

N2Africa Podcaster no. 24

January and February 2014

Introduction

The second phase of N2Africa started on the 1st January 2014 and it has been a very busy time writing up reports and getting started with our new strategy. N2Africa is going through some major changes in staffing and we extend a very warm thanks to all of those staff who are moving on to new challenges. Jeroen Huising has moved to a new position at IITA, Ibadan. Linus Franke has taken up a position as Senior Lecturer at the Department of Soil, Crop and Climate Sciences, University of the Free State, Bloemfontein, South Africa. From this position he hopes to remain engaged with N2Africa and has several joint manuscripts in development with N2Africa staff and partners. Judith de Wolf remains in Zimbabwe and is assisting in transitioning the N2Africa Monitoring & Evaluation (M&E) into the new era as a consultant for two months. We thank Alastair Simmons and the other Taskscope staff for the wonderful video materials produced during the first phase.

We advertised all of the new positions in December and had a large number of applications. We thank all of the people who assisted in interviewing which has resulted in a number of new appointments. We introduce to you below: Edward Baars, the N2Africa Business Development Officer who will be based in Abuja, Nigeria; Joost van Heerwarden, Research and Data based at Wageningen, The Netherlands. We have also appointed the Coordinators for the Core Countries: Endalkachew Wolde-meskel (Ethiopia), Samuel Adjei-Nsiah (Ghana), Emmanuel Ademola Sangodele (Nigeria), Freddy Baijukya (Tanzania) and Peter Ebanyat (Uganda). We have yet to appoint the Project Coordinator and the Monitoring & Evaluation Specialist and are still interviewing.

We are busy with a number of key activities. The past few months have been a hectic period of writing Milestone Reports and the Final Report for the first phase. We are



The N2Africa Field Liaison Officer in Nigeria, Esther Chinedu with her son who was named "Inoculant" – surely a first!! His parents also gave him the official name of Elijah Chinedu.

developing a new Communication Strategy, with a strong emphasis on improving sharing of knowledge among countries within N2Africa. As part of this, Greta van den Brand and Charlotte Schilt have been (and still are) assisting Marcel Lubbers with revamping the N2Africa website (www.N2Africa.org) in line with our new strategy. We hope that the numerous (more than 60!) reports and MSc theses can now be found more easily and look forward to your feedback on the website. There is also an interactive map that is being developed to show where we are working and to provide an easy way of finding out about past and current activities. N2Africa now has a Facebook page (see www.facebook.com/N2Africa) to help us speed up communication within and outside N2Africa – please visit the page and give us a Like!

Ken Giller

Introduction of new N2Africa coordinators

Prof. Samuel Adjei-Nsiah, Country Coordinator, N2Africa, Ghana

Prof. Samuel Adjei-Nsiah until his appointment was an Associate Professor at the College of Agriculture and Consumer Sciences, University of Ghana. Samuel is trained as an Agronomist and holds a PhD in Production Ecology and Resource Conservation from Wageningen University.

He has several years of experience in integrated soil fertility management in smallholder farming systems in Ghana. Samuel has also worked on tropical legumes and in particular in nitrogen fixation in cowpea. His present research is in the realm of smallholder agricultural development and



focuses on facilitation of multi-stakeholder collaboration for institutional innovation, food security and climate change. He has professional skills in Participatory Action Research and facilitation in multi-stakeholder processes.

Samuel is married with four children.

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Edward Baars, Business Development Officer for N2Africa

I was born on February 22, 1966 in Rotterdam to the delight of my parents and 2 year older sister although no further attempts were made for a third child. After 4 years we moved to Delfzijl, surprisingly a 4 hour drive while still located in the Netherlands. People say I kept my Rotterdam accent but managed to grasp my first foreign culture and language called Gronings. In secondary school I faced a melange of secular and religious ideologies both in teachers and fellow students. In 1985 I ended up in the Navy, again a very different culture but all in all a great experience.

I decided in 1986 to prepare for a life abroad and left for Wageningen University to study Tropical Agricultural Engineering. It was the time of paradigms around how to best go about development cooperation while analysing the many lessons learnt from the past. I started playing with the idea that through private sector involvement one could tackle the sustainability issue but had a hard time to get rapport, hence shifted to the Marketing faculty. In 1991, I successfully completed my thesis combining the Engineering and Marketing disciplines.

My thesis was based on a large irrigation scheme in Mendoza, Argentina and I went back several times to also visit Chile, Peru, Brazil and Uruguay. I was to work for Euroconsult in the Fayoum, Egypt while pursuing a PhD. Instead in 1993 I took the opportunity to start my own company in Kenya, growing and exporting fruits and vegetables and learnt many things they don't (want to) teach you in school. Family considerations brought me back to Holland end 1999 where I worked for a marketing research company but was beeped up to work in Somalia from 2002-2011 having close ties with the private sector and somehow Somalia is

Peter Ebanyat, Country Coordinator for Uganda

Peter Ebanyat holds a PhD (Agronomy/Soil fertility) from the C.T. de Wit Graduate School for Production Ecology and Resource Conservation (PE&RC), Wageningen University, The Netherlands.

His area of expertise is farming systems and legume agronomy. He has worked for Makerere University since 1996 rising from Assistant Lecturer to Senior Lecturer. His research interests are in smallholder systems intensification with legumes, using action research approaches in the context integrated soil fertility management and value chains.

Peter has also coordinated multi-disciplinary research projects including; Strengthening University-Farming Community Engagement, Institutionalizing Quality Assurance Mechanisms and Dissemination of Commercial Products.



Edward Baars (blue cap) during field work in Jamama, Southern Somalia in 2008 for the EC funded Support to Agricultural Marketing Services and Access to Markets Project (SAMSAM) on the horticulture, sesame and bananas supply chains. The banana findings were presented at the International Conference on Banana and Plantain in Africa called, 'Harnessing International Partnerships to Increase Research Impact', or The Banana 2008 conference in Mombasa, Kenya. This also resulted in a publication titled 'A ripe time for Somali bananas?' (The New Agriculture Website).

still in my system. With IFDC thereafter I was involved in implementing a private sector led project which broadened my scope in the region to South-Sudan, Ethiopia, Uganda, Mozambique and still Kenya.

Currently I am very excited to start with N2Africa as the Senior Business Development Officer, a unique combination of research, private sector and development cooperation, all of which I have gained a rich experience with.

Edward Baars (e.baars@cgiar.org)



Peter has published 15 articles in peer-reviewed journals and supervising over 10 graduate students (MSc and PhD). Peter is based at Makerere University and IITA, Kampala Uganda.

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Endalkachew Wolde-meskel, Country Coordinator Ethiopia

Endalkachew Wolde-meskel is Country Coordinator for N2Africa Project, Ethiopia. He joined the project from Hawassa University, Hawassa, Ethiopia where he was an Associate Professor of Soil Microbiology at the School of Plant and Horticultural Sciences. He obtained his PhD from Norwegian University of Life Sciences in 2004. His main expertise is on rhizobiology



and on the N₂-fixing symbiosis with legumes. But also on nutrient cycling in farming systems in the tropics; on selection and identification of elite N fixing strains; on ecology of indigenous and naturalized rhizobial populations aiming on enhancing of N₂ fixation in farming systems. He coordinated north-south collaborative projects on legume-rhizobium symbiosis and on investigation of cyanobacterial biofertilizer for production of horticultural crops. He has extensive experiences on exploration of biodiversity of rhizobia where he identified several novel genospecies and described new species. Endalkachew has supervised more than 46 MSc and PhD students and published in peer-review international journals.

Contact: ewm_endalkachew@yahoo.com

Joost van Heerwaarden, Coordinator Research and Data

My name is Joost van Heerwaarden and I have been freshly appointed as coordinator research and data for phase II of N2Africa. As of March 1st, I will be taking over from Linus Franke, who has accepted a faculty position at the University the Free State in south Africa. Originally trained as a biologist, I have a background in statistics, quantitative genetics and computer modelling, with a focus on crops and agriculture. Before my current job at the statistics department of Wageningen University I worked for two years at UC Davis in the United states, and before that was based in Mexico for eight years, working on smallholder seed systems at the Internal Maize and Wheat Improvement Center (CIMMYT) and the Mexico's National Autonomous University (UNAM). After a number of years crunching numbers I am thrilled to join the N2Africa team, interact with many of you, and to put my expertize and skills at your service. I will be joining

the planning meetings in Ethiopia, Ghana and Nigeria at the beginning of March and hope to have the opportunity to visit Tanzania and Uganda soon. I am looking forward to meeting everyone involved in the project and can't wait to start working with all of you on this challenging endeavour.



Kind regards,
Joost van Heerwaarden
(joost.vanheerwaarden@wur.nl)

Freddy Baijukya, N2Africa Coordinator, Tanzania

Frederick Baijukya is a System and Legume Agronomist - and coordinator of N2Africa in Tanzania. Prior to that, he was employed by CIAT as Legume agronomist and leader of N2Africa Phase I in Rwanda and DR Congo. Frederick has worked as Principal Research Scientist in the Department of Research and Development, Ministry of Agriculture, Food Security and Cooperatives in Tanzania.



He also spent four years (2005-2009) at FAO-UN analyzing trans-boundary ecosystems and bio-security threats of agricultural activities in the Tanzania-Uganda-Rwanda-Burundi inter-phase systems. Frederick holds a Ph.D (Agronomy/Soil fertility) from the C.T. de Wit Graduate school for Production Ecology and Resource Conservation (PE&RC) at Wageningen University in The Netherlands. Frederick has more than 20 years of agricultural research and development focusing on smallholder farmers in rural societies of Africa. He has published over 25 papers in peer reviewed International Journals and he has supervised and co-supervised more than 28 MSc and PhD students from sub-Saharan Africa, Asia and Europe. Frederick is based at IITA East Africa Hub Centre in Dar es Salaam, Tanzania.

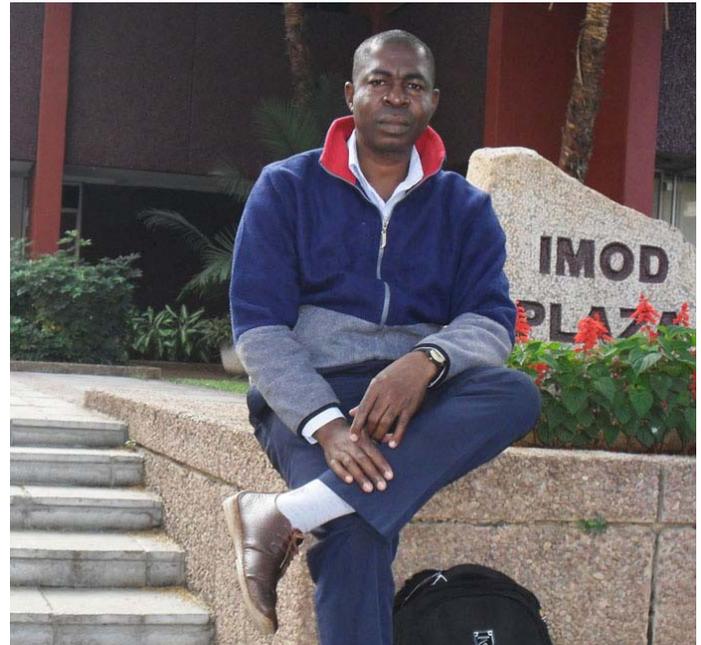
E-mail: f.baijukya@cgiar.org

Emmanuel Sangodele, country coordinator Nigeria

Dr Emmanuel Sangodele is a plant breeder and seed system specialist based in Kano, Nigeria. Over the years, he has played a key role in the establishment of a sustainable commercial seed industry in Nigeria, ensuring that farmers have access to improved seed and input. His work focused on the development of viable agricultural input systems and the establishment of a smallholder agro-industry, especially in the North West where N2Africa core activities are located. He has notable experience in the establishment of networks of rural farmers for improved market opportunities, to better benefit from productivity and quality improvements brought about from the use of improved quality seed and other inputs.

He has documented a series of success stories in Nigeria; a few of them include:

- Resolving the gaps and critical constraints impeding the seed industry's development.
- Maximize seed industry impact in the agricultural sector productivity.
- Create demand for, and supply farmers in Nigeria with, high quality improved seeds;
- Create revenues through new smallholder linkages to output markets in Nigeria;
- Invest in plant breeding research programs generating new/improved genotypes.
- Support foundation seed enterprise development in Nigeria and empower the seed industry to have an effective voice in policy, regulatory, and economic decisions.



Dr Emmanuel Sangodele obtained his PhD in Genetics and Plant Breeding from the University of Agricultural Sciences Dharwad, India. He hails from Osun State in Western Nigeria. Before joining N2Africa as Country Coordinator, he worked with ICRISAT Kano, Nigeria.

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Five N2Africa PhD Scholarships available

N2Africa seeks applicants for five PhD "sandwich" scholarships available to start in September 2014. We seek candidates with an excellent academic record, a strong commitment to advancing science to enhance agricultural productivity of grain legumes in sub-Saharan Africa and their use by smallholder farmers. All students will register for their PhD at Wageningen University. Preference will be given to candidates who are employed by a national university or research institute in the country specified for each of the PhD scholarships.

1. Tanzania

Intensification of common bean cultivation on smallholder farms in the Northern Highlands of Tanzania

Common bean is a staple crop and an important source of dietary protein for the rural poor in the Northern Highlands of Tanzania. High yielding improved bean varieties (both climbers and bushy types) are strategic crops to mitigate recurring hunger and poverty. With the ability to fix atmospheric nitrogen, common bean has the potential to boost productivity of the associated crops and to sustainably

intensify the larger cropping system. Yields and the amount of nitrogen fixed depend on the interaction between $(G_L \times G_R) \times E \times M$, where: G_L = legume genotype, G_R = rhizobial strain, E = environment and M = management.

Although the potential productivity of common bean, especially of new improved varieties, is high (3 t ha^{-1}), farmers often obtain yields far below this potential ($0.3 - 1 \text{ t ha}^{-1}$). Farmers in this area usually cultivate common bean as intercrop or in rotation with maize, using traditional planting methods. Generally, management levels are low, with limited use of mineral fertilizers, poor seed quality and non-optimal weeding. In addition, the climate is highly variable and the lands in which common beans are planted are often marginal lands, limited in available soil nitrogen. How the multiple factors included in the $(G_L \times G_R) \times E \times M$ interaction exactly contribute to bean yield and the amount of nitrogen fixed and how those factors interact with each other is poorly understood.

The proposed research will focus to unravel the contributions of genetic, management and environment related factors to common bean yield and nitrogen fixation, includ-



ing cultural, social and economic analyses of growing common beans. The generated knowledge will contribute to sustainable intensification of cropping systems in the Northern Highlands of Tanzania.

Scholarship requirements

You have an MSc in agro-ecology, land use studies, agronomy, soil science or another topic that suits you to work on systems analysis and integration. You wish to work closely with others in a team and have a strong motivation to pursue a PhD. You have good communication skills. This scholarship is open for Tanzanian nationals.

2. Uganda

Understanding the need for inoculation of common bean in smallholder farming in Uganda

Common bean is a staple crop and an important source of dietary protein for the rural poor in the highlands of Uganda. A number of new bush and climbing bean varieties have been released with improved pest and disease resistance and better yields than the varieties commonly grown. Climbing bean varieties offer an option for farmers with small areas of land to intensify their production due to their superior yield potential compared with bush types. Research conducted during the first phase of N2Africa indicated highly variable responses to inoculation in common bean – often no significant differences, sometimes strong responses in yield. Common bean is known to nodulate with a wide diversity of fast-growing rhizobia (both strains and species) in African soils. The promiscuous nature of common bean could be one of the reasons for the erratic response to inoculation – sometimes there are many effective rhizobia present in the soil, sometimes the background population is largely ineffective on common bean.

This PhD project will focus on elucidating reasons for the sporadic success of inoculation with common bean. A combination of classical and modern (molecular) microbiology methods will be used to (i) characterize background populations of rhizobia found in Ugandan soils (the so-called indigenous rhizobia), (ii) test the success of elite inoculant strains in establishing themselves against the rhizobial populations present in soils, (iii) test the effectiveness of inoculant strains compared with indigenous strains, (iv) to select new elite rhizobia to identify potential strains for use in inoculants, (v) to test these elite strains in the field, (vi) evaluate competitiveness and survival of introduced rhizobium strains as affected by management and environment.

Scholarship requirements

You have an MSc in microbiology or molecular biology with a thorough understanding of smallholder agriculture. You wish to work closely with others in a team and have a strong motivation to pursue a PhD. You have good communica-

tion skills. This scholarship is open for Ugandan nationals.

3. Ethiopia

Understanding host legume x rhizobium strain interactions in common bean and chickpea

The genetic potential of grain legumes (G_L) targeted to suitable environments (E) depends on the presence of effective soil populations of rhizobia or inoculation (G_R) under appropriate crop and soil management (M). This ($G_L \times G_R$) x E x M interaction forms the core of the N2Africa approach. Over the past year N2Africa has conducted multi-locational experiments that have confirmed that common bean and chickpea respond strongly when inoculated with elite strains. A diverse collection of common bean and chickpea rhizobia have been isolated and characterized by Hawassa University, Ethiopia. The availability of core genotypes of these two important grain legumes opens new opportunities for understanding host legume genotype x rhizobium strain interactions.

The proposed PhD research will provide detailed molecular characterization of the rhizobium strains that nodulate common bean and those that nodulate chickpea. Glass-house experiments will be conducted to explore the host-rhizobium interactions in both nodulation (infectiveness) and nitrogen fixation (effectiveness). Once repeated tests have been performed to confirm the best combinations, these will be advanced to field testing. The most effective host x strain combinations will provide a basis for future breeding for enhanced nitrogen fixation in these two important grain crops.

Scholarship requirements

You have an MSc in microbiology or molecular biology with a thorough understanding of smallholder agriculture. You wish to work closely with others in a team and have a strong motivation to pursue a PhD. You have good communication skills. This scholarship is open for Ethiopian nationals.

4. Ghana

Grain legume residues as a livestock feed resource for smallholders in Northern Ghana

Legumes are a key resource for farmers in Sub Saharan Africa (SSA) both for food grains and residues for livestock feed. Livestock production across SSA is in flux and undergoing a process of intensification. In parts of West Africa, cereal and legume residues have changed from being communal resources to being private resources in the last two decades. Residue values are rising and residues are a tradable resource. In Northern Ghana cowpea and groundnut haulms are extensively traded. There is considerable species and varietal variation in legume residue yield and quality. Furthermore, agronomic practices including those

being investigated in N2Africa can influence the livestock feed value of legume residues. It is expected that management of haulms (collection, storage, feeding and/or trade) depends on the farming systems' objectives. Consequently, across a livestock intensification gradient different use of legume residues will be observed and different options for intensified use identified.

In the research proposed here, the influence of intensification on legume residue use within smallholder livestock systems will be investigated. The research will comprise a series of activities as follows:

- Define an livestock intensification gradient, in northern Ghana and focused around existing N2Africa sites.
- Characterize livestock feeding system along the gradient including extent of inclusion of legume residues in livestock diets, prices for legume residues and quality/yield of legume residues.
- Characterize residue management including post-harvest practices and storage practices.
- Assess recent changes in residue use and prices, using farmer recall and secondary data.
- Conduct action research on improved varieties and practices to enhance livestock production along the intensification gradient.

Scholarship requirements

You have an MSc in animal science, agricultural economics or related subject and a thorough understanding of smallholder agriculture. You wish to work closely with others in a team, have a strong motivation to pursue a PhD and good communication skills. This scholarship is open for Ghanaian nationals.

5. Nigeria

Exploring the potential benefits of rhizobium inoculation with cowpea

Promiscuous legumes such as cowpea that nodulate freely with indigenous rhizobia already present in the soil, have rarely been observed to respond to inoculation with rhizobia. Inoculation responses are only found when the elite

N2Africa was officially launched in Uganda on January 16th

Published before on [N2Africa Facebook](#) on January 16th

N2Africa was launched at a workshop led by Dr Peter Ebanyat in Kampala, Uganda. Dr Stephen Byantwale, representing the Director of Crop Resources, Ministry of Agriculture stressed the importance of N2Africa in enhancing the livelihoods of smallholder farmers in Uganda and of aligning with the policies of the government.

A [Phase II launch report for Uganda](#) was written shortly after this workshop and made accessible via the N2Africa website.

inoculant strain is substantially more effective in N_2 -fixation than the indigenous strains, and when the elite inoculant strain can be established on the roots of the grain legume. This is essentially a 'numbers game' and high quality inoculants that can deliver large numbers of the inoculant strain on the seed are needed to ensure success. Understanding success of inoculation under such circumstances relies on studies of background populations of indigenous rhizobia and tracing the success of nodulation by the inoculant strains through 'competition studies' using molecular typing.

New multi-purpose cowpea varieties with good grain yield, a short growing cycle and drought tolerance and can easily be integrated in mixed cereal-cowpea systems. These short-duration varieties yield in the middle of the growing season (the "hunger season") allowing double cropping. Their short growing period means that they are much more likely to respond to inoculation in the field than the creeping cowpea varieties that take much longer to mature.

This PhD project will explore the opportunities for inoculation of cowpea in Nigeria – the world's largest cowpea producer. A combination of field, glasshouse and laboratory experiments will be deployed to understand the success of the new elite cowpea strains in nodulating cowpea against background populations of indigenous rhizobia. Both classical rhizobiology methods and new molecular tools will be deployed. The PhD student will support extensive fieldwork that will be conducted through N2Africa to explore the field response to inoculation in the northern Guinea savannah of Nigeria.

Scholarship requirements

You have an MSc in microbiology or molecular biology with a thorough understanding of smallholder agriculture. You wish to work closely with others in a team and have a strong motivation to pursue a PhD. You have good communication skills. This scholarship is open for Nigerian nationals.

Background information on N2Africa is available on www.N2Africa.org. Please submit your applications to Greta van den Brand gretaj.vandenbrand@wur.nl with a copy (cc) to n2africa.office@wur.nl by 31st March 2014.



Dr Stephen Byantwale

N2Africa project launched in Tanzania in February

Published before on [N2Africa Facebook](#) on February 24th

N2Africa was officially launched by the Director for Research and Development in the Ministry of Agriculture, Food Security and Cooperatives, Dr Fidelis Myaka on behalf of the Permanent Secretary Ms Sophia Kaduma at the start of the workshop held in Dar es Salaam, Tanzania on 19-20 February, 2014. The project launch was organized by the International Institute of Tropical Agriculture (IITA)—one of the project’s implementing partners.

Speaking at the event, Dr Myaka lauded the project for singling out legumes. He said despite their obvious benefit to the country’s food security, employment, and even contribution to GDP, their productivity was low and yields were far below their potential.

“The application of scientific knowledge, especially by smallholder farmers, has always been constrained by poor targeting of the technologies to the diversity of farmers and farming conditions, poor packaging of technologies, and issues relating to input supply and output market, said Dr Myaka. I am aware that N2Africa’s approach puts into consideration all these factors through farming systems analysis to target technologies to the farming conditions of

Innovation Village about N2Africa in Tanzania

Innovation Village, a news blog about promoting new technologies, businesses, products, services, startups in

N2Africa launch Ethiopia

The N2Africa project was officially launched in Addis Ababa on 27-28 Feb 2014. The launch was held in a tent due to ongoing refurbishment on ILRI’s conference facilities. The tent lent an informal atmosphere to the meeting and encouraged strong engagement by around 70 participants from across Ethiopia and from other N2Africa countries.

During the first morning, Ken Giller and Bernard Vanlauwe made introductory presentations which inspired participants on the potential of nitrogen fixation to enhance productivity. Director General of the Ethiopian Institute for Agricultural Research, Dr Fentahun Mengistu, officially opened the meeting. The participants then enjoyed a brief overview of the achievements of the recently completed bridging phase project which included impressive photos of demo plots from around the country. The bridging phase has successfully established partnerships with a range of Ethiopian research institutions.

In the afternoon and on Day 2, participants worked in groups to define visions of success and to sketch out action plans around key project outcomes: productivity, value chains and markets, nutrition, women’s empowerment, livestock.



Dr Fidelis Myaka and Ken Giller speaking at the project launch in Tanzania smallholder farmers and through a value chain approach,” he added.

Other speakers at the forum included the Director of the Project, Dr Ken Giller from Wageningen University who gave an overview of the project, Dr Bernard Vanlauwe, Director for Natural Resource Department of IITA who noted the N2Africa was important to IITA as part of its Natural Resource Management activities and Dr Fredrick Baijukya, the project’s coordinator who explained the scope and activities of N2Africa in Tanzania. The project launch brought together a wide diversity of stakeholders from those in legume production, input development, and supplies including seeds and fertilizers, processing, marketing, and regulatory bodies to policy makers.

Freddy Baijukya

Africa, paid attention to the launch of N2Africa in Tanzania by publishing a [press release](#).



The discussions were active and dynamic fueled by breaks for traditional Ethiopian coffee and a range of pulses with injera at mealtimes.

By the end of the meeting, there was a strong spirit of collaboration among participants and some excellent networks were established which bode well for the establishment of N2Africa Phase II in Ethiopia.

Alan Duncan

The information about this meeting is available via [wikispaces](#).

N2Africa Phase II Launch in Ghana

The Phase II of N2Africa was officially launched in Ghana on 3-4 March, 2014 at the Modern City Hotel, Tamale.

Welcoming participants to the workshop, Dr Nutsuga, the Director of the Savanna Agricultural Research Institute (SARI) of the Council for Scientific and Industrial Research (CSIR) in Tamale lauded the gains made by N2Africa in Phase I in improving the productivity of grain legumes in Northern Ghana and pledged his institute's support. The Northern Regional Director of the Ministry of Food and Agriculture, Mr W. Boakye Acheampong officially launched the programme.

The launch brought together stakeholders along the legume value chain representing research institutions, universities, private sector, farmer organisations, development organisations and Non-governmental organisations. A key activity during the workshop was mapping of related activities/projects in the N2Africa operational areas in Ghana.

Partners present at the workshop included the USAID-funded Agricultural Technology Transfer (ATT) Project and Evangelical Presbyterian Development and Relief Agency (EPDRA) indicated their interest to forge collaboration with N2Africa to promote N2Africa legume technologies in their intervention zones in Northern Ghana for a wider impact.



A group photograph of the participants after the launching ceremony

A presentation that Edward Baars, the N2Africa Business Development Officer, gave on Public/Private Partnerships (PPPs), generated many discussions and reflected the new approach that N2Africa will take to embed the major grain legumes within functioning value chains.

Samuel Adjei-Nsiah

Brief story of N2Africa Phase II launch in Nigeria

March 7 2014 was a memorable date for IITA Kano station and Nigeria legume farmers. N2Africa Phase II was launched in Kano city. The benefit of Phase I of the project were; farmers are convinced about yield enhancement effect the use of rhizobium inoculant in soya bean production in Nigeria and are ready to adopt the practice as a practicable way of generating more income. Luckily, Nigeria has been designated as one of the core countries in Phase II.

Director General of IITA ably represented by Dr Bernard Vanlauwe launched the Phase II project in the campus of IITA Kano station. Major stakeholders and key players in the N2Africa Phase I participated in the launching. In his presentation entitle Overview of N2Africa Phase II, Prof. Ken Giller introduced the project strategy.

Dr Bernard Vanlauwe, IITA Director R4D for Central Africa and NRM spoke on the implementation strategy for N2Africa in Nigeria.

According to Dr Bernard, N2Africa vision of success is to build sustainable, long-term partnerships to enable smallholder farmers to benefit from symbiotic N₂-fixation by grain legumes through effective production technologies including inoculants and fertilizers. He stressed that the



Phase II exit strategy will build national capacity to sustain the benefit of rhizobium inoculant in legume production and value addition as N2Africa in Nigeria works through partners and linking with national and international initiatives which are clearly embedded in the national system, N2Africa leverages a position to ensure sustainability of the project.

As part of the activity after the launching the house broke



into 6 working groups to develop sub-activities to be carried out by various partners. The N2Africa team in Nigeria also mapped our strategy for immediate take-off of the project pending when master work-plan from the central project office is ready. Specific responsibility were also assigned to individual team member and the Country coordinator want to ensure that the distribution of materials such as seed and inoculant for demo plots and agronomy research are delivered to project partners before the start of planting season in all selected site.

Emmanuel Sangodele

N2Africa Phase II launched in DR Congo

South and North Kivu Provinces in Eastern DR Congo face persistent food insecurity due to poor or inadequate crop production systems, despite all regional agricultural potential. Since 2009, the N2Africa project, funded by the Bill & Melinda Gates Foundation, is working with smallholder farmers in the region to raise agricultural productivity and soil fertility through Biological Nitrogen Fixation (BNF), thereby improving the livelihoods of those farmers. The Howard G. Buffett Foundation (HGBF) grant, from 2012 to 2014, strengthened and extended N2Africa activities in Ruzizi plain/ South Kivu and Rutshuru & Masisi/ North Kivu, which are major agricultural zones with extensive agricultural land and human capital to enable sustainable agricultural development. The N2Africa project aims at encouraging smallholder farmers in sub-Saharan Africa to grow legumes as a cheaper alternative way of improving soil fertility and nutrition through successful BNF.

February 3rd 2014, the IITA Kalambo station was hosting the planning meeting on the N2Africa project, Putting nitrogen fixation to work for smallholder farmers in Africa, Phase II under IITA coordination. The overall objective of the workshop was to evaluate Phase I of the project, including implemented activities since season B 2010 and to set up the workplan of season B2014's activities. This was achieved by focusing on the following specific objectives:

- To develop of a workplan for season B 2014
- To establish a platform which will be working with the project in south Kivu.

The official opening was done by the Regional Ministry of Agriculture, Mrs. Adolphine MULEYE. *"Thank you for this special occasion you have given to us, to discuss again about the future of agriculture, the key factor of the development of DR Congo", she said. "Thank you IITA for creating projects that are complementary to government goals in agriculture especially in enhancing yield of grain legumes, which is an important food component in the region. I suggest to widespread all the activities of this new project in all territories of South-Kivu and always associate*

government' services which have many facilities to support the project"

Dr Okafor, head of IITA-Kalambo station, was the second to talk to participants. Indeed, the project which is now in its second phase is funded by the Bill and Melinda Gates Foundation and led by Wagenigen University under the International Institute of Tropical Agriculture (IITA) in Bukavu, DR Congo.

Other speakers of the workshop, such as the National Coordinator of N2Africa in DRC, Jean Marie Sanginga,



Photo 1: Participants on the N2Africa Phase II launching workshop at IITA/ Kalambo



Photo 2: Input distribution

gave the overview of the project master plan work and invited all participants to bring their knowledge and experience together for developing the strategy to achieve the project's objectives. The objectives are dissemination of technologies developed during the first phase of the project, institutionalization of the N2Africa program, promotion of commercial products and increasing capacity building at different levels.

Jean Marie Sanginga, Despines Bamuleke, Noel Mulinganya, Isaac Balume. N2Africa/ IITA, Bukavu South Kivu DR Congo
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Photo 3: Demonstration field in Walungu

Murdoch University poster award 2013 for Aliyu Anchau Abdullahi

EXPLORING THE GENETIC DIVERSITY OF GROUNDNUT-NODULATING RHIZOBIA IN MOIST AND DRY SAVANNAS OF NIGERIA FOR INCREASED SYMBIOTIC NITROGEN FIXATION AND PRODUCTIVITY.
A. A. Abdullahi¹, J. Howison¹, G. O'Hara¹, J. Topolli¹, R. Tiwari¹ and A. A. Yusuf²

- Centre for Rhizobium Studies, Murdoch University, South Street, Murdoch, Western Australia 6150.
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INTRODUCTION
Groundnut or peanut (*Arachis hypogaea* L.) is a very important leguminous crop in the tropics. Nigeria is the leading producer in Africa (Table 1), with production mostly in the hands of resource poor small-holder farmers. They harvest far less than the potential yield of the crop due to poor soils and difficulties in obtaining fertilizers (Mpinganga et al., 2005). Use of rhizobia (root nodule bacteria) inoculants is a relatively simple, environment friendly and economically viable technology to improve the yield of the crop through symbiotic nitrogen fixation. The absence of local inoculants for the crop and the failure of the few imported ones due to environmental conditions (Yusuf et al., 2012) is of particular concern. Although there are widespread rhizobia of the "cowpea miscellanea" that promiscuously nodulate groundnut in Nigeria, identifying the diversity of strains indigenous to the Nigerian savannas and selecting effective strains for the production of inoculants is shown to be the best solution (Machado et al., 2013). This poster outlines my progress during the first 9 months of my PhD.

OBJECTIVES
The specific objectives to be achieved are to:
1. Determine the genetic diversity of indigenous rhizobial strains nodulating groundnut in Nigeria.
2. Molecular characterization of the isolated strains.
3. Glasshouse experiments to identify the most effective strains.
4. Determine the effect of soil type on the diversity of groundnut-nodulating rhizobia.
5. Evaluate the nitrogen fixing capacity of identified strains with SAMNUT 22 and SAMNUT 24 groundnut varieties.

RESULTS
Figure 1. Map of Nigeria showing the agro ecological zones.
Figure 2. Contrast in moisture and vegetation between Ibadan, in Kaduna state; in moist northern Guinea Savanna (left) and Kinturu in Zambezi state; in dry Sudan Savanna (right) (Google earth 29/10/2013).
Figure 3. Groundnut grown without N fertilizer or inoculation in moist Northern Guinea Savanna (13/7/2013).
Figure 4. Groundnut intercropped with millet in dry Sudan Savanna (24/7/2013).

EXPECTED RESULTS
1. Higher genetic diversity of groundnut-nodulating rhizobia in the moist northern Guinea than in the dry Sudan savanna.
2. Higher genetic diversity in fertile soils with higher organic matter, clay, cation exchange capacity and moderate pH than less fertile, sandier soils.
3. A large indigenous population of both effective and ineffective strains.
4. Highly adapted effective promising strains suitable for inoculant development.

BENEFITS
The results will provide strains of rhizobia for development of inoculants to boost environmental safety, soil fertility, economy, food security, groundnut processing and inoculant producing industries in Nigeria and for the West African Guinea and Sudan Savanna regions.

REFERENCES
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4. Yusuf, A. A., Juma, M., Muehe, D. C. and Okamoto, A. C. (2012). Evaluation of commercial and laboratory produced inoculants on nodulation and yield of groundnut (Arachis hypogaea) in the Nigerian savanna. In: 10th Annual Meeting of the Society of Soil Science of Nigeria (SSSN) 2012, 10-12th October 2012, Abuja, Nigeria. pp. 175-179.

Adapted from Simonsen et al. (2006)

I was awarded the prize in "Plant Diseases and Crop Improvement" category at the 2013 Postgraduate Poster Day (An annual event) held at Murdoch University WA, on Friday 8th November, 2013. The prize was provided by the Department of Agriculture and food, Western Australia (DAFWA) in support of PhD students at Murdoch University.

The poster was an overview of the progress of my PhD research program involving an investigation of the root nodule bacteria that fix nitrogen in symbiosis with groundnut (peanut) in Nigeria at nine (9) months.

Title of the poster is: Exploring the genetic diversity of groundnut-nodulating rhizobia in moist and dry savannas of Nigeria for increased symbiotic nitrogen fixation and productivity.

Full version of the poster.

Aliyu Anchau Abdullahi

MSc research Usambara Mountains, Tanzania: Continued story parts 3 and 4

Did you read the stories of our MSc students Jori Langwerden and Elise Bressers that were published before on N2Africa Facebook on February 3rd and March 3rd?

Some of the best photos of these stories are published here again.



Active nodules



Plants of two weeks old in growth pouches for the MPN counts



Talking about field management with Iddy Shekallaghe, a farmer in Mshizii

Africa Business Leadership Training Center offers online and distance learning certificate courses

We received a message that the Africa Business Leadership Training Center is organizing online and distance learning certificate courses, to be conducted from 1st April 2014 to 1st June 2014.

The marketing modules seem interesting for country coordinators, agronomists, BDOs considering the direction N2Africa is taking. [The text of the announcement and the information on the Marketing Certificate Course](#) are available to those who want to know more.

Literature study by the Virtual Fertilizer Research Center (VFRC)

A [literature study](#) has been published by the Virtual Fertilizer Research Center (VFRC) (written with the Department of Soil Quality, Wageningen University) about soil, roots and microroganismes: the fascinating world of microbial life in the rhizosphere that contributes to nutrient uptake for plants.

The Podcaster is published six to eight times per year – we look forward to receiving news and contributions – particularly from partners. Please send in contributions well in time. Contact address for this newsletter is: N2Africa.office@wur.nl

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