



N2Africa Dissemination tools

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With contributions from Charlotte Schilt

April 2019

N2Africa

**Putting nitrogen fixation to work
for smallholder farmers in Africa**



N2Africa is a project funded by The Bill & Melinda Gates Foundation by a grant to Plant Production Systems, Wageningen University who lead the project together with IITA, ILRI, AGRA and many partners in Ghana, Nigeria, Tanzania, Uganda, Ethiopia, the Democratic Republic of Congo, Rwanda, Kenya, Malawi, Mozambique and Zimbabwe.

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Esther Ronner, 2019. N2Africa Dissemination tools, www.N2Africa.org, 23 pp.



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Short summary

This report provides an overview of the different training and extension materials that have been developed in the N2Africa project about legumes (from production to marketing) and biological nitrogen fixation. First, an overview of all materials is given, followed by sub-sections with the available materials on Biological nitrogen fixation and grain legume enterprise, Technical trainings and protocols, Rhizobium inoculation, Agricultural management practices for legumes and Post-harvest handling, processing and marketing of legumes.

Keywords

Dissemination, training, extension, legume, biological nitrogen fixation

1. Introduction

Under the N2Africa project, a wide range of training and extension materials about legumes (from production to marketing) and biological nitrogen fixation has been developed. Most of these materials have been adjusted to the relevant context in the different N2Africa countries, or translated into local languages.

In the first phase of the project (2010-2013), many of the written/illustrated extension materials were based on the booklet, "Biological Nitrogen Fixation (BNF) and Grain Legume Enterprise: Guidelines for N2Africa Master (or Lead) Farmers (Woomer, 2010). Three different versions (in English) of this booklet were developed, one each for East and Central Africa (EAC), Southern Africa and West Africa (Turner, 2011). Since then, many additional materials have been developed, e.g. related to rhizobia strain isolation and characterization, processing and value addition of legumes, or simplified instructions on the application of rhizobial inoculants.

As part of the second phase (2014-2018), a lot of attention was drawn to synthesizing lessons learned from the first phase and presenting this information in easy-to-use leaflets and posters for farmers and extension officers. A major partner in this development was the African Soil Health Consortium (ASHC). A joint effort was undertaken to ensure that the information presented was consistent and in line with information provided by other projects. A general booklet on Biological Nitrogen Fixation was complemented with country-specific information on good agronomic practices for the different legumes.

This report first provides an overview table of all materials developed under the project with a brief description, followed by the available information sorted per topic.



2. Overview of Dissemination tools developed under N2Africa

A total of 58 dissemination tools have been developed as part of the N2Africa project between 2010 and 2018 (Table 1). Most of the tools developed as part of phase 1 comprise of training materials for Training of Trainers and Lead Farmers. Sections in these training materials mostly cover biological nitrogen fixation, inoculation, general agronomy and enterprise development. These materials are available in different languages. Other materials zoom in on specific topics such as integrated pest management, protocols for rhizobiology, nodulation scoring or processing and post-harvest handling of legumes. Especially for Zimbabwe a wide range of topics is covered in separate materials, such as on inoculation, production practices for the different legumes, moisture conservation, and post-harvest handling, enterprise development and marketing for legumes. Also, the extension approach practiced in the first phase of N2Africa was captured in the manual: "Participatory research extension approach: N2Africa extension method". In cooperation with CIALCA and the Belgium Directorate-General for Development Cooperation (DGDC), a manual on establishing a business plans for an agricultural enterprise was provided.

The materials developed in cooperation with ASHC mainly deal with good agronomic management practices for relevant legumes in each of the countries. The leaflets cover topics from land preparation to sowing and fertilizer application, inoculation, crop management (weeding, pest and disease management), harvesting, storage and marketing. Emphasis was placed on using the knowledge gained through research carried out in N2Africa and knowledge available among project partners. All leaflets have attractive pictures to clarify the instructions. The general leaflet "Biological nitrogen fixation in grain legumes deals with nitrogen, nutrient cycles on the farm, biological nitrogen fixation and management practices conducive to nitrogen fixation. It also has a section on how to set up an experiment testing different treatments in the field. Again, plenty of pictures and diagrams were used to support the text. Two posters were developed for specific practices: the inoculation with different types of inoculants (Legumefix, Biofix), and guidelines for the staking of climbing beans.



Table 1: Overview of N2Africa Dissemination tools

| Number | Title | Country | Topic | Partners | Target audience |
|--------|---|---------------|---|-------------|---------------------------------------|
| 1 | Biological Nitrogen Fixation ne Nzira dze Kutengeswa Kwe Bhinzi: Bhuku ReVatungamiriri vevarimi Muchirongwa Che N2Africa MuZimbabwe | Zimbabwe | Biological nitrogen fixation, inoculation, general agronomy, enterprise development | | Training of trainers and lead farmers |
| 2 | Better groundnut for farmers in Nigeria | Nigeria | Groundnut, general agronomy | ASHC | Extension |
| 3 | Better cowpea for farmers in Nigeria | Nigeria | Cowpea, general agronomy | ASHC | Extension |
| 4 | Better soybean for farmers in Nigeria | Nigeria | Soybean, general agronomy | ASHC | Extension |
| 5 | Como inocular a soja: uso do inoculante legume Fix | Mozambique | Inoculation, soybean | CLUSA, ASHC | Training of trainers and lead farmers |
| 6 | Better soybean through good agricultural practices: Zimbabwe | Zimbabwe | Soybean, general agronomy | ASHC | Extension |
| 7 | Better soybean through good agricultural practices: Rwanda | Rwanda | Soybean, general agronomy | ASHC | Extension |
| 8 | Better cowpea through good agricultural practices: Zimbabwe | Zimbabwe | Cowpea, general agronomy | ASHC | Extension |
| 9 | Better beans through good agricultural practices: Rwanda | Rwanda | Common bean, general agronomy | ASHC | Extension |
| 10 | Biological nitrogen fixation in grain legumes | All countries | Biological nitrogen fixation | | Training of trainers and lead farmers |
| 11 | Better cowpea through good agricultural practices: Zimbabwe | Zimbabwe | Cowpea, general agronomy | ASHC | Extension |
| 12 | Better groundnut through good agricultural practices: Zimbabwe | Zimbabwe | Groundnut, general agronomy | ASHC | Extension |
| 13 | Better sugar bean through good agricultural practices: Zimbabwe | Zimbabwe | Common bean, general agronomy | ASHC | Extension |



| Number | Title | Country | Topic | Partners | Target audience |
|--------|--|---------------|---|--------------|---------------------------------------|
| 14 | Better beans through good agricultural practices: Ethiopia | Ethiopia | Common bean, general agronomy | ASHC | Extension |
| 15 | Better soybean through good agricultural practices: Ethiopia | Ethiopia | Soybean, general agronomy | ASHC | Extension |
| 16 | Banco e Inoculante | Mozambique | Seed bank, inoculation, soybean | USAID | Extension |
| 17 | How to inoculate soybean: using Legume Fix | All countries | Inoculation, soybean | ASHC | Extension |
| 18 | Staking climbing beans | All countries | Climbing bean, staking | ASHC | Extension, Lead farmers |
| 19 | Biological Nitrogen Fixation and Grain Legume Enterprise (in French) | DRC | Biological nitrogen fixation, inoculation, general agronomy, enterprise development | | Training of trainers and lead farmers |
| 20 | Practical Steps to Inoculant Application – Slurry Method (Poster) | Ghana | Inoculation | KNUST | Training of trainers and lead farmers |
| 21 | Legume inoculation technology manual | Ghana | Inoculation | KNUST | Extension |
| 22 | Establishing a Business Plan for an Agricultural Enterprise: A Trainers Guide Manual 3 | All countries | Enterprise development | CIALCA, DGDC | Technical training |
| 23 | Participatory research extension approach: N2Africa extension method | All countries | Participatory research and extension methods | | Extension |
| 24 | A Ranking System for Legume Root Nodules. N2Africa Training Report | All countries | Nodulation scoring | | Technical training |
| 25 | Farmers' handbook for agricultural marketing: Manual for Trainers | All countries | Marketing | | Training of trainers and lead farmers |
| 26 | An Extension Manual for N2Africa Master Farmers (poster) | All countries | Extension, inoculation | | Training of trainers and lead farmers |
| 27 | Biological Nitrogen Fixation and Grain Legume Enterprise: Guidelines for N2Africa Lead Farmers | All countries | Biological nitrogen fixation, inoculation, general agronomy, enterprise development | | Training of trainers and lead farmers |



| Number | Title | Country | Topic | Partners | Target audience |
|--------|---|---------------|---|--------------------|---------------------------------------|
| 28 | Agro-Dealer Training Manual Zimbabwe 2012-2013 Season | Zimbabwe | Biological nitrogen fixation, inoculation | | Technical training |
| 29 | A revised manual for rhizobium methods and standard protocols | All countries | Rhizobiology | | Technicians, students |
| 30 | Master Farmer Training in Biological Nitrogen Fixation and Grain Legume Enterprise - Presentations plus practical | All countries | Biological nitrogen fixation, inoculation, general agronomy, enterprise development | | Training of trainers and lead farmers |
| 31 | Farmers' handbook for agricultural marketing | Zimbabwe | Marketing | | Farmers |
| 32 | Lead farmer guidelines for southern Africa | All countries | Biological nitrogen fixation, inoculation, general agronomy, enterprise development | | Training of trainers and lead farmers |
| 33 | Moisture Conservation in Arable Lands | Zimbabwe | Moisture conservation | | Extension |
| 34 | Inoculation of Legumes - Zimbabwe | Zimbabwe | Inoculation | | Extension |
| 35 | Legume Production Notes : Soyabean, Sugar bean, Cowpea and Groundnut | Zimbabwe | General agronomy, inoculation, processing | | Extension |
| 36 | Post-Harvest Handling Guidelines for Legumes | Zimbabwe | Post-harvest handling of legumes | | Extension |
| 37 | Farming as a Business - Zimbabwe | Zimbabwe | Enterprise development | | Extension |
| 38 | Master Farmer Guidelines (simplified) - BNF and Legume enterprise Chichewa | Malawi | Biological nitrogen fixation, inoculation, general agronomy, enterprise development | | Training of trainers and lead farmers |
| 39 | Mbinu bora za kuongeza uzalishaji wa Soya, mahindi na Mtama | All countries | General agronomy, soybean | | Extension |
| 40 | Legume inoculant technology and quality control procedures: Workshop manual | All countries | Inoculant production, quality control | Murdoch University | Laboratory technicians |
| 41 | Mince and Press soya milk | All countries | Processing, soybean | | Farmers |
| 42 | Seed Inoculation: Master Farmer Training Practical | All countries | Inoculation | | Training of trainers and lead farmers |



| Number | Title | Country | Topic | Partners | Target audience |
|--------|---|---------------|---|----------|---------------------------------------|
| 43 | Uogezaji Naitrojeni Kibaologia na Biashara ya Mazao ya Legumi: Maelezo ya Wakulima Wakuu wa N2Africa | All countries | Biological nitrogen fixation, inoculation, general agronomy, enterprise development | | Training of trainers and lead farmers |
| 44 | Kuweka Natrogeni Kibaologia (Swahili Nitrogen Cycle) | All countries | Nitrogen cycle | | Training of trainers and lead farmers |
| 45 | Biological Nitrogen Fixation and Grain Legume Enterprise: Guidelines for N2Africa Master Farmers | All countries | Biological nitrogen fixation, inoculation, general agronomy, enterprise development | | Training of trainers and lead farmers |
| 46 | Inoculant application instruction in Swahili | All countries | Inoculation | | Extension |
| 47 | Mwongozo wa Mafunzo ya Usindikaji wa Nafaka za Jamii Kunde: Ongezeko la Thamani kwa Maharagwe, Kunde, Karanga na Soya kwa Wakulima Wadogo Barani Afrika | All countries | Processing, post-harvest handling | | Extension |
| 48 | Grain legume processing presentation in Kiswahili | All countries | Processing, post-harvest handling | | Extension |
| 49 | Soybean varieties with photo references | All countries | Soybean varieties | | Extension |
| 50 | Grain Legume Processing Handbook: Value addition to bean, cowpea, groundnut and soyabean by small-scale African farmers | All countries | Processing, post-harvest handling | | Extension |
| 51 | Best practices to maintain high yields and grain quality of soyabean, English and Kiswahili version | Kenya | General agronomy, post-harvest handling | | Extension |
| 52 | Best practices to maintain high yields and grain quality of soybean | Kenya | General agronomy, post-harvest handling | | Extension |
| 53 | Integrated pest management for N2Africa legume crops | All countries | Pest management | | Extension |
| 54 | An Extension Manual for N2Africa Master Farmers: booklet cover | All countries | Biological nitrogen fixation, inoculation, general agronomy, enterprise development | | Training of trainers and lead farmers |



| Number | Title | Country | Topic | Partners | Target audience |
|--------|---|---------------|---|----------|---------------------------------------|
| 55 | Swahili: Biological Nitrogen Fixation and Grain Legume Enterprise: Guidelines for N2Africa Master Farmers | All countries | Biological nitrogen fixation, inoculation, general agronomy, enterprise development | | Training of trainers and lead farmers |
| 56 | Master Farmer Training Modules | All countries | Biological nitrogen fixation, inoculation, general agronomy, enterprise development | | Training of trainers and lead farmers |
| 57 | How to grow soybean | All countries | General agronomy, soybean | ASHC | Training of trainers and lead farmers |
| 58 | Rhizobia Strain Isolation and Characterisation Protocol | All countries | Rhizobia Strain Isolation and Characterisation | | Technicians, students |



3. Dissemination tools per topic

3.1 Biological nitrogen fixation and grain legume enterprise

The booklet on Biological Nitrogen Fixation and Grain Legume Enterprise has been developed for different countries, and in different languages. Topics covered go from the formation of farmer groups to explanations about nitrogen cycles, biological nitrogen fixation and the legume-rhizobium symbioses, management practices for the N2Africa target legumes, seed inoculation, on-farm technology testing, seed production, post-harvest handling, and grain legume marketing strategies. The booklet is fairly detailed, and is therefore targeted to the training of trainers and lead farmers – not the average farmer. The booklet “Biological nitrogen fixation in grain legumes” is a simplified and updated version, developed in the second phase of the project.

Table 2: N2Africa Dissemination tools on Biological nitrogen fixation and grain legume enterprise

| Number | Title | Country | Topic | Partners | Target audience |
|--------|---|---------------|---|----------|---------------------------------------|
| 1 | Biological Nitrogen Fixation ne Nzira dze Kutengeswa Kwe Bhinzi: Bhuku ReVatungamiriri vevarimi Muchirongwa Che N2Africa MuZimbabwe | Zimbabwe | Biological nitrogen fixation, inoculation, general agronomy, enterprise development | | Training of trainers and lead farmers |
| 10 | Biological nitrogen fixation in grain legumes | All countries | Biological nitrogen fixation | | Training of trainers and lead farmers |
| 19 | Biological Nitrogen Fixation and Grain Legume Enterprise (in French) | DRC | Biological nitrogen fixation, inoculation, general agronomy, enterprise development | | Training of trainers and lead farmers |
| 26 | An Extension Manual for N2Africa Master Farmers (poster) | All countries | Extension, inoculation | | Training of trainers and lead farmers |
| 27 | Biological Nitrogen Fixation and Grain Legume Enterprise: Guidelines for N2Africa Lead Farmers | All countries | Biological nitrogen fixation, inoculation, general agronomy, enterprise development | | Training of trainers and lead farmers |
| 30 | Master Farmer Training in Biological Nitrogen Fixation and Grain Legume Enterprise - Presentations plus practical | All countries | Biological nitrogen fixation, inoculation, general agronomy, enterprise development | | Training of trainers and lead farmers |
| 32 | Lead farmer guidelines for southern Africa | All countries | Biological nitrogen fixation, inoculation, general agronomy, enterprise development | | Training of trainers and lead farmers |



| Number | Title | Country | Topic | Partners | Target audience |
|--------|---|---------------|---|----------|---------------------------------------|
| 38 | Master Farmer Guidelines (simplified) - BNF and Legume enterprise Chichewa | Malawi | Biological nitrogen fixation, inoculation, general agronomy, enterprise development | | Training of trainers and lead farmers |
| 43 | Ugezaji Naitrojeni Kibaologia na Biashara ya Mazao ya Legumi: Maelezo ya Wakulima Wakuu wa N2Africa | All countries | Biological nitrogen fixation, inoculation, general agronomy, enterprise development | | Training of trainers and lead farmers |
| 44 | Kuweka Natrogeni Kibaologia (Swahili Nitrogen Cycle) | All countries | Nitrogen cycle | | Training of trainers and lead farmers |
| 45 | Biological Nitrogen Fixation and Grain Legume Enterprise: Guidelines for N2Africa Master Farmers | All countries | Biological nitrogen fixation, inoculation, general agronomy, enterprise development | | Training of trainers and lead farmers |
| 54 | An Extension Manual for N2Africa Master Farmers: booklet cover | All countries | Biological nitrogen fixation, inoculation, general agronomy, enterprise development | | Training of trainers and lead farmers |
| 55 | Swahili: Biological Nitrogen Fixation and Grain Legume Enterprise: Guidelines for N2Africa Master Farmers | All countries | Biological nitrogen fixation, inoculation, general agronomy, enterprise development | | Training of trainers and lead farmers |
| 56 | Master Farmer Training Modules | All countries | Biological nitrogen fixation, inoculation, general agronomy, enterprise development | | Training of trainers and lead farmers |



3.2 Technical trainings and protocols

At the start of the project, a manual was developed with guidelines for the participatory research and extension approach applied in N2Africa. It deals with the situation analysis, the role of farmer groups and lead farmers, different types of field trials and the participatory monitoring and evaluation of these trials. Also, a practical ranking system for the classification of root nodules was provided. A training manual on biological nitrogen fixation and inoculation was developed specifically for agro-dealers. Two protocols about rhizobium methods and strain isolation and characterization were produced as information to technicians and students working on rhizobiology, as well as a manual on the technology of legume inoculants and appropriate quality control.

Table 3: N2Africa Dissemination tools on Technical trainings and protocols

| Number | Title | Country | Topic | Partners | Target audience |
|--------|---|---------------|--|--------------------|------------------------|
| 23 | Participatory research extension approach: N2Africa extension method | All countries | Participatory research and extension methods | | Extension |
| 24 | A Ranking System for Legume Root Nodules. N2Africa Training Report | All countries | Nodulation scoring | | Technical training |
| 28 | Agro-Dealer Training Manual Zimbabwe 2012-2013 Season | Zimbabwe | Biological nitrogen fixation, inoculation | | Technical training |
| 29 | A revised manual for rhizobium methods and standard protocols | All countries | Rhizobiology | | Technicians, students |
| 40 | Legume inoculant technology and quality control procedures: Workshop manual | All countries | Inoculant production, quality control | Murdoch University | Laboratory technicians |
| 63 | Rhizobia Strain Isolation and Characterisation Protocol | All countries | Rhizobia Strain Isolation and Characterisation | | Technicians, students |



3.3 Rhizobium inoculation

A number of different leaflets and posters have been developed on the practical application of rhizobium inoculant to seeds, using different types of inoculants. These are mainly targeted to Lead farmers. The “Legume inoculation technology manual” and “Seed Inoculation: Master Farmer Training Practical” are more extensive manuals for extension officers.

Table 4: N2Africa Dissemination tools on Rhizobium inoculation

| Number | Title | Country | Topic | Partners | Target audience |
|--------|---|---------------|---------------------------------|-------------|---------------------------------------|
| 5 | Como inocular a soja: uso do inoculante legume Fix | Mozambique | Inoculation, soybean | CLUSA, ASHC | Training of trainers and lead farmers |
| 16 | Banco e Inoculante | Mozambique | Seed bank, inoculation, soybean | USAID | Extension |
| 17 | How to inoculate soybean: using Legume Fix | All countries | Inoculation, soybean | ASHC | Extension |
| 20 | Practical Steps to Inoculant Application – Slurry Method (Poster) | Ghana | Inoculation | KNUST | Training of trainers and lead farmers |
| 21 | Legume inoculation technology manual | Ghana | Inoculation | KNUST | Extension |
| 34 | Inoculation of Legumes - Zimbabwe | Zimbabwe | Inoculation | | Extension |
| 42 | Seed Inoculation: Master Farmer Training Practical | All countries | Inoculation | | Training of trainers and lead farmers |
| 46 | Inoculant application instruction in Swahili | All countries | Inoculation | | Extension |



3.4 Agricultural management practices for legumes

For each of the N2Africa target legumes (except chickpea and faba bean in Ethiopia), extension leaflets were developed in partnership with ASHC and based on request of the countries. Some of the leaflets for soybean were translated in Kiswahili. Also, manuals for moisture conservation and integrated pest management in legumes are available.

Table 5: N2Africa Dissemination tools on Agricultural management practices for legumes

| Number | Title | Country | Topic | Partners | Target audience |
|--------------------|---|---------------|-------------------------------|----------|-------------------------|
| Common bean | | | | | |
| 9 | Better beans through good agricultural practices: Rwanda | Rwanda | Common bean, general agronomy | ASHC | Extension |
| 13 | Better sugar bean through good agricultural practices: Zimbabwe | Zimbabwe | Common bean, general agronomy | ASHC | Extension |
| 14 | Better beans through good agricultural practices: Ethiopia | Ethiopia | Common bean, general agronomy | ASHC | Extension |
| 18 | Staking climbing beans | All countries | Climbing bean, staking | ASHC | Extension, Lead farmers |
| Cowpea | | | | | |
| 3 | Better cowpea for farmers in Nigeria | Nigeria | Cowpea, general agronomy | ASHC | Extension |
| 8 | Better cowpea through good agricultural practices: Zimbabwe | Zimbabwe | Cowpea, general agronomy | ASHC | Extension |
| 11 | Better cowpea through good agricultural practices: Zimbabwe | Zimbabwe | Cowpea, general agronomy | ASHC | Extension |
| Groundnut | | | | | |
| 2 | Better groundnut for farmers in Nigeria | Nigeria | Groundnut, general agronomy | ASHC | Extension |
| 12 | Better groundnut through good agricultural practices: Zimbabwe | Zimbabwe | Groundnut, general agronomy | ASHC | Extension |
| Soybean | | | | | |
| 4 | Better soybean for farmers in Nigeria | Nigeria | Soybean, general agronomy | ASHC | Extension |



| Number | Title | Country | Topic | Partners | Target audience |
|--------|---|---------------|---|----------|---------------------------------------|
| 6 | Better soybean through good agricultural practices: Zimbabwe | Zimbabwe | Soybean, general agronomy | ASHC | Extension |
| 7 | Better soybean through good agricultural practices: Rwanda | Rwanda | Soybean, general agronomy | ASHC | Extension |
| 15 | Better soybean through good agricultural practices: Ethiopia | Ethiopia | Soybean, general agronomy | ASHC | Extension |
| 39 | Mbinu bora za kuongeza uzalishaji wa Soya, mahindi na Mtama | All countries | General agronomy, soybean | | Extension |
| 49 | Soybean varieties with photo references | All countries | Soybean varieties | | Extension |
| 51 | Best practices to maintain high yields and grain quality of soyabean, English and Kiswahili version | Kenya | General agronomy, post-harvest handling | | Extension |
| 52 | Best practices to maintain high yields and grain quality of soybean | Kenya | General agronomy, post-harvest handling | | Extension |
| 58 | How to grow soybean | All countries | General agronomy, soybean | ASHC | Training of trainers and lead farmers |
| | All legumes | | | | |
| 33 | Moisture Conservation in Arable Lands | Zimbabwe | Moisture conservation | | Extension |
| 35 | Legume Production Notes : Soyabean, Sugar bean, Cowpea and Groundnut | Zimbabwe | General agronomy, inoculation, processing | | Extension |
| 53 | Integrated pest management for N2Africa legume crops | All countries | Pest management | | Extension |



3.5 Post-harvest handling, processing and marketing of legumes

Different training guides, farmers' handbooks and posters are available about quality aspects of post-harvest handling, the processing of legumes into different products (e.g. snacks, soybean milk, sauce), and the marketing of legumes. Two training guides specifically deal with 'farming as a business', and the development of business plans for agricultural enterprises.

Table 6: N2Africa Dissemination tools on Post-harvest handling, processing and marketing of legumes

| Number | Title | Country | Topic | Partners | Target audience |
|--------|---|---------------|-----------------------------------|--------------|---------------------------------------|
| 22 | Establishing a Business Plan for an Agricultural Enterprise: A Trainers Guide Manual 3 | All countries | Enterprise development | CIALCA, DGDC | Technical training |
| 25 | Farmers' handbook for agricultural marketing: Manual for Trainers | All countries | Marketing | | Training of trainers and lead farmers |
| 31 | Farmers' handbook for agricultural marketing | Zimbabwe | Marketing | | Farmers |
| 36 | Post-Harvest Handling Guidelines for Legumes | Zimbabwe | Post-harvest handling of legumes | | Extension |
| 37 | Farming as a Business - Zimbabwe | Zimbabwe | Enterprise development | | Extension |
| 41 | Mince and Press soya milk | All countries | Processing, soybean | | Farmers |
| 47 | Mwongozo wa Mafunzo ya Usindikaji wa Nafaka za Jamii Kunde: Ongezeko la Thamani kwa Maharagwe, Kunde, Karanga na Soya kwa Wakulima Wadogo Barani Afrika | All countries | Processing, post-harvest handling | | Extension |
| 48 | Grain legume processing presentation in Kiswahili | All countries | Processing, post-harvest handling | | Extension |
| 50 | Grain Legume Processing Handbook: Value addition to bean, cowpea, groundnut and soyabean by small-scale African farmers | All countries | Processing, post-harvest handling | | Extension |



References

Turner, A. (2011), Dissemination Tools Produced, www.N2Africa.org, 17 pp.

Woomer, P.L. (2010), Biological Nitrogen Fixation and Grain Legume Enterprise: Guidelines for N2Africa Master Farmers. Tropical Soil Biology and Fertility Institute of the International Centre for Tropical Agriculture, Nairobi, 17 pp.



List of project reports

1. N2Africa Steering Committee Terms of Reference
2. Policy on advanced training grants
3. Rhizobia Strain Isolation and Characterisation Protocol
4. Detailed country-by-country access plan for P and other agro-minerals
5. Workshop Report: Training of Master Trainers on Legume and Inoculant Technologies (Kisumu Hotel, Kisumu, Kenya, 24-28 May 2010)
6. Plans for interaction with the Tropical Legumes II project (TLII) and for seed increase on a country-by-country basis
7. Implementation Plan for collaboration between N2Africa and the Soil Health and Market Access Programs of the Alliance for a Green Revolution in Africa (AGRA) plan
8. General approaches and country specific dissemination plans
9. Selected soyabean, common bean, cowpea, and groundnut varieties with proven high BNF potential and sufficient seed availability in target impact zones of N2Africa Project
10. Project launching and workshop report
11. Advancing technical skills in rhizobiology: training report
12. Characterisation of the impact zones and mandate areas in the N2Africa project
13. Production and use of rhizobial inoculants in Africa
18. Adaptive research in N2Africa impact zones: Principles, guidelines and implemented research campaigns
19. Quality assurance (QA) protocols based on African capacities and international existing standards developed
20. Collection and maintenance of elite rhizobial strains
21. MSc and PhD status report
22. Production of seeds for local distribution by farming communities engaged in the project
23. A report documenting the involvement of women in at least 50% of all farmer-related activities
24. Participatory development of indicators for monitoring and evaluating progress with project activities and their impact
25. Suitable multi-purpose forage and tree legumes for intensive smallholder meat and dairy industries in East and Central Africa N2Africa mandate areas
26. A revised manual for rhizobium methods and standard protocols available on the project website
27. Update on Inoculant production by cooperating laboratories
28. Legume seeds acquired for dissemination in the project impact zones
29. Advanced technical skills in rhizobiology: East and Central African, West African and South African Hub
30. Memoranda of Understanding are formalized with key partners along the legume value chains in the impact zones
31. Existing rhizobiology laboratories upgraded
32. N2Africa Baseline report



33. N2Africa Annual Country reports 2011
34. Facilitating large-scale dissemination of Biological Nitrogen Fixation
35. Dissemination tools produced
36. Linking legume farmers to markets
37. The role of AGRA and other partners in the project defined and co-funding/financing options for scale-up of inoculum (Banks, AGRA, industry) identified
38. Progress towards achieving the vision of success of N2Africa
39. Quantifying the impact of the N2Africa project on Biological Nitrogen Fixation
40. Training agro-dealers in accessing, managing and distributing information on inoculant use
41. Opportunities for N2Africa in Ethiopia
42. N2Africa project progress report month 30
43. Review & Planning meeting Zimbabwe
44. Howard G. Buffett Foundation – N2Africa June 2012 Interim Report
45. Number of extension events organized per season per country
46. N2Africa narrative reports Month 30
47. Background information on agronomy, farming systems and ongoing projects on grain legumes in Uganda
48. Opportunities for N2Africa in Tanzania
49. Background information on agronomy, farming systems and ongoing projects on grain legumes in Ethiopia
50. Special events on the role of legumes in household nutrition and value-added processing
51. Value chain analyses of grain legumes in N2Africa: Kenya, Rwanda, eastern DRC, Ghana, Nigeria, Mozambique, Malawi, and Zimbabwe
52. Background information on agronomy, farming systems and ongoing projects on grain legumes in Tanzania
53. Nutritional benefits of legume consumption at household level in rural sub-Saharan Africa: Literature study
54. N2Africa project progress report month 42
55. Market analysis of inoculant production and use
56. Soyabean, common bean, cowpea, and groundnut varieties with high Biological Nitrogen Fixation potential identified in N2Africa impact zones
57. A N2Africa universal logo representing inoculant quality assurance
58. M&E workstream report
59. Improving legume inoculants and developing strategic alliances for their advancement
60. Rhizobium collection, testing and the identification of candidate elite strains
61. Evaluation of the progress made towards achieving the Vision of Success in N2Africa
62. Policy recommendation related to inoculant regulation and cross-border trade
63. Satellite sites and activities in the impact zones of the N2Africa project
64. Linking communities to legume processing initiatives
65. Special events on the role of legumes in household nutrition and value-added processing



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66. Media events in the N2Africa project
 67. Launching N2Africa Phase II – Report Uganda
 68. Review of conditioning factors and constraints to legume adoption and their management in Phase II of N2Africa
 69. Report on the milestones in the Supplementary N2Africa grant
 70. N2Africa Phase II Launching in Tanzania
 71. N2Africa Phase II 6 months report
 72. Involvement of women in at least 50% of all farmer-related activities
 73. N2Africa Final Report of the First Phase: 2009-2013
 74. Managing factors that affect the adoption of grain legumes in Uganda in the N2Africa project
 75. Managing factors that affect the adoption of grain legumes in Ethiopia in the N2Africa project
 76. Managing factors that affect the adoption of grain legumes in Tanzania in the N2Africa project
 77. N2Africa Action Areas in Ethiopia, Ghana, Nigeria, Tanzania, and Uganda in 2014
 78. N2Africa Annual Report Phase II Year 1
 79. N2Africa: taking stock and moving forward. Workshop report
 80. N2Africa Kenya Country report 2015
 81. N2Africa Annual Report 2015
 82. Value Chain Analysis of Grain Legumes in Borno State, Nigeria
 83. Baseline report Borno State
 84. N2Africa Annual Report 2015 DR Congo
 85. N2Africa Annual Report 2015 Rwanda
 86. N2Africa Annual Report 2015 Malawi
 87. Contract Sprayer in Borno State, Nigeria
 88. N2Africa Baseline Report II Ethiopia, Tanzania, Uganda, version 2.1
 89. N2Africa rhizobial isolates in Kenya
 90. N2Africa Early Impact Survey, Rwanda
 91. N2Africa Early Impact Survey, Ghana
 92. Tracing seed diffusion from introduced legume seeds through N2Africa demonstration trials and seed-input packages
 93. The role of legumes in sustainable intensification – priority areas for research in northern Ghana
 94. The role of legumes in sustainable intensification – priority areas for research in western Kenya
 95. N2Africa Early Impact Survey, Phase I
 96. Legumes in sustainable intensification – case study report PROIntensAfrica
 97. N2Africa Annual Report 2016
 98. OSSOM Launch and Planning Meeting for the west Kenya Long Rains 2017
 99. Tailoring and adaptation in N2Africa demonstration trials
 100. N2Africa Project DR Congo Exit Strategy



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101. N2Africa Project Kenya Exit Strategy
 102. N2Africa Project Malawi Exit Strategy
 103. N2Africa Project Mozambique Exit Strategy
 104. N2Africa Project Rwanda Exit Strategy
 105. N2Africa Project Zimbabwe Exit Strategy
 106. N2Africa Annual Report 2017
 107. N2Africa review of policies relating to legume intensification in the N2Africa countries
 108. Stakeholder Consultations report
 109. Dissemination survey Tanzania
 110. Climbing bean x highland banana intercropping in the Ugandan highlands
 111. N2Africa Annual Report 2018
 - 111A. N2Africa Annual Report 2018 Ethiopia
 - 111B. N2Africa Annual Report 2018 Ghana
 - 111C. N2Africa Annual Report 2018 Nigeria
 - 111D. N2Africa Annual Report 2018 Tanzania
 - 111E. N2Africa Annual Report 2018 Uganda
 112. N2Africa Dissemination tools



Partners involved in the N2Africa project

