. In the soyabean input trials, inoculation increased mean yield of Makwacha by 52.5% from 1431 to 2168kg/ha. Our results suggest that if the use of inoculants is promoted and subsequently adopted by farmers, we should be able to raise national production figures of soyabean by at least 50%, hence making a big impact on smallholder farmers producing soyabean and other players in the soyabean value chain.

The results also showed that Inoculation increases biomass yield. On average for all the six varieties, there was a biomass yield increase of 13% (from 2348 to 2661 kg/ha). For Makwacha in the soyabean input trials there was even a 20% biomass yield increase (from 2095 to 2520 kg/ha). This implies that when the biomass is incorporated back into the soil and when soyabean only fixes N from the atmosphere and does not take N from the soil, farmers should be able to replenish on average 13% more N into the soil when they would use inoculants than when they would not use inoculants. Analysis of N-content in the sampled soyabean biomass and soil N balance after a soyabean crop are yet to be completed and these will help to quantify soyabean potential in BNF.

The current orientation of N2Africa in Malawi is to determine the most practical and ideal storage and handling procedures for the inoculants, to engage and provide technical backstopping to agro-dealers and commercial seed companies importing and distributing the inoculants and to build capacity amongst farmers on the use of inoculants and field management in general. Strategies are being made on the use of vouchers to incorporate inoculants on soyabean seed sales and within the Malawi Government Targeted Input Subsidy Programme.

Chataika B., C. Banda and G. Kasongo

N2Africa Ethiopia kick-off

Pulses are important food and cash crops for farmers and rural households in Ethiopia. Pulses are the second most important element in the national diet, providing the principal protein source and important dietary supplement to cereal consumption. Pulses recently have regained significance as export commodities. Despite the economic and food security importance of these crops, actual smallholder farm yields are far below the potential production, e.g. 1.3 t/ha for common bean and 1.5 t/ha for chickpea and faba bean. Targeting technologies for legume production in farming systems, N2Africa is an important project for Ethiopia. The Ethiopian Ministry of Agriculture (MoA), Federal and Regional Agricultural Research Institutes and the Agricultural Transformation Agency (ATA) have identified Rhizobium inoculant as the main priority intervention in Integrated Soil Fertility Management (ISFM). Partnering to these institutions, N2Africa will be supporting them to achieve their goals.

As a follow up to the workshop at ILRI "*Exploring opportunities for N2Africa in Ethiopia*" in May 2012, Ken Giller and Esther Ronner visited Ethiopia in February 2013 and discussed N2Africa activities for this year with project partners at Bahir Dar, Debre Zeit and Addis Ababa. The regional and federal research institutes and universities are the main actors for implementing the N2Africa project in Ethiopia, including the Ethiopian Institute of Agricultural Research (EIAR), Amhara Agricultural Research Institute (ARARI) in collaboration with Bahirdar University (BU), Oromia Agricultural Research Institute (OARI), and Hawassa University (HwU) in collaboration with Southern Agricultural Research Institute (SARI). Operating under the umbrella of EIAR, Debrezeit, Melkasa and Pawe agricultural research centers are also important partners in the project. ILRI will act as lead contractor for N2Africa and will coordinate the project in Ethiopia, next to its role as advisor and collaborator on aspects relating to the use of legume crop residues for animal feeding across the different N2Africa countries.

N2Africa training workshop participants from different locations in Oromia, Bishoftu, 21 June, 2013

Workshop participants actively attending demonstrations on inoculation of seeds

The strategy for implementing the N2Africa project in Ethiopia is to work in partnership with these institutions in four regions, Benishangul Gumuz (EIAR), Amhara (ARARI and BU), Oromia (OARI and EIAR) and Southern Regions (HwU and SARI). During this growing season, a season bridging to the envisaged Phase II in 2014, N2Africa project activities are now in progress at two Woredas (districts) in each of the four regions where the target legumes are widely grown: chickpea (Amhara, Southern Region and Oromia), faba bean (Amhara and Oromia), soyabean (Oromia and Benishangul) and common bean (Southern Region, Oromia and Benishangul). In the different Woredas, on-farm demonstrations of the best available legume technologies (varieties, inoculants and P-fertilizer) will be established on five farmer's plots in three Kebeles (villages) per Woreda. These on-farm demonstrations at Kebeles are led by Development Agents (DAs: community based MoA extension facilitators). Overall, the project will have 170 on farm demonstration plots established over the four regions during the main growing season in this bridging year.

The N2Africa project prioritized demonstration and dissemination of available technologies for improved legume productivity and livelihoods of smallholder farmers. However, input and variety trials, aimed at generating new knowledge, are part of the activities as well. The latter are conducted at farmers training centres (FTC) in at least one of the three Kebeles in each of the target Woredas. N2Africa project, while providing knowledge on inoculant and legume technologies, brings about synergies among partner institutions:

- The federal and regional agricultural institutions have varieties identified for various locations.
- The MoA has Development Agents who are working at grass root levels (villages) in the community, an important element to pass legume technologies available at hand to small holders.
- Elite rhizobium strains compatible to target legumes were identified from indigenous isolates and shelved at universities and research institutes.
- Private partners who are emerging as inoculant producers benefit from N2Africa's engagement in intensification of legume technologies in farming systems.
- N2Africa will be working in collaboration with ILRI on aspects of legume production and feeding legume residues to livestock.
- Collaborations in activities on fertilizer packages and linkages to market (IFDC) are important elements in the process.

N2Africa training workshop participants from Southern region, Hawassa, 11 July, 2013

In brief, in the beginning of July soyabean and common bean demonstration/ dissemination/ knowledge generation plots have been established in Oromia (at Bako and Adje). While writing this note for the N2Africa podcaster, planting of common bean is going on at Boricha site in the Southern Region. Paralleled to the size of Ethiopia and the diversity of its climate, planting times differ at different locations. Thus, planting of common bean will be effected by the end of July at Pawe while planting of faba bean and chickpea continues from end of July to first week of September, depending on the location. To equip researchers and grass root practitioners (the DAs) with the necessary knowledge on rhizobia, inoculation and inoculant technology and to make sure partners correctly apply the protocols N2Africa supplied (common to all countries N2Africa is operational), we conducted training workshops at Debrezeit (Oromia) and at Hawassa (Southern region). We would be conducting the last workshop at Bahirdar (North), perhaps when this podcaster is in printing. Despite the slow start late in the growing season, N2Africa activities are now accelerating fast. Seeing at the germinating plans in the field, we look forward that the N2Africa project is fruitful and rewarding.

Endalkachew Wolde-Meskel, N2Africa coordinator, Ethiopia

Hawassa University in Ethiopia identified effective strains for pulses

Hawassa University (HwU) has been conducting research on rhizobium-legume symbiosis for more than a decade in collaboration with researchers in universities in the Northern Hemisphere (Norway, Finland, Germany, Canada). Along this path, we have genetically and symbiotically characterized hundreds of rhizobial strains isolated from soils in Ethiopia, identified several new genospecies and named the unique ones (*International Journal of Systematic and Evolutionary Microbiology* (2013) 63, 1746-1753, and google "rhizobia and southern and Ethiopia" for more information). These findings have demonstrated that Ethiopia represent a hot spot, not only for cultivated crops, but also for rhizobial biodiversity in the East Africa region.The detection of such high diversity in our collection (> 500 strains) while contributing to global knowledge on the biodiversity of rhizobia, also represent a valuable biological resource to enhance legume-rhizobium symbiosis and N_2 fixation in farming systems. Results from cross-inoculation experiments involving only few of these strains and target hosts (Haricot bean, soyabean, chickpea, cowpea, lentils etc.) demonstrated ample opportunity for identifying elite strains (Pictures 1 & 2, 3, 4).

Picture 1. Solomon (a technician) working on pure rhizobial strains in the laminar flow chamber in the soil microbiology laboratory at HwU

Picture 2. Investigating purity and Gram staining under microscope

Picture 3. Authentication of rhizobial isolates on homologous host (*Phaseolus vulgaris*)

Picture 4. Effectiveness test of rhizobial strains (*Phaseolus vulgaris*) under greenhouse

Appropriate handling, preparation and application of these strains as legume seed inoculants improve crop yield, soil fertility and nutritional quality (protein content) of the legume crops (grain as well as straw) (Fig. 1). Higher protein content in straw ensures good quality animal feed and/or efficient C and N transformation and delivery, thus impacting the yield of non-legume crops in rotation. N2Africa, in partnership with NARS, Universities, ATA, MoA and community based facilitators (the DAs), is actively working towards effective

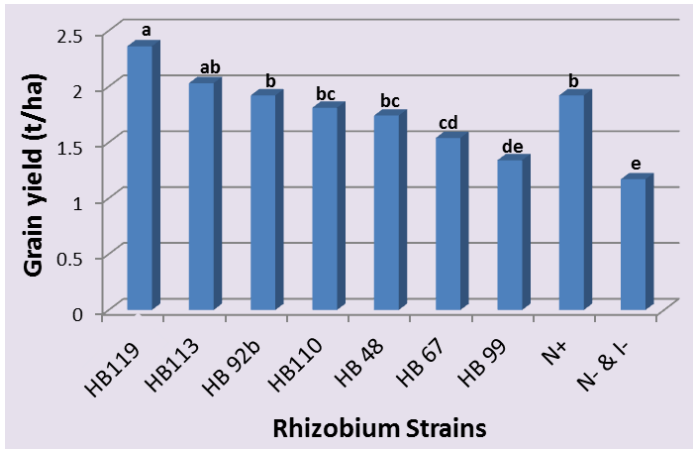

Figure 1. Grain yield (t/ha) of haricot bean as affected by inoculation with different rhizobium strains (note 23 kg/ha N+ and N- & I- control treatments)

utilization of these valuable resources. Some strains, which have been tested and proved to be effective on specific legumes, are available to NARS for use as inoculants (Table 1). Also, standard strains from international collections in our biobank has been supplied as reference.

On behalf of HwU and participating researchers, I would like to acknowledge the scientific contributions of co-investigators at various universities abroad, particularly of the Norwegian University of Life Sciences (UMB), the Norwegian Universities Committee for Research and Education(NUFU) for funding, large number of PhD and MSc students and the research team in Hawassa University and at UMB. A special thanks goes to Prof. Åsa Frostegård of UMB for her guidance, efficient coordination of the NUFU-HwU collaborative project, and the overall support she has provided in this process.

Table 1. List of strains effective to specific legume host species

Strain	Host Plant	Remark
CP41	Chick pea (*Cicer arietinum* L.)	Isolated from soils in Ethiopia
LT 8	Lentil (*Lens culinaris*)	Idem
LT 29	Idem	Idem
MB102	Cowpea (*Vigna unguiculata*)	Idem
MB 103	Idem	Idem
HB113	Common bean (*Phaseolus vulgaris*)	Idem
HB129	Idem	Idem
NA 76	Soyabean (*Glycine max*)	Idem
CIAT 899	Common bean (*Phaseolus vulgaris*)	International reference
USDA 2667	Soyabean (*Glycine max*)	Idem

Endalkachew Wolde-Meskel, N2Africa Coordinator, Ethiopia

On-farm evaluation of the response of chickpea to inoculation and P fertilization in southern Ethiopia

Ethiopia recently joined the N2Africa project. The country is the leading chickpea producer in Africa with a share of 39% of the total production in 2011. In the same year, chickpea was the third most widely cultivated legume crop in Ethiopia next to faba bean and haricot bean. Reason enough to include chickpea as one of the focus crops of N2Africa in this country. Chickpea, being considered a multi-functional crop, has an important role in Ethiopian diets and serves as a protein source for the rural poor who cannot afford to buy animal products. The crop also generates cash and plays a major role in Ethiopia's foreign exchange earnings through export to Asia and Europe. Nonetheless, despite of its potential to produce about 3 ton ha^{-1}, the average productivity of chickpea in Ethiopia for 2011 was only 1.6 ton ha^{-1} (FAOSTAT 2012).

To investigate how chickpea productivity can be increased, a study was conducted to evaluate the response of chickpea to inoculants, P fertilizer and their combined application on farmers' fields in Wolaita area in southern Ethiopia.

Materials and methods

Wolaita area is located at about 350 km south west of Addis Ababa, the capital city of Ethiopia. In this area, chickpea is one of the most important grain legumes produced by small-scale farmers and it serves as a source of food and cash. Given its ability to grow on residual moisture, chickpea allows farmers to produce an extra crop each year. In Wolaita area, agriculture is dominated by subsistence farming where limited usage of improved technologies and agricultural inputs significantly limits productivity and per capita income. A very high population density of up to 746 persons per square kilometre has reduced the average land holding of the area to about 0.25 to 1 ha per household (Jufare 2008).

Experiments were conducted on twenty farmers' fields in Wolaita zone from September 2012 to January 2013. Two contrasting soil types (i.e. black and red) were compared. For this experiment, *Mesorhizobium ciceri* strain CP 41 was obtained from the soil microbiology laboratory of the School of Plant and Horticultural Sciences, Hawassa University and used along with Natoli variety chickpea. The work was done by a Plant Sciences MSc student of Wageningen University, Ibsa Aliyi (Fig. 1), with close supervision of Dr. Katrien Descheemaeker, Prof. dr. Ken Giller and Dr Endalkachew Wolde-meskel, and was financed by the N2Africa project.

Figure 1: Ibsa in one of the experimental fields

Results

Despite the large variability across farms (Fig. 2), inoculation and P fertilizer significantly improved nodulation, growth and yield of chickpea compared with the control. The combined application of inoculation and P resulted in an even more pronounced improvement. As far as grain yield is concerned, positive effects of the soil fertility treat-

Figure 2: Across farm variability of growth of chickpea

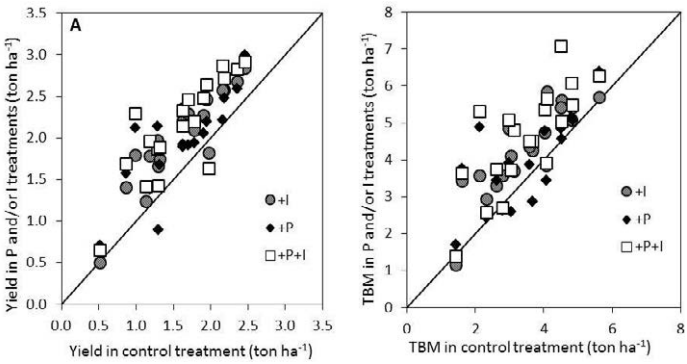

Figure 3: Response of chickpea grain yield (A) and total biomass (B) (ton ha^{-1}) to inoculation and/ or phosphorus fertilization treatments. Notes: +I = inoculation, +P = phosphorus fertilized, +P+I = both inoculation and P fertilization, TBM = total biomass

ments were recorded on about 85% of the farms (Fig. 3A). As such, inoculation, P and their combined application increased grain yield of chickpea by 26%, 19% and 33% over the control respectively.

The total biomass of chickpea is of great importance in farm level nutrient cycling due its role as either animal feed or organic matter to be returned to the soil. In this study, total biomass of chickpea was significantly improved by the soil fertility treatments (Fig. 3B) due to the positive effects of nitrogen and phosphorus on vegetative growth, and the synergy of these two nutrients on plant growth. The importance of inoculation was also confirmed by the fact that the soils of the study area were inhabited by a very small population of resident rhizobia (< 10 gram^{-1} of soil).

Generally, the observed improvement in chickpea performance can be attributed to the increased supply of nitrogen, through enhanced biological nitrogen fixation, and phosphorus, which were both present in low supply in the soils. As was observed during our field visits, most of the farmers sow chickpea in very low density (Fig. 4), which was due to lack of sufficient seed during planting time and resulted in under-exploitation of the land. Furthermore, most of the farmers in this area cannot afford P fertilizers, so credit facilities or direct supply of fertilizer would be necessary.

Figure 4: Widely spaced chickpea planting on a farmers' field, Taba

Assuming chickpea is planted on a quarter of the 0.6 ha landholdings of the households, inoculation, P fertilization, and P+I would enable a crop production increment of 60 kg, 45 kg and 75 kg per farm respectively. This corresponds to a net benefit of 63, 33, and 63 USD for using inoculation, P fertilization, and P+I treatments respectively with no difference in return between inoculation and P+I treatments.

Ibsa Aliyi Abdula, MSc Plant Sciences, Wageningen University

Characterization reports Tanzania and Ethiopia available

As background documents for the new countries Ethiopia, Tanzania and Uganda characterization reports have been written with information on agronomy, farming systems and ongoing projects on grain legumes in the different countries.

The Uganda report was already available via our website and now also the Tanzania report is published and for Ethiopia the updated version is made available.

Esther Ronner and Charlotte Schilt

CRS convene stakeholders in soyabean sub-sector to discuss soyabean variety and seed issues in Tanzania

The Catholic Relief Services (CRS), through the United States Department of Agriculture (USDA) -funded Soya ni Pesa Project is supporting small holder farmers in Southern highlands (Ruvuma and Njombe regions) of Tanzania to grow soyabean. In this endeavour the project has identified lack of seed and well adapted soyabean varieties to be the major challenge. In the second week of June, CRS Tanzania organized a three-day meeting to analyse the situation and explore options to accelerate the identification and provision of seed of improved varieties to the project area. The meeting was attended by project staff of Soya ni pesa project, N2Africa, IITA, Uyole Agricultural Research Institute (ARI Uyole), Tanzania Official Seed Certification Institute (TOSCI), Namtumbo District Council, Agriculture Seed Agency (ASA), Seed Co and development practitioners from NAFAKA project and - SAO HILL commercial farm.

Participants of CRS-consultative meeting held in Dar es Salaam to deliberate on ways to improve the availability of soyabean seeds in Tanzania

It was revealed during the meeting that only three soyabean varieties namely Bossier, Uyole 1 and Uyole 2 are released in Tanzania. It was also mentioned that reasonable quantities of seed are available only for Uyole 1, as the multiplication of other varieties is by the lack of pre basic seeds. However, a report of field demonstrations conducted by Soya ni Pesa project in Ruvuma and Njombe regions indicated that Uyole 1 is performing poorly compared the with the local variety. In most sites the local variety had good vigour, smothered weeds and yielded more grains compared to Uyole 1 (see the Figure and the Photos). While farmers preferred the local variety over Uyole 1, its yield indicates that there is still room for improvement through introduction of new superior varieties.

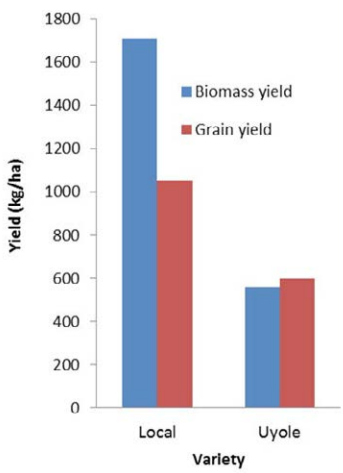

Figure A: Mean biomass and grain yields of a local and Uyole 1 soyabean varieties measured from 18 sites in Ruvuna region

An inventory of existing materials in and outside the country led to a long list of soyabean genotypes with better qualities than the local and the currently released varieties. These include those in the pipe line for release by ARI

Figure B: Field appearance of a local (left) and Uyole 1 (right) varieties at flowering stage as observed at Limamu village: The local variety is tall with good canopy closure which minimizes weeds. Uyole 1 is short with poor canopy closure and weed pressure is intense

Uyole (WF-L19; Maksoy 2N and a cross of Namsoy 4N and a UG variety); materials from N2Africa-Kenya (Namsoy, TGx1740-2F and TGx1987-64-F) and materials from Seed Co (SC Squire, SC Safari, SC Semeki and SC Spike). Participants agreed to introduce these materials and fast track them through active national institutions including ARI Uyole and ASA with the support from CRS and N2Africa. It was also agreed to provide training on seed quality control and seed basic processing equipment to project partner organizations to support community-based seed bulking. ASA and TOSCI will also develop standards for soyabean seed, based on germination percentage and sanitation, and assist in regular sampling and testing of community-bulked seed. Beside soyabean varieties and seed it was recommended that Soya ni Pesa project and N2Africa design and promote improved soyabean intercropping with special attention to spacing, rotation, and to support the availability of required inputs, particularly blended fertilizers and inoculants. Activities kick off next growing season, which starts early November.

Freddy Baijukya (N2Africa, Kenya), Amsalu Gebreselassie and Lembris Laizer (CRS, Tanzania)

New Autoclave installed at Legume Inoculant Factory in Marondera, Zimbabwe

As part of the investment in rhizobiology research and inoculant production in the different N2Africa countries, N2Africa recently facilitated the replacement of a 33 year old autoclave at the government inoculant factory in Marondera, Zimbabwe.

The Soil Productivity and Research Laboratory (SPRL) under the government Department of Research and Specialist Services is renowned in sub-Saharan Africa for their long-term research efforts in rhizobiology and inoculant production. Within the N2Africa project SPRL's capacity has been enhanced through training of staff and upgrade of their research facilities in the laboratory and greenhouse.

In addition, the team at DR&SS with funding from the N2Africa project, is developing an updated production and distribution strategy to ensure better access to high quality inoculant for smallholder farmers in the communal areas of Zimbabwe.

These collaborative efforts should lead to increased production of legumes to allow smallholder farmers to generate income and improve their nutrition.

Judith de Wolf, N2Africa, Zimbabwe

Front side: Zvomuya Munyaradzi, manager production facility

Back side: Mr. Chingwa Mupambi

Farming systems course announcement

The International Postgraduate Course "Farming Systems and Rural Livelihoods: Vulnerability and Adaptation"will be held 7 – 18 October 2013 in Wondo Genet, Ethiopia.

This postgraduate course provides skills and methods to analyse (the dynamics of) farming systems as embedded in the complex livelihoods of rural people in Africa. For more information see the poster.

Inoculating legumes: a practical guide. Grains Research & Development Corporation (GRDC)

We received a link to a very interesting publication written by the Australian team Drew E, Herridge D, Ballard R, O'Hara G, Deaker R, Denton M, et al.: INOCULATING LEGUMES: A PRACTICAL GUIDE. Grains Research & Development Corporation (GRDC) [Internet]. Kingston, Australia; 2012. It provides a good overview of the use and benefits of Inoculants in the Australian setting, showing a fine series of photos of legumes and their nodulation.

The publication is available via internet.

6th International Nitrogen Conference (N2013): "Just Enough N: Perspectives on how to get there for "too much" and "too little" Regions"

For the 6th International Nitrogen Conference (N2013), hosted by both Makerere University and IITA from 28th Nov to Dec 2013, in Kampala, Uganda (link http://www.n2013.org/) N2Africa will sponsor a number of selected participants that will present a paper or poster on N2Africa work.

Linus Franke will present a keynote address on behalf of N2Africa. Other keynote speakers are Pedro Sanchez, Bernard Vanlauwe, Jim Galloway, Adrian Leip, Shamie Zingore, Jean Brender, Ademola Braimoh, Oene Oenema, Fusuo Zhang, Mark Sutton and this list is still growing. Abstract submission deadline is July 31st.

If you would like to present at the conference please send an abstract to office.N2Africa@wur.nl.

New International Course on Agriculture Nutrition Linkages

The Centre for Development Innovation Wageningen UR is pleased to announce the organisation of the International Course on Agriculture Nutrition Linkages, to be held in Addis Ababa, Ethiopia from 18 - 29 November 2013.

Malnutrition occurring early in life has life-long negative impacts on productivity and the income generating potential of the population. For longer times, malnutrition, although seen as a multi-sectorial issue, has been mainly addressed from the health sectors. Since recently, increased attention arises for 'nutrition-sensitive' approaches including nutrition sensitive agriculture. Linking the disciplinary fields of agriculture and nutrition is a promising new field for enhanced efforts to combatting malnutrition.

Participants in this course will gain increased insights into how the fields of agriculture, agricultural development, food production and food security can contribute to reduced malnutrition in population groups. The course will provide practical tools to increase the nutritional benefits of agricultural programmes and to reduce their potential negative impacts on nutrition. The course has a clear agricultural economic approach and addresses agricultural development along food value chains.

For more information about the application procedure and costs visit this link to the course.

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