N2Africa Podcaster no. 19

March, April and May 2013

Introduction

N2Africa always has plenty to report – working across some many countries and regions! It's hard to select a few highlights and although we actively solicit articles the Podcaster is formed largely by contributions offered. We are currently full speed ahead with preparations of the full proposal for a Phase II of N2Africa. As you will have read in earlier Podcasters we are expanding activities to Ethiopia, Tanzania and Uganda, and together with Ghana and Nigeria these will be the focus countries. The shift in emphasis results from the new strategy of the Bill & Melinda Gates Foundation. We will continue activities in ALL of the countries where we have worked to date. We will maintain significant core funding in the other six countries (DRC, Kenya, Rwanda, Malawi, Mozambique and Zimbabwe), and are actively seeking other funding partners to support our work. If you can help us in this that would be wonderful!

Vipula Shukla and Charlene McKoin of The Bill & Melinda Gates Foundation visiting the fields in Tanzania for the next phase of N2Africa.

In the next phase of N2Africa, having 'proved the concept' successfully, the emphasis is on transferring ownership of N2Africa to local partners, and capacity building in its broadest sense. We will also be focusing on research for 'continuous improvement' of all aspects of our work from inoculant quality and agronomy to delivery and dissemination.

We cover a wide range of topics in this Podcaster – starting with some very sad news. We look forward to your responses and continuing interest in N2Africa. Read on!

Ken Giller

Dr H. D. L. (Tom) Corby, 1913–2013

We were sad to learn that Tom Corby passed away in January shortly before reaching his 100th birthday. Tom was one of the absolute front runners in research on the legume-rhizobium symbiosis in Africa, and in the world. He established the inoculant production factory at Grasslands, Marondera in 1962, which produces inoculants to this day. In 2011, Tom wrote a short history of the establishment of the factory called "The Bagacillo Legume-Inoculant". Also in the early 1960s he conducted multi-locational field trials examining soyabean variety by inoculant strain interactions across Zimbabwe and Zambia (what were then southern and northern Rhodesia). He is perhaps best know in the research world for his ground breaking work on legume nodule morphology which was the basis of his PhD. A full obituary by Janet Sprent is published this month in the New Phytologist – LINK

Ken Giller

Some comments Tom's doughter Susan sent in after the article was published, having witnessed her father's attention to detail:

- *Tom's father suggested that he be apprenticed to a pharmacist but he never was;*
- *photograph courtesy should read: of Arthur Bain;*
- *Tom did all his agricultural training at Guelph University.*

Obituary announcement D.K.C. Dhiliwayo

It was with great shock and sadness that we learned of the untimely death of Dr. DKC Dhliwayo. Dr Dhliwayo, or DKC as he was known to colleagues and friends was the Head of Chemistry and Soil Research Institute (CSRI) of Zimbabwe`s Ministry of Agriculture, Mechanization and Irrigation Development. The CSRI hosts the Soil Productivity Research Laboratory in Marondera that produced rhizobium inoculants that have been so key to the activities of N2Africa. DKC did his PhD on phosphorus availability in Zimbabwean soils in the Soil Science and Agricultural Engineering Department of the University of Zimbabwe. He had a strong interest and background in soil chemistry and plant nutrition, and had worked on a wide variety of projects throughout his career relating to mineral nutrient deficiencies. On behalf of the Zimbabwean N2Africa team and the wider N2Africa community, we extend our condolences to his direct colleagues and his family. Our thoughts are with them in this difficult time.

Ken Giller

Triple layer hermitic bags is a potential solution to storage pests in Rwanda

Post harvest handling and storage of grains constitute a major challenge for farmers, especially in the rural areas of Rwanda. Especially insect pests cause major losses during grain storage. Farmers use several storing technologies but most of them are not effective, expensive or present health risks due to misuse or overuse of chemicals such as insecticides. Under the N2Africa context of linking farmers to markets, a study was initiated to assess the efficacy of the Purdue Improved Crop Storage (PICS bags), a triple layer hermetic bag developed by Purdue University. The bag was originally developed for storage of and controlling pests in cowpea, common bean, maize and sorghum. The grains can be stored for several months, which allows farmers to access better prices on the market. The advantage of PICS bags is that i) no pesticide is needed to store the grain, ii) the grain can be stored up to one year, and iii) the bag can be reused up to 4 years.

Demonstration of PICS bags technology at Rwinkwavu action site in Kayonza district, March 2012

Methodology

The pilot storage activities with PICS bags were conducted in three districts namely Kamonyi, Kayonza and Bugesera, representing areas where pest infestations are usually high due to favourable climatic conditions. The study was carried out in two consecutive periods, March to September 2012, and July 2012 to January 2013 using different farmers. In total, 82 pilot farmers with at least 30 kg stored the grain for 6 months (Table 1). Prior to bagging, grains were inspected for the prevalence of insects, and moisture content was measured. The study consisted of opening the bags every month for six months to monitor the attack of insects and moisture content inside the bag. After storage, a sample was taken from each bag for germination tests.

Farmers with their pics bags after the demonstration session at Rukara action site, March 2012

Results

Results show that PICS bags could be an alternative solution of storing grains for a longer period in a consumer friendly environment. In the first period, results from samples taken at the beginning of the experiment did not differ from the ones taken at the end. The incidence of insects varied between 0 and 4%, and germination rate ranged between 74 - 99%. The variation depended on the type of grain used but not the period kept in the triple bag, with the local mixture of bean having a lower germination rate compared to the improved varieties (RWR2245 and RWR 1668). Results from the second period confirmed

Period	Crops	Bugesera		Kayonza		Kamonyi		Total number of bags stored*
		Men	Women	Men	Women	Men	Women	
March – September 2012	Bean			3	8	4	11	26
	Maize			9	9	1	1	20
	Sub-total			12	17	5	12	46
July 2012 – January 2013	Bean	8	8	6	9	2	15	46
	Maize	5	1	1	0	0	0	7
	Sorghum	1	1	0	1	0	0	3
	Subtotal	14	10	7	10	2	15	56
	Total	14	10	18	27	7	27	102

*Some pilot farmers stored more than one bag and or more than one crop

Farmers at Kamonyi inspecting bean grains for insect damage after opening the Pics bags closed for 6 months

what was observed in the first period. There was no infestation after closing the bags and the rate of insects' incidence in the bags remained constant for the 6 months. The moisture content did not increase inside the bags, remaining in the range between 9.2 – 11.6% for beans, 10- 12.4% for maize and 9.1% for sorghum. As for the first season, results of the test confirmed what was observed in the first season, where the germination rate was above 75% for all types of grains.

Feedback from farmers who participated in the experiments

At the beginning of the study, farmers were hesitating to provide a significant amount of grain, fearing that their produce might be spoiled inside the plastic bags. However, after 1 month in of the study, farmers became convinced of the technology. Some farmers even put aside a small quantity of grain to compare if there was a difference in or outside the bag. After the third month, grains outside the bag were completely destroyed by insects. The question remaining was whether stored grains in the plastic would germinate. Results from the germination test persuaded them. We did not perform a cooking test, but farmers themselves informed us of the good culinary quality of the grains from the experiment. After the second period of the experiment, farmers who participated in the study and their neighbors started asking how to acquire these PICS bags and how much would they cost. When asked how much they would pay, it ranged from 1 to 3 USD. For those farmers, the local availability of the bags was more important than the price.

Way forward

The main objective of the study to explore the efficacy of PICS bags to store common bean grain for a period of at least 6 months from harvesting, for consumption as well as for seed, was met. The Ministry of Agriculture (MINAGRI) through its Post Harvest Handling and Storage Task Force has initiated a campaign to promote the hermetic bags for grain storage, mainly maize and common bean. A significant amount of PICS bags have been ordered from a local Ecoplastic company, to be distributed country wide by recognized agro-dealers at grass roots level (administrative sectors). The N2Africa FLO was called to demonstrate how the technology works, and a training session was organized twice, first for the agrodealers from the 30 districts of Rwanda, and secondly for districts technicians in charge of Post Harvest Handling and Storage. The technology was also promoted through several radio shows by the Deputy Director General for Extension, the Chairman of MINAGRI's Post Harvest Handling & Storage Task Force, and the N2Africa Farm Liaison Officer. All the above events might promote the dissemination and the use of PICS bags technology in Rwanda.

Speciose Kantengwa, FLO Rwanda; Freddy Baijukya, country mentor, Rwanda

Women farmers engage in production and distribution of Soyabean seed in South Kivu, DR Congo

In South Kivu province of DR Congo, seed systems for most crops are almost non-existent. As a result, a large share of the seed being planted is obtained from open air grain market or derived from previous year's harvest. The good news is that the situation is slowly changing. Through N2Africa, farmers are increasingly becoming aware of the benefits accruing from using quality seeds. In the absence of government initiatives and lack of private players in production of quality seeds of various crops, N2Africa, in collaboration with a local research institution INERA-Mulungu and the active local NGOs SARCAF, DIOBASS and PAD, have initiated community-based seed production groups in 13 action sites and 4 satellite sites of N2Africa. The groups are largely constituted by women farmers with an initial focus on producing soyabean seeds. The aim is to give farmers access to improved seeds of preferred varieties and to encourage them to incorporate more grain legumes in the farming systems in order to increase yield and agro-ecosystems health. In addition, it is a strategy to ensure the continued availability of quality seeds after the end of the project.

In this endeavor, seed production has been adopted as part of the delivery and dissemination activities. Seed producer groups are informed on the importance of using improved seeds, trained on good crop husbandry practices, post-harvest handling and storage of seeds as well as seed marketing. Through this approach, about 66 tons of soyabean seeds of various varieties have been produced. Many more seed growers, the majority being women groups, are taking advantage of the availability of inoculants and fertilizers to improve soyabean yield and securing large multi-

N2Africa technicians inspecting a consolidated soyabean seed multiplication field at Mushinga site.

plication field through land consolidation. Due to lack of reliable outlets, the produced seeds are marketed at seed fairs organised by the project partners, during field days, and at designated stands in various local markets. These approaches have allowed a rapid circulation of soyabean seeds between households and communities.

Some challenges and way forward

Despite the good progress of seed production and supply to farmers there are some challenges. The majority of women farmers who are motivated to produce seeds, do not have sufficient land to qualify for seed production due to the current land tenure system, which restrict them from owning land. However, this challenge is slowly overcome by farmers consolidating their land for seed production and hiring land from institutions such as churches. Another challenge is unavailability of breeder/ and or foundation seed to rejuvenate old stocks. In this case, N2Africa is working to link seed producers with SENASEM, the national seed certifying agency, and INERA-Mulungu, who has agreed to maintain the breeder seed and provide seed producers with foundation seed. However, this requires heavy investments. Furthermore, effort is under way to organize the selling of seeds in small packs of 1 kg to give the majority of farmers access improved seeds.

A stand displaying improved seed of soyabean varieties at a local market at Murhesa

By Adrien Chifizi, Jean Marie Sanginga and F.P. Baijukya

Resignation from CIAT N2Africa DRC

Dieudonné Masumbuko Mongane – by many people better known as DD – joined N2Africa as Farm Liaison Officer in February 2010, right at the start of all N2Africa activities in DR Congo. He has always worked with great compassion with partner organisations and farmers to strive to better people's lives. Now he is moving on to a new challenging in his career.

In his new job as Program Manager for OXFAM Solidarity he will still be based in Bukavu while working in South and North Kivu supervising partner organisations. As a lot of these organisations involve themselves in agriculture, we have good hopes that our paths will cross again.
From N2Africa we express our gratitude for his contribution to our efforts to assist smallholder farmers growing legumes and we wish him the very best!

Judith de Wolf

Dieudonné in the field

Activités de diffusion en masse et approche agriculture-élevage dans N2Africa au Sud Kivu (Article translated in English below)

Les activités de diffusion en masse en RDC regroupent des journées champêtres, des visites d'échange, la journée internationale de la femme, ainsi que des émissions radio t. Elles sont organisées par les ONG partenaires tel que PAD, DIOBASS et SARCAF. Ce sont des moments de partage d'expériences et des occasions d'enrichissement mutuel.

Les femmes, les plus impliquées dans les activités agricoles, profitent des journées qui leurs sont mondialement dédiées, le 15 octobre et le 8 mars, pour parler des technologies promues par N2Africa aux autres femmes qui ne sont pas de leur groupe et même aux hommes venus les soutenir.

Dans le territoire de Kabare par exemple, les femmes accompagnées par DIOBASS membres des association des villages de Bugorhe, Kabamba, Cegera, Katana, Kavumu, Nyamakana, Cirheja, Lwiro et Kandere ont echangé sur le rôle de la femme et des technologies promues par N2Africa pour le soutien à la sécurité alimentaire dans notre pays.

Les femmes participantes à cette journée champêtre sont d'accord sur le fait que l'action combinée des engrais minéraux, de l'inoculum, des bonnes variétés suivi d'une bonne gestion du terroir donne des rendements élevés tant pour les légumineuses que pour les cultures associées. Figure 1 & 2.

Figure 1a & b: Journée internationale de la femmerurale organisée par les ONGD partenaires : Une occasion de partage d'experiences

Figure 2a & b: Les résultats obtenus pour la culture en association avec la legumineuse. Le rendement du manioc dans l'association avec les légumineuses contribue de manière remarquable à la sécurité alimentaire dans les ménages et à l'augmentation des revenues par la vente du surplus de production.

Au Sud Kivu l'usage de la matière organique n'est plus à démontrer, tous les agriculteurs sont conscients que sans amendement organique les ménages sont dans l'insécurité alimentaire. Cependant, les grand défi auxquels les agriculteurs sont confrontés sont la baisse du cheptel suite à l'insécurité et la quantité de matière organique à appliquer. Un marché rémunérateur pour les produits agricoles demeure un défi majeur au regard des coûts de production.

Certains agriculteurs ont développé des mécanismes de protection en pratiquant l'élevage en stabulation dans la parcelle où ils habitent. Ce mécanisme a favorisé l'approche agriculture – élevage par lequel l'agriculteur collecte facilement du fumier pour amender son champ pendant que le champ produit à son tour des fourrages pour l'élevage. Figure 3.

Figure 3: Un modèle à suivre : Il est possible de mieux produire et réduire la pauvreté

Il s'appelle BISIMWA Joseph producteur dans le bas fond de KAZINZI à IKOMA. Dans sa main gauche il tient un plant du soja inoculé et dans la main droite un plant du soja non inoculé. Il se tient lui-même devant l'étable d'élevage en stabulation d'une chèvre payée par la vente des récoltes de soja.

L'approche intégration agriculture élevage (l'élevage produit le fumier pour améliorer la fertilité du sol et le champ produit le fourrage (résidus de récolte) pour nourrir le bétail; l'élevage et l'agriculture produisent à leur tour les aliments pour le ménage et contribuent également à l'augmentation du revenu du ménage.

Dieudonné Mongane[1], Adrien Chifizi[1] et Freddy Baijukya[2]
([1] CIAT RDC, [2] CIAT Kenya)

Large-scale dissemination activities and integrated crop – livestock systems in N2Africa, South Kivu (translation of the French article above)

The dissemination activities in DRC consist of various types, of which the large-scale dissemination activities (field days, exchange visits, international women's day, radio broadcasts, etc.), organised by the NGO partners PAD, DIOBASS and SARCAF, are moments of sharing experiences and an opportunity for mutual enrichment.

Women, who are most involved in the agricultural activities, make use of the global days dedicated to women (15 October and 8 March) to discuss the N2Africa technologies with other women who are not in their group, and even with men who came to support them.

In Kabare, for instance, women accompanied by DIOBASS members of the village associations of Bugorhe, Kabamba, Cegera, Katana, Kavumu, Nyamakana, Cirheja, Lwiro and Kandere have exchanged ideas about the role of women in food security and the importance of N2Africa technologies to support food security in the country.

Women participating in this field day agree that the combined application of fertilisers, inoculum and good varieties followed by good land management gives higher yields in legumes as well as in intercropping. Fig 1 & 2.


Figure 1: International rural women's day organised by development NGO partners: an opportunity to share experiences


Figure 2: Results obtained by legume intercropping. The yield of cassava in intercropping with legumes contributes significantly to household food security and increasing revenues through the sale of the production surplus.

In South Kivu the use of organic matter does not have to be demonstrated anymore; all farmers are aware that without organic amendments households are food insecure. However, one of the major challenges farmers are confronted with is declining livestock numbers due to insecurity, and the amount of organic matter to be applied. A profitable market for agricultural products remains a major challenge due to the level of production costs.

Certain farmers have developed protection mechanisms by keeping livestock in stalls close to the homestead. This mechanism has favoured the integrated crop – livestock system, in which farmers easily collect the manure to improve their field, while the field, in turn, produces livestock forage.

Figure 3: A model to follow: If we want, we can produce more and reduce poverty

This is Joseph Bisimwa, farmer in the lowlands between Kazinzi and Ikoma.

In his left hand he holds an inoculated soyabean plant and in his right hand a non-inoculated plant. He is posing in front of his livestock shed with a goat, which was paid by the sale of his soyabean harvest.

The integrated crop-livestock system means that livestock produces the manure to improve soil fertility and the field produces the fodder; the remainders of the harvest are also used to feed the livestock. Livestock and agriculture produce, in their turn, food for the household, and contribute to household income as well.

Dieudonné Mongane[1], Adrien Chifizi[1] and Freddy Baijukya[2] ([1] CIAT RDC, [2] CIAT Kenya), translation: Gatien Falconnier

Engineers meet scientists to design an inoculum plant

The new Business Incubator Platform on the IITA campus in Ibadan continues to expand with the planned construction of a new inoculum plant. Last week, engineers from IITA's Facility Management Services met for two days with scientists from IITA and Wageningen University, the Netherlands, and from Legume Technology, a commercial inoculum producer from the UK, and collectively designed the plant's structure and anticipated operations.

The N2Africa project on promoting legume technologies among smallholders in Africa and other projects have demonstrated strong productivity and economic benefits of soyabean seed inoculation with nitrogen fixing rhizobia. Even with the so-called promiscuous soyabean varieties that have been bred to nodulate with rhizobia naturally present in the soil, significant yield responses to inoculation have been observed in the majority of test fields in northern Nigeria and Ghana. There is currently no commercial inoculant production in West Africa, and imported inoculants are often not available to farmers and come in packet sizes inappropriate for smallholders. Given the large potential of this technology on the 0.5 million ha of soyabean grown in Nigeria, IITA will construct a pilot inoculum plant with assistance from the Bill & Melinda Gates Foundation-funded N2Africa project.

Building upon experiences with inoculum production in Kenya and the UK, as well as the Aflasafe plant at IITA, the objective of the new plant is to produce high-quality, sterile inoculum for soyabean farmers using innovative technologies. To do so, IITA staff will receive training in inoculum production and quality control at Legume Technology in the coming months. When the construction of the newly designed inoculum plant is finished in October this year, inoculum production will start immediately at a modest scale using imported sterile sachets with carrier

Participants to the workshop that designed the rhizobium inoculant plant in IITA, Ibadan.

material that will be injected manually with locally produced rhizobia. In a next phase, the production of sachets with carrier material can be localised and the filling of sachets with rhizobia can be automatized, increasing the scale of production and reducing risks of contamination. An applied research program to optimise the production process and guarantee quality control will be established alongside. The plant will serve as a business model for private investors in Nigeria and other African countries.

Like legumes and rhizobia working in symbiosis with each other, FMS engineers and scientists greatly benefitted from each others' complementary expertise needed to design a functional inoculum plant. The building has to be sufficiently flexible to allow for changes in the production process over time and include climate-controlled rooms for product curing and storage. The participants were very satisfied with the final design and look with great excitement to the work and future developments around the plant.

Linus Franke

Rhizobium inoculant production in the N2Africa soil microbiology laboratory at Kalambo in the Sud Kivu province, Democratic Republic of Congo

The Faculty of Agriculture, Université Catholique de Bukavu, DRC, a partner of N2Africa, is implementing rhizobiology activities in the framework of the objective 3 of the N2Africa project, which global goal being enhancing inputs from BNF in smallholder farming systems. The aim of objective 3 can be summarized as follows:

- selection of superior rhizobia strains with enhanced BNF capacities adapted to various environmental stresses and develop effective inoculant delivery systems;
- establishment of a state-of-the-art laboratory and culture collection of elite strains of rhizobia for target legumes;
- and establishment of rhizobial inoculant production through partnership with the private sector.

As stated by Giller (2010), studies have demonstrated the existence in African soils of rhizobia that are more effective than existing inoculant strains for beans and tree legumes; thus a substantial program of research on rhizobial strain selection is likely to yield results within a relatively short time period.

A goal of rhizobium scientists is to discover new and better strains for use in legume inoculants. This pursuit entails the collection of isolates, strain characterization, assessment of symbiotic capacity and comparison to strains currently included within inoculants. Ongoing activities at Kalambo are bioprospection by collecting 213 rhizobium strains in 44 sites in Kalehe, Kabare, Walungu, Uvira and Idjwi locations, authentication and effectiveness of isolates collected strains, screening in greenhouse for BNF of collected isolates, conducting 50 MPNs in the greenhouse, 25 on soyabean and 25 on beans, quality control of reference commercial strains and production of inoculants for use in local trials.

With bioprospection 213 nodules samplings were collected and authentication test showed that only 103 isolates were selected. Effectiveness index was achieved in the greenhouse through nodules number, nodules scoring and leaf scoring from promiscuous (SB19) and specific soyabean (SB24) by inoculating those soyabean species in the presence of commercial stain Semia 5019, using modified Leonard jar as designed by Paul Dr Woomer (photo1). The

Photo 1: modified Leonard Jar in Kalambo greenhouse during effectiveness test on soyabean

Photo 2: effectiveness index about leaf color

aim of this is to select elite strains under greenhouse conditions.

Elite strains are determined by their ability to replace those already in use as commercial legume inoculants. First it is important that the strains be identified and not confused with one another and those already in use. Strains of rhizobia, previously selected in potted field in a greenhouse are evaluated in the field environment so as to further identify the most effective strains for inoculants production. Second, more comprehensive field testing is required to assure that the candidate elite strains perform across a wide range of field conditions, with direct comparison to commercially available inoculants.

Inoculating promiscuous soyabean with Dwl16 and Dcb1 gave highest nodules number (28 and 27 nodules respectively). The same rhizobia strains (Dwl16 and Dcb1) gave the highest nodules number for the specific soyabean (SB24). Interaction between Rhizobia strains and type of soyabean grown was highly significant. Nodule scoring was significantly affected by the interaction strain-variety and the type of strains inoculated. Inoculating promiscuous (SB19) with the strains D08a, Dkl2, D15ii, Dkbm7, Dwl16, DCb1, D18a and Dkbm5 gave highest score ranking of nodules (4, meaning abundant, > 20 nodules). For the specific soyabean (SB24), the strains Dkt2, D21 and Dlrh gave the highest score of nodules.

Concerning leaf scoring, inoculating the promiscuous soyabean SB19 with Dcb1, Dkat2, Dken gave the highest

green color to the leaves (photo 2). Effectiveness index (based on nodules number) of fifteen indigenous Rhizobia isolates (Dwl16, Cb1, Dkt2, Dken, Dkbm7, D30b, D20, D18a, D15ii, Dkl5, Dkl2, Dkbm5, Dkl7, Dkl4 and D08a) was higher compared to the commercial isolate SEMIA5019 for promiscuous soyabean (SB24) while for specific soyabean (SB19), only five indigenous rhizobia isolates (Dwl 16, Cb1, D15ii,D08a andDkmb5) gave higher results compared to the commercial isolate SEMIA5019.

Other activities carried out meanwhile are quality control of 2 commercial strains, inoculant production at Kalambo laboratory at very small scale (32 packets) (photo 3) using diluted cultures of rhizobium and presterilized peat with available equipment and quality control of commercial strain and Rwandan inoculum, quality control of inoculum produced at Kalambo, quality control of Kalambo inoculums. Quality control of commercial strains gave following results:

Inoculant name	10^{-5}	10^{-6}	10^{-7}	10^{-8}
RB&A	896	680	528	512
Soya	968	922	590	252

Results of the quality control of Kalambo were at 10^{-9} dilution $12x10^{9}$ cells; the range of acceptation of inoculum is between 10^{8} and 10^{9} cells per gram of inoculants but some countries can accept the lower level of 10^{6} (Beck *et al.*, 1993).

Photo 3: inoculants in the incubator, produced at Kalambo

The Nitrogen- fixing potential of greenhouse selected strains of soyabean rhizobia will be verified in the field environment in order to assess the BNF capacity and competitiveness of native rhizobia isolates on performance of soyabeans and beans compared to reference strains. Effectiveness index will now be carried out on beans and inoculant production from elite strains will be done after field tests.

Professor Walangululu

Promising elite rhizobium strains from Kivu, DRC, isolated and tested

My name is Bintu Ndusha, I am a Congolese student at University of Nairobi with my studies funded by the N2Africa project. I am currently doing my research on my project in Rhizobiology titled “Effectiveness of Rhizobia strains isolated from South Kivu soils in nodulation of Soyabean (Glycine max)”. The project involves collection and isolation of rhizobia strains available in South Kivu soils, screening them for effectiveness in the greenhouse and in the field, comparing them to available commercial strains (USDA110 and SEMIA5019) and evaluating their effectiveness on two varieties of soyabean (a promiscuous and a specific variety). The aim is to obtain elites strains for inoculation of soyabean. The first step of my work, collection and isolation of Rhizobia strains across different ecologies in South Kivu, has been completed. A total of 107 rhizobial isolates were isolated and characterized by BTB and Congo red reaction. The strains were then authenticated as rhizobia by plant infection method. Thereafter, the isolates were screened in the greenhouse, first in sterile sand in adapted Leonard’s jars. The effectiveness index was calculated by dividing the shoot weight by shoot weight of USDA110 or nodules weight of considered strains by nodules weight of USDA110. In this experiment, a highly significant difference between strains was observed. Ten percent of the isolates was highly effective compared to the commercial

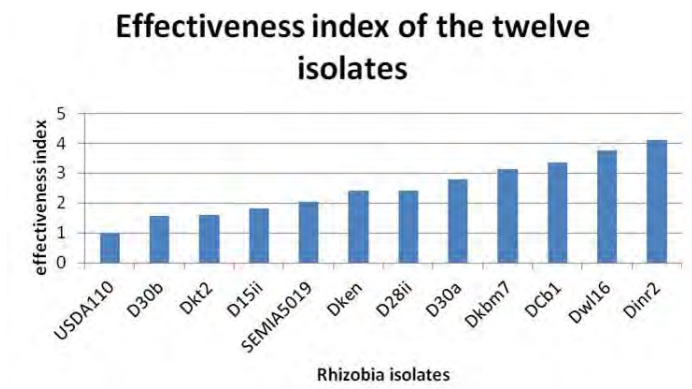

Table 1: Effectiveness index of the ten selected isolates compared to the commercial isolates based on nodules weight


Picture 1: Determining the rhizobia population in the soils using MPN method continues


Picture2: Planting in the greenhouse

strain USDA110 and was selected for testing in potted field soils in the greenhouse. Soils from two sites were selected and two varieties were used. The total N of these soils was predetermined and MPN performed. The experiment is ongoing under the mentorship of Prof. Nancy Karanja, Prof. Jean Walangululu, Dr. Paul Woomer and Dr. Freddy Baijukya.

Bintu Ndusha

Scientific seminar to discuss and present the outcomes of Phase I of N2Africa

We are pleased to announce a scientific seminar to discuss and present the outcomes of the first four years of N2Africa. The event will take place in Nairobi from 28 to 30 of October 2013. Invitees include the N2Africa steering committee, our major partners and other stakeholders in the project representating all the N2Africa countries, from the scientific and development community as well as government representatives. The first two days will be spent sharing experiences among N2Africa partners. The final day will be a public presentation highlighting the research findings and achievements in the delivery and dissemination of legume N2-fixation technologies across the N2Africa countries. We will present findings of the early impact assessment which is currently underway. Around each theme video material will tell the story of the project and there will be a discussion on each of the themes. A closing panel will discuss prospects of legume N2-fixation technologies for improving food and nutritional security and the livelihoods of smallholder farmers.

The event will close with a party to thank all that have been involved in the project for their support and effort invested in creating the success of N2Africa.

Jeroen Huising

Conference announcements

Announcement 27th SSEA and 6th ASSS conference in Nakuru, Kenya, 20-25 October 2013
The Soil Science Society of East Africa (SSSEA) in collaboration with African Soil Science Society (ASSS) invite participation at a conference intended to critically analyze Land and Water Management (LWM) technologies, innovative products and services; and strategies benefiting smallscale agriculture in Africa.

A particular focus of this joint conference deals with the contribution of LWM in the Agricultural Production Value Chains, addressing threats and opportunities associated with climate change, and scaling up of proven technologies for transformational impact on the livelihoods of African small-scale farmers. In addition, land use planning and policy will be addressed during this conference. For more information click the link.

Reminder: Global Food Security Conference, 29 September - 2 October 2013 in Noordwijkerhout, the Netherlands. Half a year ago this conference was announced in the Podcaster. The conference has attracted more than 900 abstracts which are currently under review.

Bulletin of Tropical Legumes

The latest **Bulletin of Tropical Legumes** that features Mali, has now been added to the N2Africa website: Link

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