



Supporting Soil Health Consortia in West Africa - facilitating wider uptake of better adapted ISFM practices with visible positive impacts on rural livelihoods

Final Narrative Report

Reporting period: 1 October 2013 – 31 March 2017

7/30/2017

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Document Ref.: WASHC2017_001

Project Code: 2013 SHP 005

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Acronyms

AEZ	Agro Ecological Zones
AFAP	African Fertilizer and Agribusiness Partnership
AGRA	Alliance for a Green Revolution in Africa
APRM	Annual Planning and Review Meeting
ASSS	Africa Soil Science Society
BFSHC	Burkina Faso Soil Health Consortium
BUNASOLS	Bureau National des Sols
CABI	Centre for Agriculture and Bioscience International
C4CP	The Feed the Future C-4 Cotton Partnership
CNRST	Centre National pour la Recherche Scientifique et Technique
CORAF/ WECARD	The West and Central African Council for Agricultural Research and Development / Conseil Ouest et Centre Africain pour la Recherche et le Développement Agricoles
CSHC	Country level Soil Health Consortium
CSIR	Council for Scientific and Industrial Research
CSIR_STEPRI	The Council for Scientific and Industrial Research_ Science And Technology Policy Research Institute
DAP	Diammonium phosphate
ECOWAS	The Economic Community Of West African States
E&SA CSHC	East & Southern Africa Country Level Soil Health Consortia
FMARD	Federal Ministry of Agriculture and Rural Development
GSHC	Ghana Soil Health Consortium
IAR	Institute for Agricultural Research
IAR&T	Institute of Agricultural Research and Training
IER	Institut d'Economie Rurale
IFDC	the international fertilizer development centre
IITA	The International Institute of Tropical Agriculture
INRAN	Institut National de la Recherche Agronomique du Niger
IPNI	International Plant Nutrition Institute
IPTT	Indicator Performance Tracking Table
ISFM	Integrated Soil Fertility Management
MLSHC	Mali Soil Health Consortium
NARES	The National Agricultural Research and Extension Systems
NGSHC	Nigeria Soil Health Consortium
NGCSSHC	Nigeria South Soil Health Consortium
NISHC	Niger Soil Health Consortium
OFRA	Optimising Fertilizer Recommendations in Africa
PAQSEN	Projet d'Amélioration de la Qualité et des Standards sur les Engrais au Niger

RAFIA	Recherche, Appui et Formation aux Initiatives d'Auto-développement
RCO	Regional Coordinating Office
RECA	Réseau National des Chambres d'Agriculture du Niger
REGIS-AG	Resilience and Economic Growth in the Sahel
SARI	Savanna Agricultural Research Institute
SHC	Soil Health Consortium
SP/CONEDD	Secrétariat Permanent du Conseil National pour l'Environnement et le Développement Durable
SRI	Soil Research Institute (Ghana)
WAAPP	The West Africa Agricultural Productivity Program
WAFP	The West Africa Fertilizer Program
WAFSF	The West Africa Fertilizer Stakeholders' Forum
WASHC	The West African Soil Health Consortium

Background

African farmers need better technologies, appropriate fertilizers and need to apply more sustainable soil and land management practices to prevent further degradation of their agricultural land and to reduce and finally close the yield gap. To improve food security and raise the income of the smallholder farm household sustainable intensification of staple crops should be targeted because farmers grow these crops for home consumption while the surplus is sold in the market to generate income. Access to input markets to acquire the required inputs and to output markets to enable them to sell their produce is a condition required for farmers to be able to increase their productivity. Likewise, it is important for the farmer to have access to information on these technologies and to know-how on how to apply the technologies. Information on integrated soil fertility management (ISFM), which includes the use of improved seeds and appropriate fertilizers, improved management of soil organic matter, together with good agronomic practices and all adapted to the local conditions, will advise the farmers on how to increase productivity on their fields; market information will tell them which products are available and help them to decide the right time to sell their produce. Wider uptake of better-adapted ISFM practices is needed to generate a tangible impact on smallholder farming households in Africa and consolidated action is required to improve farmer adoption of ISFM practices to improve soil fertility and productivity.

It is in this context that, in 2010, the Soil Health Program of the Alliance for a Green Revolution in Africa (AGRA) established country-level soil health consortia (CSHC) in key investment countries to bring together key stakeholders working on soil health interventions. The CSHC have been operational and successful to varying degrees. They have identified various areas of strength and weakness in their national activities during AGRA-facilitated meetings (August 2012 and October 2012) and in discussions with IITA, several challenges have been identified to achieving outcomes at scale. The following are lacking or insufficiently developed: (i) effective internal and external communication tools, (ii) harmonized protocols for data collection and interpretation, (iii) technical capacity for the development of ISFM recommendations, (iv) capacity to develop communication and awareness creation tools related to these recommendations, (v) synergized engagement of value chain actors, and (vi) monitoring and evaluation tools.

Subsequently, projects have been developed to support and facilitate the CSHC to deliver on outcomes at scale. This is done through strategic intervention aiming to establish the consortiums as the central repository of ISFM knowledge and information, strengthening their capacity to collate, analyze, and synthesize ISFM information, and to facilitate national and regional alliances of stakeholders for reporting, managing, and sharing knowledge and information related to ISFM. The aim in the end is to improve extension and the dissemination of ISFM technologies at scale, which, together with an improved and conducive environment, will lead to the improved uptake of ISFM technologies and a noticeable productivity increase. The project for West Africa comprises the CSHC of Burkina Faso, Ghana, Mali, Niger, and Nigeria and is being led by IITA.

The project grant document was signed in September 2013, marking the official start of the project but it was not launched until in December 2013. The subsequent launching of the project and CSHC in the individual countries took place only in subsequent months in 2014, with Burkina Faso CSHC being launched on 30 June – 1 July 2014 as the last. Because of this delay in the start-up of activities, a no-cost extension of five months was requested and

granted, with the end of the project set at January 31st, 2017. We have subsequently requested for a further no-cost extension of two months for the proper closure of the project at the 31st of March 2017. The closing event of the project was held at IITA, Ibadan on 22nd and 23rd of March 2017.

Semi- annual and annual progress reports have been submitted covering the period from September 2013 to July 2016. To synchronize the activities of the CSHC the decision was made to consider January 2015 as the end of Year 1 of the project, and the first annual report covered the period up to 31st of January 2015. This current document is the final narrative report on the progress of the project and summarize the achievements of the project over the past three years and as such also includes the report on the final half year of the project – August 2016 – March 2017 (for which no separate report will be submitted)

Summary of Progress

The project was launched on 10 - 12 December 2013 at IITA-Ibadan, under a bit of time pressure considering that the project agreement had been signed in September 2013. The launching event was well attended by representatives from the five CSHC, two representatives from IPNI, who were leading the sister project on the Country Soil Health Consortia from the East and Southern Africa region and a representative from AGRA. The kick-off meeting was important to reach common understanding what the project was about, to understand what the expectation from the various stakeholder groups are, agree on project outputs and deliverables and agree on a framework for the planning of activities. The disbursement of funds to the CSHC was subsequently made contingent upon the approval of the workplans submitted to the regional coordinating office.

The subsequent months were used for the establishment and launching of the country soil health consortia, with Burkina Faso being the last to launch their country soil health consortium on June 30th – July 1st, 2014. The regional coordinating office was also established during that time, with the project coordinator coming on board in March 2014 and who subsequently started the recruitment for a project secretary and database manager. Subsequently the visits to each of the country soil health consortia were planned and conducted to meet with partners, discuss organization of the CSHC, discuss workplans and assess risks to project implementation

During the first year of implementation the baseline survey was initiated in each of the countries, but the processing of the data took time and the reports on the results were long in coming. A consolidated report on the baseline survey was only presented in September. A first training workshop was organized in November 2014 on the development of information sharing products for the dissemination of ISFM information, in collaboration with CABI. Reporting emerged as an important constraint during the first year, which was partly because of the lack of harmonized tools for planning, risk assessments and monitoring and evaluation or because of these tools not being correctly used. The first year a lot of effort was put in developing and harmonizing these tools and in instructing the CSHC in the use of these tools. This, therefore, also became one of the main points on the agenda for the first annual planning and review meeting held in February 2015 in Bamako, Mali.

Thus, during first APRM time was devoted for internal progress assessment and identifying action points to address those activities that showed unsatisfactory progress. Similarly, an exercise was conducted to assess the internal risks of the project and to identify measures to

address those risk factors considered high risk. Another important topic addressed during the first APRM was the stakeholder involvement and communication and exercises were carried out to develop stakeholder engagement and communication strategies. All these exercises were intended to strengthen the capacity for project management, but also to strengthen the capacity for leading and managing the country soil health consortium. The consortium coordinators were for the first time exposed to these topics and the exercises were considered quite useful.

During the second year of the project, advances were reported by the CSHC on the development of information sharing products, policy briefs and position papers, but these resulted in only a limited number of concrete outputs during the year. Most of the outputs were generated in the third year of the project, concentrated towards the end of the project. Similarly, a lot of effort was spent on the training and sensitization of the various stakeholder groups, varying from the farmer organizations, agro-dealer, extension workers and district officers, with large numbers of people reported to having been trained or sensitized, however without evidence being provided because M&E data on these events not being systematically collected.

An international training event on data management and analyses with specific reference to ISFM and agronomic data was organized, with resource persons from aWhere, CABI (OFRA) and IITA, and with participants from the five countries, but not limited to staff of the 5 CSHC only. The training workshop was very well received and demonstrated the need for continued training and follow-up, if tangible outputs are expected.

While the second year of the project was in progress, in September 2015 AGRA raised concerns about the progress of the CSHC, specifically about the lack of outputs being generated and the lack of visibility of the CSHC. This was prompted by the fact the project was officially two year underway and indeed little concrete outputs had been delivered. Even though the project was effectively only one year in operation at that time, the concerns were legitimate. The following priorities were defined: development of information sharing products and development of a repository of information sharing materials (showing progress towards development of the CSHC as a one-stop-shop on ISFM information), the contribution to the OFRA book (both the country chapters as the general chapter on ISFM), the publishing of the position paper and policy brief by the CSHCs, and the improvement of the websites to improve visibility of the CSHC. The RCO conducted visits to the various CSHC and organized meetings to put an action plan in place. In the meantime, the RCO had already visited several institutions in Nigeria to broaden the stakeholder engagement with the Nigerian Country Soil Health Consortium, which would result in the establishment of an additional Soil Health Consortium for the southern region of Nigeria with separate funding and hosted by the Institute of Agricultural Research and Training, based Ibadan. The original Nigeria CSHC would continue to operate as the consortium for the northern region of the country. The Nigeria CSHC – Southern Node were represented for the first time at the second annual planning and review meeting conducted in Niger in February 2016.

In view of the above, the emphasis of the second annual planning and review meeting was on the planning of the year three activities with a focus on generating outputs. For that purpose, a template for the planning of the activities was designed for each CSHC to adhere to and to be finalized during the workshop. The topics for information sharing products for each of the CSHC to work on were identified and discussed. Also, the outline for the position paper and

policy briefs were discussed such that each CSHC would have a clear guideline for developing those. The requirements for the website were discussed giving clear guidelines on how to improve the visibility of the CSHC. The issue of stakeholder engagement and communication strategy was revisited, as was the ISFM database development and development of repository for ISFM information sharing products, indicating that the topics for the information sharing products should also be priority topics for the gathering of the ISFM data.

Considerable progress was made during the third year of the project. The establishment of Nigeria CSHC for the South-South resulted in an increase in the level of activities, with training of trainers' workshop conducted, a position paper produced, information sharing materials produced, and a successful launch of the consortium and the website. The Nigeria CSHC-SS had a catalytic effect in that further initiatives were taken to improve coordination in soil research Nigeria country wide, by establishing a body of regional research coordinators, with emphasis being put on integrated soil fertility management.

Ghana CSHC, Nigeria CSHC-South, Niger and Mali have developed several factsheets posters, farmers' guides and other information sharing materials. Burkina Faso collected a lot of information sharing materials which are listed on their website, though still need to be made available online. The same CSHC also developed the position papers and/or policy briefs that are being published, made available as well as activity being distributed. Nigeria CSHC-North, South, Ghana and Niger CSHC have collected a lot of data and information from publications on agronomic trials conducted within their respective countries and dealing with soil fertility management. A concerted effort was done towards the end of 2016 to see how to harmonize the way the data is organized and documented. Two training workshops were organized for intensive work on the databases, one for Nigeria CSHC North and South, and one for the Niger and Ghana CSHC. A final revision and quality control of the data is being conducted before the databases can be published.

During the third year of the project there have been several regional and international events in which the CSHC participated, and presented on behalf of the CSHC. The first time the WASHC project was represented at a major international event was at the Africa Green Revolution Forum in September 2014, in Addis Ababa, where AGRA organized a sided event. The second was at the 7th international conference organized by the Africa Soil Science Society Conference, held from 29th of May to 5th of June 2016 In Ouagadougou, Burkina Faso. It was co-organized by IITA and all the CSHC submitted a paper for presentation. Before that the 2nd Annual West Africa Fertilizer Stakeholders Forum was held from 18 to 20 May 2016 in Abuja, and one month later the West Africa Regional Workshop on the Updating of Fertilizer Recommendations was held from June 14-16 in Lomé, Togo. These events were well attended by members of the CSHCs, though not necessarily representing the CSHC, indicating that we still have some work to do in advocating for the CSHC. The invitations for these regional events are partly the results of earlier attempts to like the CSHC with other regional initiatives like the WAFP. We see at national level as well an increasing recognition of the CSHC with the CSHC being approached for information on ISFM and an increasing number of people/organization engaging with the CSHC.

The last half year of the project aimed at consolidating the efforts and achievements of the CSHC. AGRA organized two workshops aiming to synthesize results from AGRA implemented projects and to come up with best-bet fertilizer recommendations, to rank the ISFM approaches to soil fertility management in smallholder systems, and to propose strategies to

promote best bet ISFM practices. They held one workshop for the English-speaking countries and one for the French speaking countries. consortia were expected to organize meetings at country level to finalize these recommendations. So far Ghana CSHC has conducted such meeting and produced the report. For Nigeria updated recommendations on fertilizer formulations for each of the states already exist, and Nigeria CSHC-South convened a meeting to review these and come up with recommendations for fertilizer application. For the other countries, these recommendations still need to be formalized but these were presented during the closing event of the project.

The closing event of the project was held from 22nd to 23rd of March 2017, to give a summary of the achievements of the project. The biggest achievement and major outcome of the project is probably the conviction that there is an important role for the consortium to play. The consortia have shown to provide a platform for the various stakeholder groups and to be a unifying and integrative force, which is much appreciated. All CSHC also firmly believe there is a need to focus explicitly on ISFM as an entry point towards more sustainable agricultural production. All CSHC are therefore in the process of formalizing the consortium to be able to continue its activities.

Report on activities for the period August 1st, 2016 to March 31st, 2017

Activities related to developing harmonized fertilizer recommendations and recommendations on ISFM

AGRA organized two workshops aiming to synthesize results from AGRA implemented projects in the West Africa region with emphasis on making best-bet fertilizer recommendations and to rank the best ISFM approaches to soil fertility management. The purpose of the workshop was to inform the country business plans being developed within the context of the new Farmers Solutions program of AGRA. The one workshop that was intended for the English-speaking countries, was held in Hole, Ghana on 18-22 September 2016. The consortia from Ghana and Nigeria (2) participated. The other workshop was organized for the French speaking countries and held from 4-6 October 2016 in Ouagadougou, Burkina Faso. The CSHCs of Mali, Niger and Burkina Faso participated. The other participants were from other AGRA supported projects, that are also considered to be part of the CSHC. Follow-up meetings were organized by the CSHC in the various countries, notably Ghana, Niger and Nigeria, to finalize the harmonization of the fertilizer recommendations and to synthesize results in as far the recommended ISFM practices and technologies are concerned.

The project coordinator participated in both workshops and gave a presentation on the framework for making ISFM recommendations and for the delivery and dissemination of ISFM technologies and practices. The presentation puts fertilizer recommendations in the context of effort to increase fertilizer consumption by farmers as part of facilitating wider uptake of productivity enhancing technologies, which is the mandate of the Country Soil Health Consortia. It provides guidance to the CSHC on what needs to be done to stimulate wider uptake of ISFM technologies to enhance productivity and served as a reminder to the workshop that formulating fertilizer recommendations and identification is just a start.

During the workshop, existing fertilizer recommendations were reviewed and a first attempt was made towards harmonizing the various recommendations that exist (e.g. official

recommendation issued by government and recommendations from the OFRA project for example). For Nigeria, soil and crop specific fertilizer recommendations were issued by FMARD in 2011, but these seem to contrast with the recommendations from the OFRA project. The FMARD recommendations do include recommendation on micronutrients to be part of the fertilizer formulations for the various states and crops, which is an important improvement. The best-bet ISFM recommendations concentrated on maize-legume systems (as intercrop or crop rotation) and the combined use of organic and inorganic fertilizer, together with improved germplasm for maize (e.g. striga resistant varieties) and cassava.

The Nigeria South Soil Health Consortium organized a meeting from 14 – 15 February 2017 to review and finalize the fertilizer recommendations for southern ecologies, both regarding the fertilizer formulations and application rates. Fertilizer formulations were defined for cereals, fruit and vegetables, leafy vegetables, roots and tubers and legumes for the individual agro-ecologies for the south-west and south-east region of Nigeria. Nutrient applications rates are also provided for the same crop categories for each of the agro-ecologies. The application rate depends on the soil fertility status as determined by SOM %, Total N % and the available P. Further details are provided in the report of the meeting. With respect to the recommended ISFM technologies and practices, the Nigeria South SHC were the only one to evaluate the technologies they based on effectiveness and adoption potential (as instructed) During the stakeholder consultative meeting held December 7th, 2016, the consortium evaluated the promoted ISFM technologies in terms of effectiveness and adoption potential. Of the 10 technologies identified 4 are considered highly effective and have high adoption potential. These (1) the combined use of inorganic and organic fertilizer, (2) the use of vetiver grass strips, (3) veticompost, and (4) soils testing for site specific fertilizer recommendations (in so far this can be categorized as technology or practice).

For Ghana, the situation was similar. SARI has produced fertilizer recommendations that deviates considerably from the recommendations that OFRA makes for the specific AEZ, especially regarding the recommended rates for P and K. An attempt was made during the workshop to harmonize the recommendations and this was also presented. Ghana CSHC organized a follow up meeting on 25th-26th October 2016 in Kumasi to finalize the harmonization of the fertilizer recommendation. They came up with recommendations for new fertilizer blends and applications rates for maize, cassava, rice and soybean for the various AEZ. The report of the workshop is available.

In the AGRA-organized workshop held in Ouagadougou there was less emphasis on the fertilizer recommendations, rather presentations focused around the topics of soil and soil fertility, fertilizers, improved crop varieties and mechanization, and discussion were organized per country to on the question of how to capitalize on the achievements of the various projects for the agricultural transformation in those respective countries.

Mali CSHC are promoting 8 different technologies or integrated soil fertility management practices for the various crops (millet, maize, sorghum, and cowpea) as single crop or crop combinations (maize-sorghum, millet-cowpea, maize-cowpea and sorghum-groundnut) and may include the use of improved varieties, the use of microdosing, the use of organic manure, the technology of 'assisted natural regeneration', the use of Zai, stone lines and other. Technologies are recommended for specific agro-ecological zones. The recommended technologies are specified in the project summary report on fertilizer and ISFM recommendations. Furthermore, recommendations on fertilizer application are provided for

the rainfed maize, rainfed rice, rainfed sorghum and lowland rice for the pre-guinea savanna zone, the south Soudan savanna and the north Soudan savanna zones and for the various scenarios of resources availability. These recommendations are based on the results from the OFRA project

Burkina Faso had earlier identified innovations in ISFM that are considered successful. Fertilizer recommendations were considered a partial success, because of the limited availability and poor access to fertilizers as well as because of problems with the reliability of the rainfall over time. During the AGRA workshop, it was mentioned that the fertilizer doses for maize, rice, sorghum, millet, groundnut and cowpea need to be optimized for the various AEZ and that the recommendations need to be translated in local language to promote the use of fertilizers. Microdosing of fertilizers especially combination with the use of organic resources is considered a technology that is ready for scaling, without fertilizer application rates being specified. Otherwise, use of soil protection techniques like zaï and ‘half-moon’ are considered successful, as well as the urea deep placement and use of ‘pile composting of crop residues’.

During the workshop, Niger reported on the results of various project towards ISFM recommendations, including fertilizer recommendations. A workshop was held on 27 and 28th of February 2017 to work on the further synthesis and harmonization of the ISFM recommendations. Applications rates for microdosing for cereals (millet and sorghum) has been determined at 6 g NPK (15-15-15)- or 2 g DAP per planting station plus 1 g of urea for top dressing, for example. However, it is mentioned that these recommendations should still be compared and possibly harmonized with what OFRA is recommending for optimal doses. Another recommended technology consists of the combined use of organic manure and chemical fertilizer (2 handful of manure with 6g of NPK (15-15-15) spot applied at seeding plus 3g of urea after the first weeding. Other recommendations are provided for cereal – legume strip or inter cropping. Furthermore, recommendations are provided for the deep placement of urea super granules, resulting in reduced fertilizer application rate of 100 kg/ha and reduced seeding rate of 20 kg/ha. Furthermore, quite many improved varieties for the different types of crops have resulted from research. Further details can be obtained from the project report compiled from the various CSHC report on the synthesis of results from the project activities.

Activities related to the development of the ISFM legacy database

Two workshops were organized to assist CSHC in finalizing their ISFM legacy database. Though progress had been made on developing metadata sets for the ISFM legacy data, we had not been able to agree on one final metadata standard and the various countries had adopted different templates for entering their data. Also, the way the data was structured differed from one CSHC to the other. The workshop, therefore, aimed at defining the metadata set that is acceptable to all, to agree on how the data is structured and to exercise mapping the data from the various CSHC using the final metadata set and agreed data structure. Attention was also devoted to the control of data quality. Data quality deals, for example, with how missing data is handled, the consistency in the way the data is entered and looking at data integrity (e.g. referential integrity to make sure that the links between data held in the various spreadsheets are well maintained).

One workshop was organized for the Nigeria Soil Health Consortia for the Northern and

Southern node, from 19/10/2016 – 21/10/2016; the second workshop was for the Niger and Ghana CSHC held from 31/10/2016 to 02/11/2016. These four CSHC had invested considerable effort in gathering ISFM legacy data. After the workshops, considerable time was taken to extensively review the databases from each CSHC independently, to make necessary corrections to assure that the data contained in the database is accurate and reliable and herewith fit for use. Each CSHC has its own database implemented in EXCEL. Data source has been published articles, technical reports, student thesis and other from national institutions. The IAR&T database contains 55 data sets (that is data from 55 different sources or papers), IAR has collected data from 61 sources, Ghana CSHC has 73 data sets in their database, and Niger finally included 66 data sets, bringing the total to 255 data sets reporting on the results from experiments on ISFM. Noteworthy is that by far most of the data refers to experiments or trials with Maize. Only for Niger the dominant crop has been millet. For the other crops data for only a very limited number of experiments are available and not enough to allow for a meaningful synthesis of the results. Having a well-defined metadata set and properly documented database allows us to include data from other databases, like the OFRA legacy database. For now, there is not enough data in the database on crops like cassava, yam, millet, sorghum and a range of other crops to be able to provide crop specific recommendations on the soil fertility management. This signifies that a concerted effort is required to collect data and information from additional sources and that there is an urgent need for doing ISFM trials on underrepresented crops at the national level.

Time was spent on documenting the metadata set, developing the vocabulary for the ISFM trials to facilitate the data communication. We also spent time on developing a relation database for ISFM legacy data, because EXCEL does not provide a suitable environment for the proper management of this data. Please see the milestone report on ISFM data management for further details.

Another aspect of data management concerns not the legacy data, but the capture of data from trials and experiments itself. We have invested in the development of a database, that has largely the same structure and design as the database for the legacy data, only that you must make provision for capturing data on the response of treatments for individual plots. The metadata sets and the ISFM trial vocabulary equally applies to this ISFM database. We want to take advantage of field trials as well as demonstration plots to draw solid conclusion on the effectiveness of ISFM practices and technologies. This requires that data is collected in the a in a harmonized way. To make this happened protocols and data templates are developed to be adopted by those that implement these trials. Niger CSHC has developed standard format (templates) for the data collection for Farmers Field Schools as well as for demonstration plots. Mali CSHC has done the same for the various ISFM technologies they are demonstrating through the outreach and development partners. What is missing, however, are the protocols for the data collection itself. The project has collected protocols from the various projects and for the various crops to guide partners on how the data collection is done.

Lessons learned and project close-out

For the close out of the project a project close out report was developed, identifying and scheduling the various activities for closing the project, including those activities that were still outstanding. A no-cost extension of two months was requested and approved to allow for the proper closure of the project by March 31st, 2017.

The planning for the close out concentrated on generating outstanding outputs for the project; that is the ISFM and fertilizer recommendations (reported above), the development of outstanding information sharing products (reported below) and drawing of the lessons learned from the project implementation. Each CSHC, apart from Burkina Faso, conducted a 'lessons learned' workshop and for the project in total a 'lessons learned and close-out' meeting was held on 22nd and 23rd of March 2017. The 'lessons learned' workshop served as the closing event for the individual country projects and the regional project. As such, the achievements were reported and evaluated and the continued operation of the CHSC was discussed.

The RCO prepared guides for the CSHC on how to conduct the 'lessons workshop' and for drawing the lessons learned. The lessons learned has two aspects. One aspect was related to the achievements of the CSHC and how to evaluate this, for which the RCO developed an M&E tool. The other aspect was erected to draw lessons learned from how the project and CSHC had tried to facilitate the wider uptake of ISFM technologies (the main objective of the project) and from this to provide recommendations on how the facilitation can be improved.

The project had not adopted an explicit theory for scaling out to ISFM, based on which the strategy was formulated. Rather, this was implicit in the activities and outputs identified and planned and expected outcomes of the project. Therefore, the RCO developed a theory for scaling out of ISFM and developed guiding questions for learning lessons on the facilitation of this process. The theory of scaling revolves around the following:

1. identification of suitable and scalable ISFM technologies, based on their qualification in terms of effectiveness (what are the conditions required to guarantee their effectiveness) and their adoption potential (differentiating between the different categories of farmers, based on the orientation and production objectives and resource endowments)
2. Documentation of the ISFM technologies and practices and instruction on the application
3. The best practices for the delivery and dissemination of the technologies, identifying the appropriate delivery mechanisms whereby a larger number of farmers can be reached, targeting of farmers (or farm types) for which the technologies are most suited and the evaluation of the technology on farmer's fields.
4. Advocacy for ISFM to get the policy support at institutional and government levels and to engage with the right partners in the scaling out ISFM
5. Developing capacity and to build a cadre of young people to provide the technical and advisory services required for scaling of the technologies.

Considering the outputs delivered by the project and CSHC, we observe that we have only partly achieved these objectives. The question though whether these are suitable tasks for a consortium to implement and carry out (or whether a consortium is the most effective organizational structure), especially if one considers that the aim of the project is to facilitate the wider uptake of ISFM technologies, which seems to point towards the need for institutionalization of these activities.

This resulted in a final discussion during the closing event on questions (1) whether soil health consortia and platforms are actually useful constructs in addition to already existing

cooperation and collaborative agreements, (2) whether ISFM is maybe a too complicated proposition and not a useful entry point from promoting sustainable soil management practices, (3) whether the research institutions are the most suitable institutions to host the soil health consortia, and (4) whether the soil health consortia have a unique selling point that would make it more easy to raise funds or whether we should be looking for alternative funding strategies. The meeting responded with a resounding support for the CSHC, based on their own experience of how the consortia have been able to break down boundaries between institutions and establish stronger links between research, development and policy. The meeting was also of the opinion that ISFM does provide a relevant entry point; that, however, challenges are with terminology used and understanding of whether ISFM should be promoted as a package or not (confusion between ISFM as a set of principles and as a set of practices and technologies to be promoted). On the funding, it was remarked that agriculture should be approached as a business proposition and that ISFM should also be seen within the context and perspective of the value chain (that is adds value in the production). Finally, the meeting believed the research institutes are the right institutions to host the soil health consortia, which is already illustrated by the institutes having offered to further host and facilitate the country soil health consortia and which is justified by the convening power the institutes have and their ability to network among the development partners and government institutions.

Institutionalization of the country soil health consortia

The ‘lessons learned’ workshop was planned as a close-out meeting as well, in which the achievements were presented and reviewed and in which the continued operation of the consortium was discussed in view of the imminent closure of the project. In some countries (e.g. Nigeria South and Niger) a separate meeting was held to discuss the exit strategy and agree on some modus to continue operation of the consortium. The project was written to provide support to existing country soil health consortia. In practice, however, the consortia still had to be established and, rather than providing support, the project was much about guiding the country teams in the establishment of the consortia and the development and implementation of the activities. The consortia were operated more like a project than as a consortium per se. Already quite early in the project attention was devoted towards the formalization or institutionalization of the consortiums in the various countries, considering that having a well-established and functioning consortium at the end of the project would probably be the biggest achievement, whereby the activities the consortia would engage in would mainly serve to illustrate what the benefits of a consortium would be and to convince stakeholder to engage with the consortium in a structural manner.

To this end, and while waiting for the formal establishment of the consortiums, we recommended the country soil health consortia would issue a charter or manifesto, a public declaration of the policy and aims of the consortium, that would signify the factual establishment of the consortium or a confirmation of the intend of the consortium to continue its operations. The regional coordinating office prepared a template as a kind of blueprint of the charter document for the CSHC to adapt and adopt. The Ghana CSHC, the Nigeria South SHC and Mali CSHC have issued a charter. Nigeria North SHC has discussed the charter during the lessons learned workshop and are working on a final document

Niger has evolved into a consortium. The charter and associated Niger CSHC has developed a charter and associated regulatory texts have been adopted by the general assembly of March

17, 2017. These tests have been submitted to the ministry of internal affairs and they are awaiting now the formal recognition of the consortium.

Institutionalization of the CSHC activities is also achieved if some of the tasks and responsibilities are accommodated in other consultative bodies. The establishment of a national body of regional coordinators for soil research from the six geopolitical zones in Nigeria, at the inaugural meeting held at IAR&T at 24 and 25 of January 2017 at Ibadan, was inspired by the Nigeria Soil Health Consortium and is one of the outcomes or spin-offs from the project. This body aims to coordinate soil related research in Nigeria in which integrated soil fertility management will be a focal point. Better coordinated research on ISFM is needed to fill the knowledge gap on ISFM for the various crops and will help facilitating the wider scale adoption of ISFM technologies and practices in Nigeria.

Burkina Faso CSHC had initiated talks and prepared an inter-ministerial text for the formal establishment of the soil health consortium already in 2015. The consortium is member of the national platform on 'sustainable land management' that which is hosted by the Ministry of Environment and which implies the recognition of the consortium. The consortium takes part in the national dialogue on Rural Development, Food Security and Environment by participating in session of the '*Cadre Sectoriel de Dialogue*'. We have no further update on the status of the Consortium though.

Achievements

Objective	Activity	Output ¹	Outcome
Objective 1: To improve access by smallholder farmers and other stakeholders to ISFM innovations	1.1 Establishment and operation of the Country Soil Health Consortium	WASHC Project Launch Reports: <ul style="list-style-type: none"> • _Report of the WASHC Project Launch [WASHC2013_002] Consortium Launch Reports: <ul style="list-style-type: none"> • WASHC-Launch of the Burkina Faso Soil Health Consortium, June 30 – July 1, 2014 [BFSHC2014_002] • Programme for Project Planning of the GSHC and inauguration of the Steering Committee [GSHC2014_001] • Meeting of the national launch of the project consortium SHP- Mali [MLSHC2014_003] • Report on the Launch of the Niger SHC [NISHC2014_004] • Inauguration Report of Nigerian Soil Health Consortium [NGSSH2016_012] Consortium Charters: <ul style="list-style-type: none"> • South Nigeria Soil Health Consortium Charter [NGSSH2017_002] • Consortium National Mali Project Charter [MLSHC2017_004] • Consortium Charter Niger [NISHC2017_082] • Consortium Charter Ghana [GSHC2017_009] 	<ul style="list-style-type: none"> • Six consortiums established, rather than originally planned five, with an office address and web addresses providing data and information on ISFM and herewith having improved access to ISFM innovations. • All consortiums are determined to continue their operations and have taken action to getting their consortiums institutionalised. Meanwhile our partner institutions are committed to host the consortium secretariats.
	1.2 Conduct stakeholder mapping and analyses; develop and implement stakeholder	Regional Coordinating Office: <ul style="list-style-type: none"> • The WASHC Project Stakeholder Mapping & Categorization Report [WASHC2015_033] Niger SHC	<ul style="list-style-type: none"> • Stakeholder and partners are aware of the consortiums and a more directly engaged with the work of the consortiums; which has led to a closer collaboration between the different institutions.

¹ Between square brackets are the document reference numbers

	engagement strategy	<ul style="list-style-type: none"> Stakeholder communication and engagement strategy [NISHC2016_008] A directory of agro-dealers in 6 regions of Niger [NISHC2016_013] Update of directory of agro-dealers in three additional regions and database established containing 540 agro-dealers. [NISHC2016_014] 	<ul style="list-style-type: none"> There is a more conscientious approach to the engagement with stakeholders and the need for improved communication. More effective communication and provision of access to ISFM best bet technologies.
	<p>1.3 Collect analyse and synthesize baseline data on ISFM to inform training needs and priority action for generating knowledge and information sharing products.</p>	<p>Regional Coordinating Office:</p> <ul style="list-style-type: none"> WASHC Baseline Survey Report [WASHC2015_029] 	<ul style="list-style-type: none"> The outcome of the baseline survey was that there were severe gaps in the knowledge of ISFM. There is partial understanding of ISFM in some stakeholder groups. The baseline survey highlighted that there is a need for sensitisation on ISFM, especially on how the principles of ISFM can be applied in practice. The outcome has been strong focus on sensitisation and training on ISFM of the project.
	<p>1.4 Develop tools for monitoring and evaluation of the use of data and information products developed by the CSHC</p>	<p>Regional Coordinating Office:</p> <p>Tools developed:</p> <ul style="list-style-type: none"> Risk assessment and analysis, and progress assessment and evaluation Indicator Performance Tracking Tool (English and French versions) M&E questionnaire Template <p>Reports:</p> <ul style="list-style-type: none"> Year 1 Progress Assessment and Analysis 2015 [WASHC2015_004] Year 1 Risk Assessment and Analysis Report 2015 [WASHC2015_005] IPTT (Yr 3 Q3 and Q4) Report IITA - AGRA (2016) - PJ 1636 [WASHC2017_069] Final M&E report [WASHC2017_070] 	<ul style="list-style-type: none"> Increased awareness of unsatisfactory progress achieved in year 1 and 2 of the project (with disparities between the perception of the RCO and the CSHC). There were disparities between the perceived levels of risks; the RCO perceived them to be high, whereas the CSHC perceived the risks to be generally low. More emphasis was placed on the monitoring project outputs. Stakeholder engagement was generally conceived as the major risks, jeopardising the continued operation and sustainability of the consortiums. And herewith having repercussions for the short and long term balance of the project, More realistic targets set, improved M&E and increased compliance.

			<ul style="list-style-type: none"> The outcome of the M&E exercise showed a high level of satisfaction of the CSHC team members on the performance of the consortiums in relation to all the project objectives. The increased uptake of ISFM technologies was considered highly relevant and the consortium was also considered highly relevant and important. The stakeholders share the opinion on the performance of the consortium and the importance of the works of the consortium. Stakeholders do indicate not to be very satisfied with the opportunities given to participate in the consortium activities, where the desire to participate in these activities was very high.
	<p>1.5 Conduct annual planning and review exercise; financial and progress reporting</p>	<p>Annual Planning and Review Meeting Reports</p> <ul style="list-style-type: none"> Report of the 1st Annual Planning and Review Meeting February 2015 [WASHC2015_017] Report of the 2nd Annual Planning and Review Meeting [WASHC2016_005] The WASHC Project Closeout Meeting Report [WASHC2017_022] <p>WASHC RCO Yearly Narrative Reports</p> <ul style="list-style-type: none"> Technical Report IITA-AGRA (01-10-13 to 28-02-14) [WASHC2014_010] 2nd interim Narrative report [WASHC2014_006] 3rd Interim Report on Progress and 1st Annual Progress Report [WASHC2015_018] Progress report-4th interim Feb-Jul'15 [WASHC2015_031] WASHC Projects 5th Interim Narrative Report and 2nd Annual Progress Report [WASHC2016_011] Interim Narrative Report (Feb '16-Jul'16) [WASHC2016_030] <p>*All financial Reports Submitted to AGRA directly, through IITA's Project Development and Administration Unit (PDAU) Office</p>	<ul style="list-style-type: none"> Better understanding of the essence of the project (objectives, mission and aim). Harmonization of the planning tool and better coordination between consortiums. Improved external communication and exposure of the project and the consortiums, through improved media coverage, both print media and radio and television broadcasting. This was especially so with the inclusion and engagement with the ministries and national institutions.

	<p>1.6a Develop the database/repository on ISFM</p>	<p>Regional Coordinating Office: Several intermediary documents on the development of the ISFM legacy database, including metadata standards and data collections templates, and final report on the development of the database.</p> <ul style="list-style-type: none"> • Metadata Standards for field experiments 2015 [WASHC2015_019] • Vocabulary_agronomic trials [WASHC2016_032] • Metadata structure [WASHC2016_033] • ISFM harmonized data Template final [WASHC2016_034] • Metadata implementation file [WASHC2016_035] • MSR 1.6a – ISFM data management and database development [WASHC2017_071] <p>The consortiums combined have stored 786 records in their ISFM legacy databases. The data refers to data captured from scientific articles and reports on ISFM related agronomic trials. The CSHC has developed their own ISFM legacy database, using a similar data structure..</p> <p>Consortium Repositories:</p> <ul style="list-style-type: none"> • Ghana SHC: Contains 73 datasets (data from 73 experiments) covering 17 crops in total, with maize being the most prominent. • Nigeria (North) SHC: Contains 61 datasets with a total of 19 crops with maize being the most prominent. • Nigeria (South) SHC: Contains a total of 55 datasets with a total of 441 treatments and a total of 23 crops, with maize being the most prominent. • Niger SHC: Contains a total of 66 datasets with a total of 4 crops with millet being the most prominent. <p>The Regional Coordinating Office has collected and stored in an offline repository a total number of 354 agronomic data sets from 1958 -2014 (56 Years):</p>	<ul style="list-style-type: none"> • Out of the six, four consortiums have legacy databases established. • Improved capacity to manage ISFM legacy data; to build and expand on ISFM legacy databases. • Legacy ISFM data from trials is very biased towards especially maize and millet and specific management practices. There is a need to increase and broaden the research to include more crops and on the effect of various management practices including crop nutrition to provide evidence for sound ISFM practices. • The meta data standards for the ISFM legacy data has raised awareness on the minimum required data and proper design of the trials and requirements for reporting on the data. This will contribute to improving the quality of the data and to improved management of the data. • Improved and standard documentation of agronomic data will enhance the use of the (legacy) data and integrated analyses of the data. • Dissemination of the knowledge and information-sharing products has resulted in better understanding, and know-how, on how to apply ISFM technologies.
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		<ul style="list-style-type: none"> • 82 agronomic data sets contained yield and soil data • 257 agronomic data sets contained yield data only • 15 data sets contained soil data only <p>The data sets contained data on 27 popularly grown crops in 8 countries in West and Central Africa (DR Congo, Ghana, Kenya, Malawi, Mali, Niger, Nigeria and Tanzania). The crops covered in this repository are as follows: Bambara groundnut, carrot, coffee, cucumber, fluted pumpkin, garden egg, Irish potato, oil palm, okra, plantain, roselle (Hibiscus), sesame, wheat, pepper, yam, sweet potato, tomato, sorghum, cassava, millet, rice, climbing bean, bush bean, groundnut, maize, cowpea, soybean. The metadata for the data sets in the repository still need to be collected and organized and will then be made available.</p> <p>Support documents Niger SHC:</p> <ul style="list-style-type: none"> • Rudiments Sur L'analyse De Données GIFS Sur R [NISHC2016_020] • Préparation De Données Sur La Gestion Intégrée De La Fertilité Du Sol (GIFS) Avec Un Tableur [NISHC2016_021] 	
	<p>1.6b Develop information sharing products and develop a repository for information sharing products</p>	<p>The CSHC have developed quite several information sharing products and collected many information sharing materials- that were otherwise no longer available – and have stored these in their repository of information sharing products. All these are listed below. The regional coordinating office has likewise collected many knowledge and information sharing materials. All these materials still need to be catalogued to improve discovery of ('search and find') and access to these materials.</p> <p>Burkina Faso Soil Health Consortium: The consortium host 102 knowledge and information sharing products on their consortium website, can be accessed upon user request.</p> <p>Ghana SHC Products Developed:</p>	<ul style="list-style-type: none"> • Print ready up to date materials on ISFM technologies are available for dissemination and are used to enhance the dissemination of the technology and is used for the further advocating for ISFM. • Consortiums have repositories of information and knowledge sharing products that are accessible to the stakeholders, where these were earlier not easily accessible. • A suite of information sharing products available in different formats (factsheets, farmer guides, technical notes, posters, success stories, tele broadcasts, radio broadcasts, agro dealer catalogues, manuals) on ISFM for a wide range of crops (Maize, Cowpea, Millet, Sorghum, Cotton, Tomato, Onion, Pepper, Sesame, Cowpea, Peanut) and in different languages allows for

	<p>Factsheet:</p> <ul style="list-style-type: none"> • Manure handling and storage [GHSHC2016_004] • Steps to composting [GHSHC2016_005] • Mineral fertilizers on Ghanaian Market [GHSHC2016_008] <p>Mali SHC Products Developed:</p> <p>Farmer Guides – Bambara:</p> <ul style="list-style-type: none"> • Fini gèrègèrè sènèli (Bambara) [MLSHC2017_023] • Kaba gèrègèrè (Bambara) sènèni [MLSHC2017_024] • Kaba ni Sanyô jèkasènè (Bambara) [MLSHC2017_025] • Kaba ni Sô jèkasènè (Bambara) [MLSHC2017_026] • Keninge gèrègèrè sènèni (Bambara) [MLSHC2017_027] • Keninge ni sô jèkasènè (Bambara) [MLSHC2017_028] • Kôôri ni kaba sènè fôfôli nyôgôn kô (Bambara) [MLSHC2017_029] • Sanyô gèrègèrè sènèni (Bambara) [MLSHC2017_030] • Sanyô ka sègè kèlèli (Bambara) [MLSHC2017_031] • Sanyô ni sô jèkasènè (Bambara) [MLSHC2017_032] • Sô gèrègèrè sènèni (Bambara) [MLSHC2017_033] • Tiga ni keninge sènè fôfôli nyôgôn kô (Bambara) [MLSHC2017_034] <p>Fiche Techniques:</p> <ul style="list-style-type: none"> • Association de cultures Mil - Niébé sur les anciens billons dans la plaine du SENO en zone Sahélienne du Mali [MLSHC2015_019] • La culture de niébé par les femmes dans le Zaï [MLSHC2015_020] • La culture de relais Maïs - Niébé dans la zone de production agricole Mali-sud [MLSHC2015_021] • Stratégie de production du mil sur les terres sèches et latéritiques au sahel [MLSHC2017_018] • Sécuriser la culture du mil dans les zones de production de maïs [MLSHC2017_019] • Sécuriser la production de sorgho dans les zones de 	<p>different channels to be used for dissemination of the information and improve the effectiveness.</p> <ul style="list-style-type: none"> ○ Information sharing products ranging on the following topic areas: women farmers, relay cropping, crop rotation, conservation agriculture, restoration of degraded soils, microdosing, warrantage system, manure handling and storage, composting, mineral fertilizers, organic fertilizers, erosion control, fungi control, soil fertility management, water harvesting, crop production, storage and the Zaï system.
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		<p>culture de maïs [MLSHC2017_020]</p> <ul style="list-style-type: none"> • La production du mil dans la rotation biennale niébé - mil a Cinzana dans le sahel [MLSHC2017_021] • La production de sorgho dans la rotation biennale niébé-sorgho a Katibougou dans le sahel [MLSHC2017_022] <p>Posters:</p> <ul style="list-style-type: none"> • Un système alternatif garantissant la sécurité alimentaire et le revenu agricole du foyer dans la zone cotonnière sud du Mali [MLSHC2015_013] • Transformation de terres dégradées héritées des parents en ferme de production agricole modèle [MLSHC2015_014] • Une Stratégie de culture de mil sur les terres sèches en zone sahélienne [MLSHC2017_035] • Les femmes profitent des terres dénudées pour produire abondamment du niébé destine a la vente [MLSHC2017_036] • Les paysans profitent de la succession des cultures pour garantir leur autosuffisance alimentaire en maïs [MLSHC2017_037] • Produire le niébé dans le système de culture de relai maïs-niébé pour pallier au déficit fourrager dans le terroir [MLSHC2017_038] • Les Femmes arrivent a produire du mil sur des terres abandonnées par les homes [MLSHC2017_039] <p>Success Stories:</p> <ul style="list-style-type: none"> • Ferme agropastorale de Amadou Dia de Diabougou, commune rurale de Sio (Mopti) [MLSHC2015_015] • Exploitation agricole familiale de Saïda Diawara du village de Madina Kouroulamini à Bougouni [MLSHC2015_016] • Exploitation agricole familiale de Jean DOUGNON du village de Anakana dans le cercle de Koro (région de Mopti) [MLSHC2015_017] • La ferme de Brama B. Guindo de Noumoudama dans le 	
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		<p>cercle de Bankass (région de Mopti) [MLSHC2015_018]</p> <p>Mali SHC Products Collected:</p> <p>Tele-Broadcasts:</p> <ul style="list-style-type: none"> • News Broadcast on Sorghum and Maize seed production in Mali (ORTM) [MLSHC2017_040] • News Broadcast on Groundnut seed production in Mali (ORTM) [MLSHC2017_041] • News Broadcast on Sorghum seed production in Mali (ORTM) [MLSHC2017_042] • News Broadcast on Sorghum production in Mali (ORTM) [MLSHC2017_043] • News Broadcast on Sorghum and Maize hybrid seed production (ORTM) [MLSHC2017_044] • News Broadcast on Hybrid seeds quadrupling Sorghum yields (ORTM) [MLSHC2017_045] • Sketch on Hybrid Sorghum (Bambara) [MLSHC2017_046] • Sketch on Microdose (Bambara) [MLSHC2017_047] • Sketch on Warrantage (Bambara) [MLSHC2017_048] <p>Niger SHC Products Developed:</p> <p>Factsheet:</p> <ul style="list-style-type: none"> • Tableau connaissances d'éléments de la GIFS [NISHC2016_039] <p>Fiche Techniques:</p> <ul style="list-style-type: none"> • Zaï (TASSA) Technique de valorisation des terres dégradées [NISHC2016_015] • Microdose d'engrais sur le Mil [NISHC2016_016] • Fabrication du Compost en tas à partir des Substrats Organiques [NISHC2016_017] • Fertilisation de Pomme de Terre [NISHC2016_027] • Microdose Fertilisation de Mil avec le DAP et l'uree [NISHC2016_028] • Microdose Fertilisation de Mil avec le NPK 15-15-15 et l'urée [NISHC2016_029] 	
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	<ul style="list-style-type: none"> • Fertilisation de Tomate [NISHC2016_030] • Fertilisation de Sorgho [NISHC2016_032] • Fertilisation de Poivron [NISHC2016_033] • Fertilisation d'Oignon [NISHC2016_034] • Fertilisation d'Aubergine [NISHC2016_035] • Variétés de Millet 1 [NISHC2017_060] • Variétés de Millet 2 [NISHC2017_061] • Variétés de Millet 3 [NISHC2017_062] • Techniques Culturelles y Variétés de Sésame [NISHC2017_063] • Techniques Culturelles y Variété de Sorgho [NISHC2017_064] • Techniques Culturelles y Variété de Arachide 2 [NISHC2017_065] • Techniques Culturelles y Variété de Arachide 1 [NISHC2017_066] • Techniques Culturelles y Variété de Niébé 1 [NISHC2017_067] • Techniques Culturelles y Variété de Niébé 2 [NISHC2017_068] <p>Manuals:</p> <ul style="list-style-type: none"> • Guide méthodologique des démonstrations [NISHC2016_026] <p>Posters:</p> <ul style="list-style-type: none"> • Promotion de l'Utilisation des Engrais par la Technologie de la Microdose aux Poquets [NISHC2017_033] • Effect of NPK Microdose as Starter Dose on Sole Sésame, Groundnut and Cowpea cropping in the Sahel [NISHC2017_031] <p>Tele-Broadcasts:</p> <ul style="list-style-type: none"> • Application of microdose in an experimental field in N'Dounga (Kollo) [NISHC2017_008] 	
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	<ul style="list-style-type: none"> • Création d’une boutique d’intrants [NISHC2017_054] • Champ école paysan [NISHC2017_055] • Caractéristiques, fonctions et activités d’une boutique d’intrants [NISHC2017_056] • Fertilisation minérale chez les cultures maraichères [NISHC2017_057] • Les voyages d’échange d’expériences : Conseils pour en améliorer l’impact [NISHC2017_058] • Warantage (Haoussa) [NISHC2017_059] • Masu hannu da shuni na katin kayan gona (Haoussa) [NISHC2017_070] • Tsarin tahiyar da katin kayan gona (Haoussa) [NISHC2017_071] • Microdosing (Haoussa) [NISHC2017_072] • Gérant (Haoussa) [NISHC2017_075] • The buying and selling responsibility of the farm store (Haoussa) [NISHC2017_076] <p>Poster:</p> <ul style="list-style-type: none"> • Gestion intégrée de l’eau et des nutriments sur les plateaux latéritiques [NISHC2017_029] • Exemple de type de sol sur périmètre irrigué de la vallée du fleuve Niger [NISHC2017_030] • Digital soil salinity mapping with electrical resistivity data in irrigated paddy fields from Niger [NISHC2017_032] • Gestion des connaissances et genre [NISHC2017_077] • Gestion des intrants intégrant le genre [NISHC2017_078] • Le cycle de la capitalisation d’expériences [NISHC2017_079] • Problématique du genre dans la gestion des intrants agricoles [NISHC2017_080] <p>Radio - Broadcast:</p> <ul style="list-style-type: none"> • Les champs écoles paysans (Script) [NISHC2017_035] • Boutique des Intrants – Zarma (Haoussa) [NISHC2017_015] • Microdose – Zarma (Haoussa) [NISHC2017_016] 	
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	<ul style="list-style-type: none"> • Commande Groupée – Zarma (Haoussa) [NISHC2017_017] • Champ Ecole – Zarma (Haoussa) [NISHC2017_018] • Boutique D'intrants (Haoussa) [NISHC2017_019] • Champ Ecole (Haoussa) [NISHC2017_020] • Commande Groupée (Haoussa) [NISHC2017_021] • Microdose (Haoussa) [NISHC2017_022] • Warantage (Haoussa) [NISHC2017_023] • Utilisation des engrais et variétés améliorées (script) [NISHC2017_025] <p>Tele – Broadcast:</p> <ul style="list-style-type: none"> • Application of microdose in an experimental field in N'Dounga (Kollo) [NISHC2017_008] • Nigerian Consumers and crops grown in Niger (Zarma) [NISHC2017_012] • Opening the doors of Agriculture in Niger [NISHC2017_013] • Sketch on Warrantage in Niger (Haoussa) [NISHC2017_009] <p>Nigeria (North) SHC Factsheets:</p> <ul style="list-style-type: none"> • Recommended practices for cowpea production in the northern Nigeria savanna agro-ecologies [NGSHC2017_015] • Recommended practices for maize production in the northern Nigeria savanna agro-ecologies [NGSHC2017_017] • Mineral fertilizers in Northern Nigeria [NGSHC2017_019] <p>Nigeria (South) SHC: Factsheets:</p> <ul style="list-style-type: none"> • Soil Fertility Management [NGSSH2017_016] • Erosion Control on Farmland [NGSSH2017_017] • Common Fungi Diseases of Tomatoes and their control [NGSSH2017_018] • Compost preparation [NGSSH2017_019] 	
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		<p>Farmer Guides:</p> <ul style="list-style-type: none"> • Control of erosion using vertiver grass hedgerows [NGSSHC2017_020] • Soil fertility management guide [NGSSHC2017_021] • Construction of micro check dam for water harvesting on seasonal streams [NGSSHC2017_022] • ISFM for Maize Production [NGSSHC2017_015] 	
<p>Objective 2: To strengthen the capacity of stakeholders and institutions to provide technical knowledge and harmonized solutions on ISFM technologies</p>	<p>2.1 Conduct training and sensitization workshops on ISFM principles and practices for development organizations, extension services, farmer organization, and other local staff (based on knowledge gap assessment)</p>	<p>Burkina Faso SHC: In year 2 of the WASHC project the consortium stated that they had conducted two (2) training session on the proper and effective use of agricultural inputs. Whilst in year 3 they reported that 100 Farmers (men & women) trained on vegetable production techniques.</p> <p>Ghana SHC: Ghana CSHC reported that they had conducted ten (10) training and sensitization sessions</p> <p>Mali SHC: During the second year of the project the Mali SHC Mali CSHC reported they had conducted two (2) value-chain training workshops for agro-dealers and farmer organizations, a total of six (6) training and sensitization sessions Altogether; and in the third they reported to have had 24 farmers trained on improved peanut seed production and 28 farmer groups sensitized on ISFM.</p> <p>Nigeria (North) SHC: In year two of the project the Nigeria CSHC, for the South West reported one (1) ToT workshop on ISFM protocols. Northern Nigeria held two (2) sensitization events directed at the youth in Zaria under the theme of ‘Catch them young’. Various training materials collected and compiled by the NGSHC, 15 in total consisting of manuals, presentations related to ISFM, and 1 reference book on fertilizer use and management practices for crops in Nigeria.</p> <p>Nigeria SHC List of Training Materials</p> <ul style="list-style-type: none"> • Extension Teaching Methods ISFM [NGSHC2017_005] 	<ul style="list-style-type: none"> • Stakeholders have broadened knowledge and understanding on ISFM, how to apply it, and how to scale ISFM out. • Capacity to disseminate ISFM technologies contributed to the further scaling out of ISFM technologies. • Stakeholders and farmers have improved access to ISFM technologies.

		<ul style="list-style-type: none"> • Group formation and management [NGSHC2017_006] • Development of Extension Training Material [NGSHC2017_007] • Principles of Agricultural Extension Education [NGSHC2017_008] • How to conduct effective field visits and field days [NGSHC2017_009] • The roles of village] extension agents [NGSHC2017_010] • Sources and Sourcing for Agricultural Credit [NGSHC2017_011] • Research-Extension-Farmers-Inputs linkage System [NGSHC2017_012] • The Warrantage Credit System [NGSHC2017_013] • Principles of Integrated Soil Fertility Management [NGSHC2017_014] • Module 1_Basic definitions of soil and the concept of pedology [NGSHC2017_021] • Module 2_Nutrient needs and deficiencies [NGSHC2017_022] • Module 3_Basic soil management principles and practices [NGSHC2017_023] • Module 4_Basic agronomic principles for sustainable soil and crop productivity [NGSHC2017_024] • Module 5_Harvesting, Processing and Storage [NGSHC2017_025] • Fertilizer use & management practices for crops In Nigeria [NGSHC2017_026] <p>Nigeria (South) SHC: Training of trainer’s workshop conducted with representative from 6 states in South West Nigeria. A total of 36 extension agents trained on ISFM</p> <p>Niger SHC: Over the course of the second year of the project the Niger consortium reported they had conducted five (5) training of trainers (ToT) workshops on agricultural inputs. And in 2016 the consortium provided a survey report on training they</p>	
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		<p>had provided (NISHC2016_003).</p> <p>Niger SHC Training Modules:</p> <ul style="list-style-type: none"> • Module de formation sur les Dossiers Bancables pour les agro-dealers [NISHC2016_022] • Module de formation – Connaissances et l’utilisation des intrants agricoles [NISHC2016_023] <p>*Further information can be found in the narrative reports of each of the CSHC</p>	
	<p>2.2 Country level training on ISFM data analysis and synthesis of ISFM data</p>	<p>RCO:</p> <ul style="list-style-type: none"> • ISFM data management and analysis workshop report [WASHC2015_030] • Minutes of the ISFM Data Management Workshop for the Nigeria (North) SHC, Nigeria (South) SHC, Ghana SHC and Niger CSHC [WASHC2016_039] 	<ul style="list-style-type: none"> • Focus on collection and organisations of the data, rather than the analysis of the data, legacy data of ISFM trials. • Improved collection and documentation of agronomic data has opened possibilities for review and analysis of ISFM practices and the identification of best bet ISFM technologies. • The consortiums have been exposed to using R for doing ANOVA. • Participants have access to and can use the Dev-aWhere platform for uploading and organising data for analyses and visualization. • The CSHC have obtained the capacity to manage and further expand the ISFM legacy database using ISFM metadata and data collection templates.
<p>Objective 3: To enhance the dissemination of ISFM innovations by developing the national ISFM database and appropriate</p>	<p>3.1 Organize writeshops to produce information-sharing/extension materials</p>	<p>Mali SHC: Hosted 2 writeshops;</p> <p>Mali Writeshop 1: (listed are the document reference number - For full titles see products listed under Mali in 1.6b)</p> <p>Posters: MLSHC2015_013, MLSHC2015_014. Success stories: MLSHC2015_015, MLSHC2015_016, MLSHC2015_017, MLSHC2015_018. Fiche techniques: MLSHC2015_019, MLSHC2015_020, MLSHC2015_021.</p>	<ul style="list-style-type: none"> • The factsheets and farmer guides are presented in a more user-friendly format; as such are more effective at conveying ISFM messages. • Factsheets have been produced on topics on which little information was available to the farmers (like fertilizer that are available on the market) and the set of information sharing products is more comprehensive

<p>knowledge products</p>		<p>Their second writeshop saw to the production of 12 Farmer Guides, 5 Posters and 5 Fiche Techniques:</p> <p>Farmer Guides: MLSHC2017_023, MLSHC2017_024, MLSHC2017_025, MLSHC2017_026, MLSHC2017_027, MLSHC2017_028, MLSHC2017_029, MLSHC2017_030, MLSHC2017_031, MLSHC2017_032, MLSHC2017_033, MLSHC2017_034</p> <p>Fiche Techniques:</p> <ul style="list-style-type: none"> • MLSHC2017_018, MLSHC2017_019, MLSHC2017_020, MLSHC2017_021, MLSHC2017_022 <p>Posters:</p> <ul style="list-style-type: none"> • MLSHC2017_035, MLSHC2017_036, MLSHC2017_037, MLSHC2017_038, MLSHC2017_039 <p>The Ghana SHC hosted 1 writeshop and produced 3 factsheets:</p> <p><u>Ghana SHC Writeshop outputs</u></p> <ul style="list-style-type: none"> • GSHC2016_004, GSHC2016_005, GSHC2016_008 <p>The Niger SHC hosted 2 writeshops to develop 6 fiche techniques and 1 factsheet in the first writeshop and 14 fiche techniques and 3 posters in the second series.</p> <p><u>Niger SHC 1st Writeshop outputs</u></p> <p>Factsheets:</p> <ul style="list-style-type: none"> • NISHC2016_039 <p>Fiche Techniques:</p> <ul style="list-style-type: none"> • NISHC2016_015, NISHC2016_016, NISHC2016_017, NISHC2016_027, NISHC2016_028, NISHC2016_029, <p><u>Niger SHC 2nd Writeshop outputs</u></p> <p>Fiche Techniques:</p> <ul style="list-style-type: none"> • NISHC2016_030, NISHC2016_032, NISHC2016_033, NISHC2016_034, NISHC2016_035, NISHC2017_060, NISHC2017_061, NISHC2017_062, NISHC2017_063, NISHC2017_064, NISHC2017_065, NISHC2017_066, NISHC2017_067, NISHC2017_068 	
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	<p>3.3 Improve delivery and dissemination of ISFM technologies</p>	<p>Regional Coordinating Office: Workshop for developing information sharing products conducted 26-29 November 2014 (Workshop on ISFM information sharing product development [WASHC2014_011]) (See Output 1.6b for knowledge products they have collected and collated)</p> <p>Country Soil Health Consortia: Below are lists of materials other than information sharing products and extension materials relating to ISFM (However, it should be noted that the CSHC have more materials hosted in their respective databases):</p> <p>Niger SHC: The consortium has collected several famer guides, fiche techniques, posters and a script for a radio broadcast; which are all listed under outputs for 1.6b</p> <p>Books:</p>	<ul style="list-style-type: none"> • Through the dissemination of the products farmer are better informed about the improved ISFM practices. • The consortiums have the capacity to develop relevant and site specific ISFM information sheets and extension materials. • With the collection and review of pre-existing information sharing materials the need for new and updated products was identified and acted upon. • Improved collaborations between different partner institutions and harmonized approach towards dissemination of ISFM technologies while improving the understanding of ISFM technology and its application. • The research into optimizing fertilizer recommendations has resulted in more effective and relevant recommendations.

		<ul style="list-style-type: none"> Recueil des fiches techniques en gestion des ressources naturelles et de productions agro-sylvo-pastorales [NISHC2017_081] <p>Book Chapter:</p> <ul style="list-style-type: none"> Optimizing Fertilizer Use within the Context of Integrated Soil Fertility Management in Niger (OFRA Book Chapter 11) [NISHC2016_040] <p>Protocols:</p> <ul style="list-style-type: none"> Guide/Protocol for demonstrations in Farmer Field Schools (Doc ref.: Guide méthodologique des demonstrations [NISHC2016_026]). <p>Technical Guide (Collected):</p> <ul style="list-style-type: none"> Guide technique Agriculture élevage [NISHC2017_048] Improving Onion Productivity (1994) [NISHC2017_034] Optimisation des Recommandations des Engrais en Afrique (OFRA) [NISHC2016_019] Practical Guide to the Farmer Field School Approach in Niger [NISHC2017_028] <p>Directories:</p> <ul style="list-style-type: none"> Niger CSHC produced two agro-dealer directories to facilitate the distribution of information and inputs to the farmers (Répertoire des distributeurs d'Intrants Agricoles du Niger (2015) [NISHC2016_013]; Répertoire Des Fournisseurs D'intrants Du Niger (2016) [NISHC2016_014]). <p>Communication Strategy:</p> <ul style="list-style-type: none"> Niger also developed a communication and engagement strategy document which covers the dissemination of ISFM technologies (Rapport sur la stratégie d'engagement des parties prenantes [NISHC2016_008]) <p>Information Note:</p> <ul style="list-style-type: none"> Traitement du bassin versant et du Kori de Youri / Quels enseignements 5 ans après la réalisation des aménagements [NISHC2012_001] 	<ul style="list-style-type: none"> Protocols for conducting demonstrations have resulted in a more harmonised approach in the delivery of technologies.
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	<ul style="list-style-type: none"> • Récupération de terres - Le site de Guidda pour tirer des enseignements Note de travail [NISHC2013_001] • La gestion viable des espaces nus forestiers ce qu'il faut faire et ce que il ne faut surtout pas faire [NISHC2013_002] • National des Chambres d'Agriculture du Niger (RECA) [NISHC2014_002] • Ounoufa Réaliser des banquettes entre d anciennes banquettes un risque pour un reboisement reussi [NISHC2014_003] <p>Mali SHC:</p> <p>Book Chapter:</p> <ul style="list-style-type: none"> • Optimizing Fertilizer Use within the Context of Integrated Soil Fertility Management in Mali (OFRA Book Chapter 8 [MLSHC2017_001] <p>Research Article:</p> <ul style="list-style-type: none"> • Impact of the Management of Sandy Soil Fertilization Practices on the Yield of the Intercropping Pearl Millet-Cowpea and on Farmer Income in the East Sahelian Zone of Mali [MLSHC2016_007] <p>Protocols</p> <ul style="list-style-type: none"> • Protocole de quelques activités pour membres du Groupe de travail vulgarisation [MLSHC2017_052]. <ul style="list-style-type: none"> ○ Protocol for demonstrations of application of manure and microdosing technology for sorghum and millet, ○ Protocol for applying microdosing for cowpea ○ Protocol for demonstration of zaï technique for cowpea for women • Protocols for testing various recommended application rates (depending on resource endowment farmer) for maize, upland rice, lowland rice, and sorghum (Doc. Protocole des doses d'engrais dans la zone projet Consortium Mali [MLSHC2017_053]) <p>Maps – highlighting where the consortium has been active in</p>	
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		<p>the delivery and dissemination of ISFM practices:</p> <ul style="list-style-type: none"> • ISFM Technologies of the consortium project on varieties of Sorghum in Mali [MLSHC2017_006] • ISFM technologies in Mali [MLSHC2017_007] • ISFM Technology of the Mali Consortium Project – Improved Cowpea [MLSHC2017_009] • ISFM Technology of the Mali Consortium Project – Maize Hybrid [MLSHC2017_010] • ISFM Technology of the Mali Consortium Project – Maize Variety OPV [MLSHC2017_011] • ISFM Technology of the Mali Consortium Project – Maize [MLSHC2017_012] • ISFM Technology of the Mali Consortium Project – Millet Hybrid [MLSHC2017_013] • ISFM Technology of the Mali Consortium Project – Millet OPV [MLSHC2017_014] • ISFM Technology of the Mali Consortium Project – Millet [MLSHC2017_015] • ISFM Technology of the Mali Consortium Project – Sorghum Hybrid [MLSHC2017_016] • ISFM Technology of the Mali Consortium Project – Sorghum [MLSHC2017_017] 	
<p>Objective 4: Facilitate collaboration among stakeholders to enhance national and regional knowledge sharing and communication of ISFM information</p>	<p>4.2 Develop website/portal for ISFM related information and platform for information sharing</p>	<p>The website was developed to support the scaling of ISFM technologies throughout West Africa. Simultaneously it serves as the project website, in which the achievements of the project and the six country soil health consortiums are reported. The Soil Health Platform has been promoted through various materials, such as banners, posters and leaflets, at various international events (WASHC: http://www.tsbf-platform.org/).</p> <p>Communication materials for the Soil Health Platform:</p> <ul style="list-style-type: none"> • Tropentag rollup poster The Tropical Soil Biology and Fertility Platform WASHC2016_044 • TSBF Platform A0 poster WASHC2016_045 	<ul style="list-style-type: none"> • The platform aims to support the continued operation of the country soil health consortiums, through the facilitation of data and information exchange. • The regional platform has been developed, yet funds are insufficient to further develop and sustain the platform and website. • The consortiums have an online presence, which has resulted in an increased awareness of the consortiums activities and services. • There is increased online accessibility to ISFM information (both regionally and nationally). For most of the countries these platforms serve as the first and only online access point for ISFM information.

		<ul style="list-style-type: none"> • TSBF Platform Flyer WASHC2016_046 <p>Country Soil Health Consortium Websites: Each CSHC was supported in the development of their national platforms, for which the RCO developed guiding documents. (Minimum requirements for a fully functional consortium website [WASHC2015_072], Website Development Guide Document [WASHC2015_073]).</p> <p>GSHC: http://shcghana.org/ BFSHC: http://www.soilhealthconsortium-bf.org/ MLSHC: http://consortium-maligifs.org/ NISHC: http://soilhealthconsortium-ne.org/ NGSHC: http://nigeriasoilhealthconsortium.com/ NGSSH: http://ngshcsouth.org/</p>	
	<p>4.3 Improve communication and engagement with stakeholders</p>	<p>Comprised list of all communication related outputs:</p> <p>Regional Coordinating Office:</p> <p>Newsletters and News briefs:</p> <ul style="list-style-type: none"> • Soil Health Issue 01 - Country Level Soil Health Consortia March 2014 [WASHC2014_002] • Soil scientists harmonize positions on sustainable soil - IITA Bulletin 2278, 01 – 05 June 2015 [WASHC2015_008] • West Africa Soil Health Consortia Call on Governments to Support Initiative - AGRA SoundByte Issue 55, February 2015 [WASHC2015_013] • Soil Health Issue 02 - Country Level Soil Health Consortia October 2014 [WASHC2015_022] • Soil Health Issue 03 - Country Level Soil Health Consortia newsletter July 2015 [WASHC2015_024] • WASHC-IITA, Nigerian higher institutions, explore opportunities for scaling up ISFM technologies IITA Bulletin 2275, 11 – 15 May 2015 [WASHC2015_039] • WASHC-IITA visits SSLM-FUNAAB for joint efforts in soil fertility management – In IITA News No 2273, 27 – 30 April 2015 (No. 2273) [WASHC2015_040] • WASHC project ends; participants share successes - In IITA 	<ul style="list-style-type: none"> • The Mali SHC engages directly with development partners for the scaling and delivery of ISFM information and technologies in the East and South-Eastern region of Segou and Sikasso (as indicated by the maps in activity 3.3). • In the northern and south-eastern region of Nigeria there is strong engagement, especially with the National Research Institutes, farmer organizations, government and extension service providers and universities, with the consortium. • In Ghana there is strong engagement, especially with the National Research Institutes, universities and government bodies, with the consortium. • Through the improved communication and stakeholder meetings in Niger there is a broad representation of engagement in Niger with a range of stakeholders, including banks, National Research Institutes, universities and government bodies, ICRISAT, farmer organizations NGO and regional focal points. • As the Burkina Faso SHC is a member of the national platform on ‘sustainable land

		<p>News No 2373 27-31 March 2017 [WASHC2017_001]</p> <p>Media Coverage:</p> <ul style="list-style-type: none"> • Newspaper Articles on the 1st APRM 2015 [WASHC2015_014] • Tele-Broadcast of the WASHC 2nd APRM, Niger 19th Feb 2016 [NISHC2017_024] • Rendre opérationnelle la gestion intégrée de la fertilité du Sol – Nation, 18-02-2016 [WASHC2015_057] <p>Ghana SHC:</p> <p>Newsletters:</p> <ul style="list-style-type: none"> • Prioritizing Integrated Soil Fertility Management for Increased Agricultural Productivity in Ghana, Science – Policy – Africa, Newsletter of The African Academy of Sciences Vol 20 No 2, June 2016 [GSHC2016_017] <p>Media Coverage:</p> <ul style="list-style-type: none"> • Ghana Soil Health Consortium advocates for soil health policy, 02-March-2017 (Modern Ghana) [GSHC2017_012] • Inadequate gov’ support hampers management of soil resources, 14-Feb-2017 (Joyonline) [GSHC2017_013] <p>Mali SHC:</p> <p>Tele Broadcasts:</p> <ul style="list-style-type: none"> • Conclusion of the Mali Consortium Project and the Future of ISFM and the Consortium in Mali [MLSHC2017_049] <p>Niger SHC:</p> <p>Tele Broadcasts:</p> <ul style="list-style-type: none"> • News Broadcast on the AGRA Meeting in Niger on Agricultural Production and the role of ISFM [NISHC2017_010] • Introduction to the Niger Soil Health Consortium [NISHC2017_011] 	<p>management’, hosted by the Ministry of Environment, it has broadened the scope of engagement with the key national players. The consortium also has strong linkages with a number of research for development projects.</p> <ul style="list-style-type: none"> • The consortiums have received wide coverage in the media which has resulted in broad public awareness of the consortiums and their activities. • The CSHC have resulted in the improved communication and better collaboration between stakeholders and a more harmonised approach to the scaling of ISFM. •
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	<ul style="list-style-type: none"> Role and place of input shops in the supply of agricultural inputs in Niger [NISHC2017_014] <p>Communication Strategy:</p> <ul style="list-style-type: none"> Stakeholder communication and engagement strategy (Rapport sur la stratégie d’engagement des parties prenantes [NISHC2016_008]) 	
<p>4.4 Organize national and international events in the context of International Day of Soils 2015</p>	<p>The WASHC Project, in conjunction with IITA, co-organized the 7th International conference of the ASSS; the Burkina CSHC was part of the local Organizing Committee. (Report on the 7th African Soil Science Society Conference (ASSS), Ouagadougou, Burkina Faso [WASHC2016_014])</p> <p>Events were organized in Nigeria, in relation to the International Day of Soils. Especially raising awareness amongst children and the youth.</p>	<ul style="list-style-type: none"> The ASSS conference was used to promote the Soil Health Platform with a focus on the improved sharing of data and information on soil fertility management. Four of the five consortiums were presented for the first time at the international event.
<p>4.5 Advocacy for ISFM and policy recommendations</p>	<p>Ghana SHC:</p> <p>Policy Brief: Prioritizing Integrated Soil Fertility Management for Increased Agricultural Productivity in Ghana [GSHC2016_009]</p> <p>Position Paper: Integrated Soil Fertility Management in Ghana: challenges and opportunities [GSHC2016_015]</p> <ul style="list-style-type: none"> Ghana Soil Health Consortium Communiqué, 14-Feb-2017 [GSHC2017_002] Message from the Office of the Country Coordinator [GSHC2016_007] Ghana Soil Health Consortium advocates for soil health policy, 02-March-2017 (Modern Ghana) [GSHC2017_012] Inadequate gov’ support hampers management of soil resources, 14-Feb-2017 (Joyonline) [GSHC2017_013] <p>Niger SHC:</p> <p>Policy Brief: Quelles orientations pour l’amélioration de la productivité des sols au Niger [NISHC2016_045]</p> <p>Position Paper: Sols et utilisation des intrants agricoles au Niger</p>	<ul style="list-style-type: none"> Policy briefs, communiqués they have been widely disseminated through publication in newsletters, magazines and media and distributed at national and international events. This has elevated the dialogue on the severity of problem of poor soil fertility and has raised the call to action especially for government institutions. In Nigeria initiative has been taken to organise and better coordinate soil research, especially soil fertility by the convening and establishing a meeting of regional soil research coordinators.

		<p>[NISHC2016_046]</p> <p>Nigeria (South) SHC:</p> <p>Position Paper: Position Paper - Status of Integrated Soil Fertility Management (ISFM) In Southwestern Nigeria [NGSSH2017_023]</p> <p>Policy Brief: Policy Brief on adoption of ISFM [NGSSH2017_012]</p> <p>Mali SHC:</p> <p>Position Paper: Faciliter une plus large diffusion des meilleurs pratiques adaptées de GIFS qui ont un impact positif visible sur le bien être des communautés rurales du Mali: [MLSHC2016_008].</p>	
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Challenges and New Directions

Collaboration between AGRA funded projects at regional and country level

1. The collaboration between the various AGRA supported projects has proven to be difficult. Various efforts have been undertaken and attempts made to improve the collaboration with the IPNI-led project on the support for the CSHC of the East and Southern Africa region and the Optimizing Fertilizer Recommendations for Africa (OFRA) project led by CABI, as well as with the CABI led project on the African Soil Health Consortium (ASHC). We have organized meetings to discuss further collaboration on specific topics like data management (development of the ISFM legacy database); we attended the planning and review meetings of especially the OFRA project, aiming to see how we could coordinate the planning of our activities better and exploring where we could cooperate better making use of the expertise available in the associated projects and institutions for the capacity building efforts of our project (e.g. for the training on the development of the information sharing materials, and for the training on the management and analyses of agronomic data). We intended to jointly publish a newsletter and to jointly operate a website for both the CSHC projects. We have been partly successful, but our initiatives have not led to a further collaborative effort. For example, we discussed a data sharing agreement with CABI on the OFRA project especially, which never materialized because of difficulties they experienced with their own country partners in complying with the internal data sharing agreements.

2. At country level we had similar difficulties in establishing a closer collaboration between the WASHC and OFRA project on for example the data management, even though the project representatives were from the same institution. The RCO had to convene meetings within the countries to assure that the projects would share their data. Collaboration on these matters ideally would extend to other than AGRA projects alone. Collaboration between projects is difficult, even if these projects are implemented by the same institute, or if these are funded by the same donor. This is because there are no incentives (direct advantages or benefits) for the individual projects to collaborate closer (often on the contrary extra costs are involved) and because there is no structure in place that facilitates the closer cooperation. The collaboration needs to be organised at institutional level, which will be difficult in complex institutional setting in which national and international institutions take part with also different mandates (the international projects often being implemented through the national partners in the respective countries). The consortium was maybe expected to provide the structure to allow for closer cooperation, but would find it difficult to play that role. As consequence, the consortium is run as a project, in parallel with so many other projects, which the defeats the purpose of the consortium which aims to facilitate the scaling of ISFM by and through its partners.

The reason why collaboration never really came off the ground is probable that goals for

the collaboration were not clearly defined and there was also no clear structure provided that would make further collaboration possible (e.g. there was no common governance structure). It was not clear whether the collaboration would be confined to cooperation between the projects, sharing information and provide mutual support, or whether it would extend to more coordinated activities, sharing common tasks and having compatible goals, or whether it would entail actual collaboration. I was not clear whether the focus should be on networking, cooperation or indeed partnering. Arrangements need to be made at institutional level and this was beyond the capacity of the project itself.

Discrepancy between the project and the consortium on the aim, purpose and objectives

3. The WASHC project, that was written as a project to provide support to the country soil health consortia, was challenged by the fact that the consortia themselves had not been established in effect. The objectives specified in the project documents were ambiguous and did not apply to the current situation in the countries. The aim of the project could either be perceived as to scale-out ISFM in the respective countries, to facilitate the process of scaling or to provide the infrastructure and build capacity to facilitate that process (to develop a platform for facilitating scaling of ISFM). These are multiple objectives and each would require a different role of the consortium, different partners with different roles in the consortium, and different organisation.

On the one hand efforts were directed towards the establishment of the consortium and considering what that would require (see for example the discussions on the stakeholder engagement). On the other hand, efforts were directed towards generating project outputs like the ISFM legacy database, information sharing materials, number of people trained and sensitized, policy briefs and other. And in some countries efforts were geared towards the actual delivery of the ISFM technologies through the outreach partners.

4. Within the countries, the consortia were conceived as project organisations, the national research institutes ran the consortium as a project alongside the many other projects they were conducting. Rather than providing a platform for research and development partners to come together and plan and coordinated their activities for scaling out of ISFM, or to focus on the institutional arrangements required to facilitate the process of scaling ISFM, this favoured putting emphasis on implementing activities to generate project output. This was a rather unfortunate misconception because the consortium itself may not be the most appropriate structure to resolve issues around the database development, to develop information sharing materials, etc. even though these were defined as project outputs in the proposal.

5. The role of the consortium vis-à-vis the other research for development projects never became very clear and that also applies to the role of the partners and stakeholder in the consortium (or the confusion between what partners are and what stakeholders are, and how to engage with the partners and stakeholders. It would have helped the progress of the project if the idea of the consortium would have been more clearly formulated, if

partners would have been selected and were aware of their role and if a strategy for stakeholder engagement would have been more clearly defined.

Project organisation and structure

6. It might have helped if the support functions and facilitation role would have been more clearly defined and distinction made between the role of research and innovation, delivery and dissemination and advocacy and in responsibilities assigned to the various institutions, or departments of the institutions, in providing this facilitating role. In the end, it will require institutional support to sustain these functions. In the project these tasks were assigned to the various working groups that in most cases did not operate very effectively. The research institutes, as the executing agency of the project, are of course in a better position to coordinate and direct research efforts for which they have the mandate, but less so when it concerns extension and technology delivery and advocacy work. In the end a small team of project members were involved in developing these various types of outputs, without making effective use of the capacity their respective institutes would provide.

Theory and approach to scaling of ISFM

7. The project lacked a clear theory of scaling of ISFM technologies and practices. To some extent a theory of scaling was implicit in the project proposal, but it was never made explicit and therefore not discussed, agreed and adopted. As such there was no strategy to give direction to the activities to be undertaken, with as result that these activities appeared a little aimless. For example, the collection of ISFM legacy data without a clear focus, or the rather arbitrary prioritization of information sharing products to be developed, or the development of policy briefs and position papers that maybe lacked a clear target. The project can as such be considered one long learning process and we have tried to make the lessons learned explicit as reflected in this this report.

Sustainability of project achievements and institutionalization of the consortium – stakeholder involvement

8. We realize that the outputs of the project are of little lasting value if the activities are not maintained. An ISFM database is of little value if it is not maintained and further expanded to increase its relevance. Similar with the information sharing products; the information service will only be relevant if the information sharing materials are updated and expanded to satisfy the information demand. And this also applies to the advocacy work, that will need to be continued to have any success. To this end we have worked towards the institutionalization of the consortium, but this has proven to be a major challenge. There are various reasons for this, partly explained in this section on challenges and on the lessons learned. We already stated before that stakeholder engagement will be an important factor, or more specifically finding partners that are willing to invest (time and money) in the consortium. Structural engagements with stakeholders has also proven a challenge and was identified early in the project as a risk for the sustainability of the project. It requires that the individual partners see the benefits of being part of the consortium, which may not be very clear now. First, it needs to be make clear what the

consortium is about, whether it is a multi-stakeholder platform or a partnership, and what the goals and objectives of the consortium are. It may be useful to split the various functions currently foreseen for the consortium and organize them in different ways. It also requires making a clear distinction between partners and stakeholders. The initiative to establish the consortia was taken by AGRA and did not originate from the stakeholders themselves; this means that a deliberate effort needs to be made to bring stakeholders on board. The choice of the hosting institution should also be put to the test, depending on the specific purpose of the consortium. Ideally, the stakeholders themselves should decide on the host institution. The host institution must be able to provide support to the consortium, at least by providing the secretariat and the host institution must have the convening power to bring the relevant partners together. The capacity to provide technical support must be sourced from the participating institutes. This could for example relate to developing and maintaining the consortium website.

Funding

9. Continued funding for the consortium is a challenge. Funding for the consortium is likely to come from external sources. This does not provide for a secure and stable basis and will make prospective partners and stakeholders reluctant to engage with the consortium. Many participants/members of the consortium will expect to get some funding through the consortium, which is not likely to happen if the consortium does not have the fundraising power and/or if it cannot demonstrate that it can raise funds for its partners. Expectations needs to be managed in this respect. To assure continuity, the consortium needs to be part of government sponsored programs and institutions and it needs to position itself within the playing field such that it gets recognition for the role it plays. The same applies to the non-government sponsored activities. The consortium must be seen to provide added value to a project and for this it may compete with its own institution. AGRA and other donors could help by giving the consortia a clear role in their national development and investment plans. There are many project focussing specifically on technology scaling and the consortium should be able to benefit from that if they and position themselves with the support of their institution.

Opportunities and future directions

10. There are some opportunities in the sense of regional initiatives that are being undertaken at regional level in which the CSHCS could play an important role at national level. That is the regional CORAF/WECARD-initiated/coordinated program on the updating of fertilizer recommendations for the region. Also at national level initiatives are undertaken to update fertilizer recommendations and CSHCs need to make sure they have a central role to play. The same is true for the regional initiative under WAAPP in which prominence is given to the use of organic fertilizer as an entry point to improve soil productivity and sustainable land management. The consortia should likewise play an important role in the scaling out the use of organic fertilizers.

These new initiatives also indicate the new directions for the consortia, which is to focus more explicitly on the updating of fertilizer recommendations, that is, moving towards

more site and crop specific recommendations and promoting the use of organic fertilizer and better use of organic resources in combination with the chemical fertilizer to improve its use efficiency. With this new direction, new challenges will emerge. We still do not know enough about the efficiency with which current fertilizers are being used and how this could be effectively improved with practical measures to improve the use of organic fertilizers. This new direction should be reflected in further development of the ISFM database to concentrate on the collection of data from trials on the use of organic resources, and on the development and collection of information-sharing materials on the use of organic resources. More attention should also be devoted to demonstrating the effective use of organic resources. Strategic choices will have to be made whether the consortium want to position itself as a stakeholder platform for exchanging data and information, and alliance for promoting and delivery of particular technologies, or as service provider.

Lessons learned and recommendations

1. Closer and successful collaboration between the AGRA funded projects could have been achieved if the purpose and benefits of that collaboration would have been specified and identified, and if the mode of collaboration (whether cooperation, coordination or collaboration) would have been agreed before the actual start of the projects and if a governance structure would have been provided, commensurate with mode of collaboration, that would enforce or ensure the collaboration between the projects. The collaboration between the partners should be governed by a collaborative agreement, partnership agreement or other.

There is a need still for better cooperation and stronger collaboration between the projects at country level. A clear structure should be provided for which governments, international institutions and donor community should take their responsibility

2. The project was set up as a multi-country project, with IITA as the implementing organization, aiming to provide support to the multiple country soil health consortia. Support functions need to be organized at country level. The international institutes can play a role in building capacity of the national institutes though specific projects, but in the end this will ask for a far more structural approach embedded within the institutions. The CHSC should have a strong national focus for it to be relevant and effective. We observed that there was very little exchange between the various CSHC during the project, and there is no or little added value of a regional operating consortium or platform. A lot of time and effort went into the coordination of the project activities across countries that could have better spent on other activities.

We advocate that in the various national business plans and other national initiatives in providing farmer's solutions and transforming agriculture, developing of support functions including the required capacity building efforts are considered. This should also include a platform function of the consortium that brings the various stakeholders and initiatives together.

3. A consortium can refer to an association, partnership, union or other, of parties that

agree to pull resources (financial and human) and join efforts to reach a common goal or who share a common purpose. Partners of the CSHC should have been selected before the actual start of the project and following clear criteria, such that for each partner it is clear what the objectives are, what form the collaboration would take, what is expected of the partner organization (the obligations) and what the partners expect to get out of their participation. A 'consortium' assumes there is a shared interest and that there will be a shared benefit from being part of the consortium. This was, however, not the case and identification of and engaging partners and stakeholders has been problematic throughout the project. It seems that only towards the end of the project, partners or stakeholders saw the advantage of having a soil health consortium and were willing to engage more directly with the consortium. People were engaging more on a personal and individual basis, rather than to represent the institution. The collaboration seems to have been based mainly on existing personal relationships.

An association or alliance seems yet the most appropriate form for the consortium. The consortium should still clarify its focus on soil health and specify what that entails. The consortium should further justify its role and the functions it aims to provide and prove their *raison d'être*.

4. Invest in national institutions and persons that have a clear mandate for the tasks to be carried out in the project, e.g. coordination of agricultural research, data and information management, development of information sharing products, delivery and extension, and advocacy and policy research. Facilitating wider uptake of ISFM technologies and practices asks for support functions to be institutionally embedded. Providing short term training to individuals for the benefit of the project or consortium, but that is not institutionally embedded, does little to help building the capacity of these institutions in providing these support functions. A more structural institutional approach is needed and requires different arrangements than were and could have been made through the project.

We believe the support functions, like research on ISFM, diagnoses of soil health constraints, making fertilizer recommendations, developing info-sharing materials, etc. are best embedded within the national institutions. The national institutions should take their responsibility in this, according to their mandate (e.g. the coordination of soil research). All kinds of tools should be made available, whether related to stakeholder analyses and mapping, diagnosis of soil health constraints, agronomic surveys, etc. and training provided on how to use these tools, for the institutes to be able to provide the support services required. There should be a concerted effort to develop these support functions at country level.

5. Integrated Soil Fertility Management is a complex concept because it deals with interactions between the various factor that determine crop performance in the field. It is a suitable topic and provide probably a good framework for research; it is less suitable as entry point for delivery of more sustainable soil and land management practices. It is also a difficult message to convey to politicians or to pack as policy recommendations, because the complex nature and the many actions and types of intervention required.

There is need for a clear strategy (or strategy rethink) on how to promote ISFM. ISFM is little understood and a continuous effort is needed to improve awareness and understanding of the concepts of ISFM as well as the ISFM practices and technologies.

The task of the consortium or alliance is to promote and deliver technologies to the farmers in a particular region for which it needs to develop a clear strategy. For this it needs to organize the technical support and to ensure that data and information is provided that is needed to effectively scale the technology. This requires some coordination of the support functions and ensuring the cooperation between the institutions in exchange of data and information. An important task of the consortium is to effectively communicate to all stakeholders about the importance of sustainable management of resources, the principles and practices of ISFM and the expected benefits are. There should be a clear prioritization of the crop and the specific ISFM technology, depending on the constraints and opportunities that the area presents.

6. Achieving sustainability of the consortia will require a different attitude of the key players in the consortium; the hosting institution must see a strategic interest in hosting the consortium and must be willing to invest in and facilitate the consortium. It requires a different attitude of AGRA and other donor organizations in that they must see a strategic role of the consortium in their strategy and in the implementation of that strategy in the various target countries, It also requires a different attitude of development partners and other stakeholders in accepting the consortia as a platform for scaling out of ISFM, for sustainable land use planning and land resources management. Conditions and the extent to which these are conducive for having soil health consortia vary from one country to another.

A careful selection process is required to select the host institute for the consortium and this should include the identification of the project leader or consortium coordinator. There should also be a more conscientious and purposeful selection of the partners in the consortium and comprehensive analyses of the stakeholders after the clarification on the purpose and objectives of the consortium.

Appendix 1: Nigeria CSHC – Southern Node Final Narrative Report

Supporting Soil Health Consortia in West Africa - facilitating wider uptake of better adapted ISFM practices with visible positive impacts on rural livelihoods

Nigeria Soil Health Consortium (South-West and South-South Node)

Narrative Final Report on Progress.

Reporting period: July 19th, 2016 to March 2017

AGRA Grant No.: 2013 SHP 005

Project Title:

Supporting Soil Health Consortia in West Africa- facilitating wider uptake of better-adapted ISFM practices with visible positive impacts on rural livelihoods

Period Covered:

JULY 19TH 2016 to MARCH, 2017

Background and Introductory statement

The issues affecting soil health and productivity in southwestern and south-south Nigeria range from low inherent soil nutrient reserves, low use of external nutrient inputs, nutrient mining, climate variability coupled with aggressive rainfall pattern have resulted to low crop productivity. Crop residues are not usually incorporated into the soil. Hence there is decrease in soil organic matter reserves. These have limited various functions that enhance the efficiency with which water and nutrients are used by crops. The local crop varieties commonly grown have low demand for nutrients and the efficiency of conversion of nutrients and water to yield is also low. It has also been observed recently that moisture stress has become a major threat to food security in South western Nigeria due to erratic rainfall pattern and dry spell during the cropping season. Soil fertility degradation has been described as the second most important constraint to food security in Africa which is also a major constraint to sustainable soil production in SWN. Despite proposals for a diversity of solutions and the investment of time and resources by a wide range of institutions, soil fertility decline continues to prove to be a substantially intransigent problem. Improper management due to indiscriminate land use without soil testing has exacerbated this problem to an alarming rate. The population is thus trapped in a poverty cycle between land degradation, and the lack of resources and knowledge to generate adequate income and opportunities to overcome vicious decline in soil productivity.

The Nigeria Soil Health Consortium (South-West and South-South Node) (SW_SS NgSHC) is a forum that brings together all stakeholders in the South-West and South-South part of Nigeria working on development and dissemination of ISFM technologies. The forum presents a platform for joint planning, sharing information, advocacy, and addressing gaps and challenges in developing, and dissemination of ISFM. This will ensure that Soil health research findings from the different zones can be stored and shared among all stakeholders.

The consortium was established on the 19th of July 2016. The consortium has set up a secretariat with a database manager, also other staff include Knowledge product collation officer, secretary, technical and communication assistants. Series of meetings have been held on how to implement activities in the work plan. The working group established under NGSHC has been adopted with the terms of reference and new members are been co-opted because some members have not been active. The updated list of members will be provided later. Drawing from the success of the of the meetings, a structured questionnaire has been developed and administered to all

stakeholders to ensure that proper technology missing gaps are captured for onward trainings on the practice of ISFM. Qualitative information was extracted from the questionnaires that helped to identify area of focus during trainings of stakeholders. The data are at the final stage of statistical analyses.

Training and workshops were organized for stakeholders including farmers, extension agents, policy makers, researchers, credit providers and agro-input dealers. The consortium has collated existing ISFM knowledge products and has developed new ones for tomato, maize and accelerated compost which will help in promoting and dissemination of ISFM technologies. The knowledge products on tomato and composting have been produced and used during the training workshops while the remaining are in press. There is need to organize more farmers' forum for effective distribution and circulation among all stakeholders. The consortium had also carried out awareness campaign in the south-south where All Farmers Association of Nigeria (AFAN), staff of Ministry of Agriculture State and researchers in Akwa Ibom were in attendance. Collaboration with policy makers have been initiated for subsequent integration of ISFM into their programmes. The reports of the trainings and meetings have been sent. Report on Consultative Forum will be sent after adapting it to the new guidelines sent.

Activities

1.1 Establishment and operation of the SW Node of the Country Soil Health consortium.

The SW/SS node was established on the 19th of July 2016. This officially opens the new secretariat in IAR&T, Ibadan. The secretariat has been set up with a functional project assistant / database officer. Office supply including laptops, desktop (plus accessories), printer, photocopier and furniture have been purchased. inventory of consortium members has been done and been updated. (Annex 1)

1.2 Conduct stakeholder mapping and analyses, develop and implement stakeholder engagement strategy

Stakeholder's lists and directories have been compiled (Annex2a). Structured questionnaires have been developed and have been filled by different stakeholders. Statistical analyses is on-going after qualitative information deduction from the questionnaires. (Annex 2b)

1.6a Develop the database/repository on ISFM

Metadata for the development of ISFM database has been compiled comprising study site information, ISFM component applied, test crop used, initial / final soil data after

treatment, agronomic/ yield data and source of the articles used. 72 data sets have been developed from published articles on ISFM. The database team are still working to increase the dataset to 150 by last week in February 2017 (Annex 3).

1.6b Develop information sharing products and develop a repository for information sharing products

ISFM knowledge products have been developed for tomato, maize, accelerated compost and soil fertility management. The products for farmers' guide for tomato, fsoil fertility management, erosion control, water harvesting have been produced. Fact sheets have been developed and are in press. ISFM recommendations have been done for southern ecologies while a meeting has been scheduled for 26th of January for fertilizer recommendation. The products that have been developed will be sent in another attachment. (Annex 4).

Website has been developed for information sharing for the consortium. The website is being populated with the activities of the consortium and other relevant information for stakeholder.

2.1 Conduct training and sensitization workshops on ISFM principles and practices for development organizations, extension services, farmer organization and other local staff (based on knowledge gap assessment).

Workshop to train trainers was organized in January 2016 at IAR&T with 36 representatives from the six states in Southwestern Nigeria. More over through the workshop the NARIS in Oyo State were represented. This has enhanced awareness of ISFM among scientists and extension agents and agricultural superintendent. Training workshops have been organized for other stakeholders including farmers, extension agents, researchers and agro-input dealers and credit providers. We have trained about five hundred farmers, one hundred extension agents, two hundred researchers and some credit providers (First Bank and Bank of Agriculture) and agro input dealers (green world and FARTREM). Further efforts are being made to reach more agro-input retailers before the expiration of the project.

3.3 To enhance the dissemination of ISFM innovations ISFM database and knowledge products have been developed. On farm training of farmers including field days were organized, fact sheets have been produced (in press), web sites have been developed. We propose to carry out media campaign first week in February, and a bulletin is about 80% completed, and recommendations for ISFM practices have been developed. Stakeholders consultative forum have been carried out using guidelines provided by WASHC and ISFM best practices for the region have been identified.

4.3 Improve communication and engagement with stakeholders.

Questionnaires have been developed and distributed to target different stakeholders. The strategies used to date include training workshops, knowledge products distribution and we propose interaction through media, and farmers' field day. Website development will also improve communication among stakeholders.

4.5 Advocacy for ISFM and Policy recommendations:

The consortium has liaised with Dept. of Land Resources at Federal level through the regional directors for integration of ISFM national agricultural programmes. At state levels the consortium has interacted with project managers to adopt ISFM protocols during stakeholders' consultative forum. Policy brief has been developed based on findings during the project. position paper on ISFM has been written, and has been accepted for publication in International Journal of Sustainable Agricultural Research. Publication fees has been paid. Detailed version is being produced as a booklet

Achievements

(Note: the activities highlighted in the table below represent the activities taken from your Work Plan, kindly use the further details in the work plans to complete this table. Also note that the outputs highlighted in this table will be requested for by the Regional Office)

Objective	Activity	Output	Outcome
Objective 1: To improve access by smallholder farmers and other stakeholders to ISFM innovations	1.1 Establishment and operation of the SW Node of the Country Soil Health consortium	Development and signing of new contract for the establishment of the SW_SS Node of the Nigeria Soil Health consortium	The SW Node of the Nigeria Soil Health consortium has been operational since 19 th of July 2016 with operational secretariat.
	1.2 Conduct stakeholder mapping and analyses, develop and implement stakeholder engagement strategy	<ul style="list-style-type: none"> • Compilation of list and directories of stakeholders • Formulation of engagement strategies for stakeholders • Engagement of stakeholders through workshops, group discussion, on farm training 	<ul style="list-style-type: none"> • stakeholders list developed • stakeholder engagement strategy formulated, structured questionnaires developed; About 800 stakeholders have engaged through, group discussions, training workshops, field days, electronics and print media
	1.4 Track and report on targets set for year-3 project implementation		
	1.5 Financial and progress reporting	\$59,380.92 has been released to date. (Pls. See financial reporting: annex 6.1)	59, 552.51 has expended to date for various consortium activities. (Pls. See financial reporting (annex 6.1). we have made request for the balance to complete pending activities urgently.

	<p>1.6a Develop the database/repository on ISFM</p>	<ul style="list-style-type: none"> • 72 data set have developed from 81experiments 	<ul style="list-style-type: none"> • 72 datasets submitted, datasets being analysed to synthesize information
	<p>1.6b Develop information sharing products and develop a repository for information sharing products</p>	<ul style="list-style-type: none"> • information sharing products for ISFM technology developed • designing and building of website for information sharing completed 	<ul style="list-style-type: none"> • 7 information knowledge products (farmers guide 90% completed). Fact sheets developed, 80% completion • Website development (100% completed) and being populated
<p>Objective 2: To strengthen the capacity of stakeholders and institutions to provide technical knowledge and harmonized solutions on ISFM technologies</p>	<p>2.1 Conduct training and sensitization workshops on ISFM principles and practices for development organizations, extension services, farmer organization and other local staff (based on knowledge gap assessment)</p>	<p>Training of trainers’ workshop conducted with representative from 6 states in SWN. Other stakeholders in attendance: farmers’ groups and researchers. Training workshops have been conducted for farmers, researchers, credit providers, agro input dealers, students with attendance from southwest and south-south regions</p>	<p>About 100 extension agents, 500 farmers, 200 researchers were directly trained and given knowledge products on compost making, soil fertility management, water management and soil conservation. ISFM was introduced to researchers from NARIS. Awareness of ISFM enhanced.</p>
<p>Objective 3: To enhance the dissemination of ISFM innovations by developing the national ISFM database and appropriate knowledge products</p>	<p>3.3 Improve delivery and dissemination of ISFM technologies</p>	<p>Metadata identified and database created and have been populated with datasets from research journals and reviews.</p>	<p>72 datasets have been submitted to date. Another 80 datasets have been developed.</p>

<p>Objective4: Facilitate collaboration among stakeholders to enhance national and regional knowledge sharing and communication of ISFM Information</p>	<p>4.3 Improve communication and engagement with stakeholders</p>	<p>Questionnaires have been developed and administered to target different stakeholders. Training workshops have been organized, knowledge products are being distributed. Field day organized, media campaign through print and electronics. Website has been developed. Awareness campaign to south south</p>	<p>4 sets of questionnaires developed targeting farmers, input dealers, extension agents, and agro dealers had been administered to stakeholders, about 800 stakeholders have reached directly and empowered through knowledge products, training and linkage of one stakeholders .Report of the stakeholders mapping is ready and will be published.</p>
	<p>4.5 Advocacy for ISFM and Policy recommendations</p>	<p>We have initiated collaboration with Agriculture, Land and Climate Change Dept. under Federal Ministry of Agriculture, Abuja. Programme managers of states have been involved in ISFM workshops and the need for ISFM in their states emphasized. Policy brief has been written, position paper developed</p>	<p>Prospect of integration of ISFM into national and state policies enhanced. Awareness of ISFM awareness among policy makers increased with affirmation to integrate ISFM protocols in their programmes.</p>

Challenges and New Directions. The awareness of ISFM among stakeholders is low and training had to be intensive to make impact. There was language barrier from rural farmers, hence need to interpret guides in local languages subsequently. There is need to reach more stakeholders and encourage them to adopt ISFM. More impact will be achieved by interacting with farmers on their fields to demonstrate practically ISFM. Demonstration plots are required to drive home the message. Awareness in the south south was extremely low and many of the states could not be covered due to limited time and fund. Intensive trainings and workshop are required in the zone to transform agriculture and to manage the highly fragile soils and to combat soil degradation.

Lessons Learned: Best bet technologies for ISFM were identified for different crops and locations. Dissemination methods need to improve and should be done through demonstration plots for effectiveness. Field days proved to be one of the best approaches to disseminate ISFM. It was observed that scientists' research outputs usually end up without proper disseminations. Most research findings did not get to the farmers but end up in publication in journals which are not accessible to farmers. Research should be farmers oriented and should produce knowledge products to guide farmers and train extension agents through participatory learning and action research for good adoption of technologies.

Fertilizer use is still low and vague knowledge of application methods is common. fertilizers are still not affordable by rural farmers due to high price, scarcity and government method of sales of subsidized fertilizer. There is lack of adequate availability of fertilizer when needed and incomplete fertilizer formulations which exclude essential micronutrients much needed in southern ecologies of Nigeria.

Other ISFM management practices in terms of land preparation, cropping systems, erosion control and response to climate change were not well understood. For example, farmers still plough along slope, maize –cassava intercrop are still common, farmers are not prepared for moisture stress during cropping season due to climate change.

Farmers has little knowledge of the suitability of their soils for different crops hence they experience crop failure. The consortium discovered that farmers plant without soil testing and land evaluation.

The farmers and extension agents advocated for soil testing kits and assistance in carrying out land evaluation. The farmers advocated for more trainings, on-farm demonstration plots, and help in facilitation of inputs especially fertilizers.

Generally, there is need to create more awareness about ISFM protocols to enhance small holders farmers livelihood.

Appendices/ Annexes

- Give list of staff involved in the project (or any update on staff composition)

Table 1: List of Staff

S/N	Name	Position
1.	Ande Olufunmilayo Titilayo	Project Manager
2.	Oyerinde Ganiyu Titilope	Database officer
3.	Are Kayode Steven	Communication officer
4,	Fademi Ibukun	Consortium Secretary
5,	Ojo Oluremi	Technical assistant

Table 2: Members of the Working Group and Affiliation (updated members list will be submitted later. Some members have not participated in the consortium activities despite being invited several times we have invited others to build the working group for sustainability)

S/N	NAMES	INSTITUTIONAL AFFILIATION	WORKING GROUP
1.	ANDE O.T.	IAR&T,IB	COORDINATOR
2.	OJO A.O.	IAR&T,IB	E&T
3.	FADEMI I.O.	IAR&T,IB	R&I
4.	ARE K.S.	IAR&T,IB	E&T
6.	AZEEZ J.A	FUNAAB, ABK	R&I
8.	ONAWUNMI O.	FRIN,IB	R&I
9.	OGBAN PETER	UNIVERSITY OF UYO (SS)	E&T
10.	ADURAMIGBA VINCENT	IAR&T	R&I
11.	ADEOLUWA O.O.	U.I.	R&I

List of members of the consortium (or update on the consortium members – new members)/

S/N	NAMES	INSTITUTIONAL AFFILIATION	SPECIALISATION	EMAIL	PHONE NO	CATEGORY
1.	ANDE O.T.	IAR&T,IB	Land use management			
2.	OJO A.O.	IAR&T,IB	Soil chemistry			
3.	FADEMI I.O.	IAR&T,IB	Soil physics			
4.	ARE K.S.	IAR&T,IB	Soil and water conservation			
5.	ADURAMIGBA-MODUPE V.O.	IAR&T,IB	Soil fertility			
6.	OKE A.O.	IAR&T,IB	Water engineer			

7.	ADEYOYOLANU A.	IAR&T,IB	Soil quality			
8.	ADELANA A.A.	IAR&T,IB	Soil physics			
9.	DENTON O.A.	IAR&T,IB	Soil survey			
10.	OYEDELE A.O.	IAR&T,IB	Soil microbiology			
11.	UTHMAN A.C.O.	IAR&T,IB	Soil fertirlt			
12.	ADETAYO A.	IAR&T,IB	Agro meteorology			
13.	ALEMERU MAYOWA S.	IAR&T,IB	Soil mineralogy			
14.	LAWAL B.O.	IAR&T,IB	Extension			
15.	AYOOLA O.T.	IAR&T,IB	Farming systems			
16.	TAIWO L.B.	IAR&T,IB	Soil microbiology			
17.	ADEDIRAN J.A.	IAR&T,IB	Soil fertility			
18.	OYERINDE G.T.	NSHCsw&ss	Database manager			
19.	ADEOLUWA O.O.	UI	Soil fertility			
20.	ONAWUMI O.A.	FRIN	Soil fertility			
21.	OLOMOLA D.B.	FRIN				
22.	ADEKUNLE A.F.	FCA,IB				
23.	OLUWATOYINBO F.I.	FCA,IB	Soil chemistry			
24.	KODAOLO E.O.	FCA,IB	Soil chemistry			
25.	AYANFEOLUWA O.E.	FCA,IB	Soil fertility			
26.	EZEKIEL-ADEWOYIN D.T.	FCA,IB	Soil fertility			
27.	OJENIYI S.O.	FUTA	Soil conservation			
28.	IDOWU MARY	OAU	Soil fertility			
29.	OGBAN PETER	UNI. OF UYO	Soil physics			
30.	OYEDELE DURODOLUWA JOSEPH	OAU	Soil physics			
31.	OLAKOJO SAMUEL A.	IART	Plant breeder			
32.	ADELABU LUCAS	IART	Agricultural superintendent			
33.	OJUOLA OLABODE	FARTREM	Soil scientist			

List of publications and outputs generated by the project during the period of reporting (please make sure that the regional office has a copy of all publications or reports generated)/ add a separate appendix if reports is small (minutes of meetings etc.)

Publications: Manuscript on status of ISFM in SW Nigeria has published in International Journal of Sustainable Agricultural Research

Other outputs: Bulletin series on activities: fertilizer formulation, lesson learnt workshop, trainings and communiqués of the fertilizer formulation meeting and lesson learnt workshop have been produced. Bulletin series is in press.

Report of stakeholders mapping with statistical analyses have been produced. The study reveals the ISFM technologies been used by farmers in %. The perspective of farmers about ISFM technologies were also reported. (the report will be sent with this report or after)

Position paper on ISFM is in press.

Consortium working group meetings were held after the project implementation started. Special meeting to formalised the consortium was held where represented institution affirmed their interest to be part of the consortium.

Appendix 2: Nigeria CSHC – Northern Node Final semi-annual narrative report

AGRA Grant No.: 2013 SHP 005

**SUPPORTING SOIL HEALTH CONSORTIA IN WEST AFRICA- FACILITATING WIDER
UPTAKE OF BETTER-ADAPTED ISFM PRACTICES WITH VISIBLE POSITIVE IMPACTS
ON RURAL LIVELIHOODS**

Nigeria Soil Health Consortium

Period Covered: 1st August to 31st March 2017.

Interim Narrative Report on Progress

(Institute for Agricultural Research, Ahmadu Bello University, Zaria)

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BACKGROUND

Soil Health Consortium (SHC) is an initiative funded by the Bill and Melinda Gates Foundation (BMGF) through the Alliance for a Green Revolution in Africa (AGRA) and was implemented as a project in 5 West African Countries which are: Burkina Faso Ghana, Mali, Niger, and Nigeria. West Africa Soil Health Consortium (WASHC) aims to strengthen the Country-level Soil Health Consortia (CSHC), established by AGRA, towards effective platforms for facilitation of country level identification, evaluation, and delivery of best ISFM practices, targeted to specific biophysical and farmer resource endowment conditions.

Nigeria Soil Health Consortium (NgSHC) was part of the WASHC. It was part of a four-year (2011-2014) initiative, which was extended to March 2017 and coordinated by IITA, Ibadan. The consortium is working with various institutions/organizations (collaborators and partners) to develop knowledge products with the aim of facilitating wider uptake of better-adapted ISFM practices with visible positive impacts on rural livelihoods., In addition to other collaborative activities, the project focused on synthesizing up-to date information on ISFM and applying it to produce materials in a range of format targeted at different stakeholders including policy makers, private sectors, extension workers, farmers and research scientist and students in Universities/Research Institutes.

This report covers the period 1st August, 2016 to 31st March, 2017.

ACTIVITIES CONDUCTED

I. ISFM data and information management for the WASHC project

WASHC project organized a three-day workshop on integrated soil fertility management (ISFM) data and information management which was held at the International Institute of Tropical Agriculture (IITA), Ibadan from 19th to 21st of October 2016.

Participant comprising of representative from NgSHC (North and Southern node) attended the three days meeting. Participants from NgSHC (Northern node) were Prof B.D Tarfa, Elijah Ogunsola and Dorcas Oluwaseun Malgwi.

The focus of the meeting was to provide technical support for the Nigeria Soil Health Consortium in generating milestones of ISFM data and information management subsection of the WASHC project. The agenda for the meeting included data organization and submission of ISFM files/sources, data cleaning exercise of the available data sets, mapping the available data sets/legacy data using the metadata implementation file. Other items on the agenda include meta-synthesis of the data sets to generate WASHC key performance indicators (KPI), online accessibility of the data repository/outputs of the meta-synthesis and discussion on database creation/integration. Mr Elijah Ogunsola made a presentation on the progress made with respect to the ISFM data that has been collected and collated. Expected outputs of the workshop were structured and organized ISFM data files/repository, well documented metadata for ISFM datasets, synthesis and analysis of CSHC data and making the repository, metadata and synthesis report publically accessible via their CSHC websites. At the end of the three days meeting a harmonized data template was developed for adoption by the West Africa Soil Health Country Consortia.

II Write shop on ISFM knowledge products

A three day write shop was organized by the Nigeria Soil Health Consortium for the production of information knowledge products held at Zecool hotel Kaduna, from 16th to 19th of December 2016. Participants included Prof I.Y Amapu, Prof B.D Tarfa, Prof J.G Apkoko and Mr Elijah Ogunsola. The programme of the workshop includes production of position paper on integrated soil fertility management in Northern Nigeria, production of five (5) information sharing products on integrated soil fertility management and policy briefs. The ISFM knowledge products (KP) that was produced includes Maize production, Sorghum production, Cowpea production, Mineral fertilizers and Organic fertilizers in Northern Guinea Savanna of Nigeria. Drafts were produced and sent to the West African regional office in IITA Ibadan for editing and fine-tuning. The five KPs are now ready for dissemination through the website and distribution of hard copies. Their titles are: *Mineral fertilizers in Northern Nigeria, and Organic Fertilizer: what they are, Handling and Benefits*. The other three products focused on Recommended Practices for production of *Maize, Cowpea and Sorghum*

III. Lessons learned workshop

The Nigeria Soil Health Consortium organized a three-day lesson learned workshop which was held at Zecool hotel Kaduna, from 13th to 15th of February 2017. A total of 32 participants were in attendance. The participants included personnel from various organizations, including: West Africa Soil Health Consortium, International Institute of Tropical Agriculture and International Centre for Soil Fertility and

Development (IFDC). The Federal Ministry of Agriculture and Rural development was represented by the Farm Input Support Service (FISS) and Agricultural Land and Climate Change Management Services Departments, and Agricultural Research Council of Nigeria (ARCN). National Research Institutes were represented by Institute for Agricultural Research of Ahmadu Bello University (IAR/ABU), National Agricultural Extension Research and Liaison Services (NAERLS), Lake Chad Research Institute (LCRI), Institute of Agricultural Research and Training (IAR & T), Ibadan, National Cereal Research Institute (NCRI), Badeggi, National Root Crops Research Institute (NRCRI), Umudike. Agricultural Development Project present were: Kaduna State (KADP), Katsina State (KTARDA), Zamfara State (ZAFARDA), Kano State (KNARDA), Jigawa State (JARDA), FCT ADP Abuja, and Plateau State (PADP). Projects promoting ISFM that graced the occasion included TAMASA, OFRA, N2Africa and ILWAC. Representatives also came from the following Universities: Kebbi State University of Science and Technology, Federal University, Wukari, Kogi State University, Bayero University Kano. Also present were a Non-Governmental Organization (SG 200) and a Private Sector (Notore Fertilizer PLC).

The workshop objectives were to:

- Assess performance and improve the consortium's future management and delivery of products and services
- Share lessons and experiences gained by other projects promoting ISFM
- Provide opportunities for identifying knowledge gaps in approaches to scaling out ISFM technologies
- Provide a forum for institutionalizing the consortium by developing a charter.

After the presentation of papers on the SHC and from projects promoting ISFM, and discussions on lessons learned from their experiences, three groups were formed to discuss way forward on scaling out ISFM practices for livelihood impact. The groups focused on:

- Technology related questions,
- Delivery and dissemination of ISFM technologies and
- Scaling out of ISFM technologies.

The other important activity at the workshop was development of the soil health charter with a primary focus on identifying a suitable title, agreeing on an organogram, and defining roles and responsibilities. This was with a view to drafting a charter that should ensure the sustainability of the consortium after the

project life. The title of the charter agreed upon was *“Nigeria Soil Health Consortium –Promoting Uptake of Integrated Soil Fertility Management Technologies through Enhancing Extension and Advisory Services”*. See attached to this report the organogram, role and responsibilities (appendix).

Outputs from the workshop included:

- Lessons learned from projects promoting ISFM
- Identification of scalable ISFM packages (good agricultural practices).
- The development of the Consortium Charter
- Report on the lessons learned workshop.

(IV) Participation in projects having similar goals with the Soil Health Consortium

(1) International Years of Pulses

The Nigeria Soil Health Consortium partnered with the Food and Agricultural Organization and Soil Science Society of Nigeria in mandating the Department of Soil Science, Ahmadu Bello University, Zaria (ABU), organized a one-day sensitization symposium on pulses. It was tagged “International Year of Pulses 2016”, though belatedly held on the 7th March, 2017 at Murtala Muhammed Library Complex Kano, Kano State. The specific objectives of the IYP 2016 are to:

- Raise awareness about the important role of pulses in sustainable food production and healthy diets and their contribution to food security and nutrition;
- Promote the value and utilization of pulses throughout the food system, their benefits for soil fertility and climate change and for combating malnutrition;
- Encourage connections throughout the food chain to further global production of pulses, foster enhanced research, better utilize crop rotations and address the challenges in the trade of pulses.

Participants included staffs from various institutes such as:

- Universities: Ahmadu Bello University Zaria, Bayero University Kano, Usman Danfodio University, Kebbi State University and Dustei'ma University of Kastina
- Students from selected Secondary schools within Kano
- Heads of Departments: Agronomy, Animal Science, Agricultural Economic and Rural Sociology Ahmadu Bello University and Animal Science Bayero University Kano.
- All Country Representatives of Development Partners: IITA, Kano, ICRISAT Kano, CDA Kano

- Representatives of Kano, Kastina, and Sokoto ADPs
- Farmers Organizations: Sokoto, Kastina and Kano
- Invited Guests: Women in Agriculture Kura, Kano State

Three presentations were made during the programme, with titles:

- Contributions of pulses to soil fertility, food security and climate change mitigation
- Nutritional benefits of pulses
- Pulses: Drivers of Economic Growth and Poverty Reduction

At the end of the symposium, flyers, caps and T-shirts with advertorial inscriptions were distributed to the participants.

(2) **Training of Scientist on the use of Soil Doc Kit**

The NgSHC also collaborated with NAERLS, ABU Zaria to raise more awareness on the need for soil analysis to enhance site-specific fertilizer recommendations, which could lead to more efficient nutrient management and greater productivity. This activity plans to use the soil test kits known as “SoilDoc”, which was developed by Researchers at the University of Maryland and Columbia University with the support of the Alliance for a Green Revolution in Africa (AGRA). The soil test kits have been distributed to all ADPs in Nigeria by the Federal Ministry of Agriculture and Rural Development.

Training objectives

- To transfer a smart fertilization information to extension specialists and scientists
- Develop proficiency of participants in analyzing key soil fertility indicators using SoilDoc Kit
- Improve knowledge of participants on android data management system
- Develop capacity of participants to timely undertake analysis of samples

Learning Outcomes:

- Apply scientific principles to make recommendations and advise to farmers
- Participants will conduct analyses using soil doc kit to determine key soil fertility indicators
- Participants will interpret soil doc test information and make management decisions based on state recommendations

The activity was planned for March 2017 but had to be moved to May 2017. Participants will principally be staff working with the adopted villages (extension laboratories) of the respective research institutes and some postgraduate students. Information from the training shall be posted on the NgSHC website.

(3) OFRA engagement with Extension Staff Training workshop

The NgSHC also participated in training extension staff of the IAR/ABU and NAERLS/ABU “Adopted Villages” on the employment of OFRA Fertilizer Optimization Tools. This activity took place between the 4th and 6th April 2017. The NgSHC contributed by providing information from the consortium database, which was used to develop a key output of the FOT and presented in a table titled, “*Fertilizer Use Within an Integrated Soil Fertility Management Framework*”.

(VII) WASHC Closeout Meeting

The WASHC project organized a two-day close-out meeting which was held on the 22nd and 23rd of March 2017, at the International Institute of Tropical Agriculture (IITA), Ibadan Nigeria to celebrate its achievements and mark the upcoming end of the project. Participant comprising of representative from Ghana, Mali, Niger and Nigeria (Northern and Southern node). Participants from NgSHC (Northern node) were Prof I.Y. Amapu, Prof B.D Tarfa, Prof. J.G. Akpoko, Elijah Ogunsola and Malgwi, Oluwaseun Dorcas.

The agenda for the meeting included

- Sharing the story of the WASHC project
- Theory of scaling of ISFM technologies and practices
- Country specific recommended ISFM practices
- Dissemination and delivery of ISFM technologies and practices
- Data and information sharing on ISFM
- Advocacy and stakeholder involvement.
- Presentations from associated project promoting ISFM
- A Panel discussion on lessons learned and paving a way forward

The Nigeria Soil Health Consortium gave a firm assurance that it was going to continue pursuing the laudable objectives of the SHC.

Challenges, Lessons Learned and New Directions

- Poor comprehension of modus operandi laid to delay in commencing activities and general lethargy

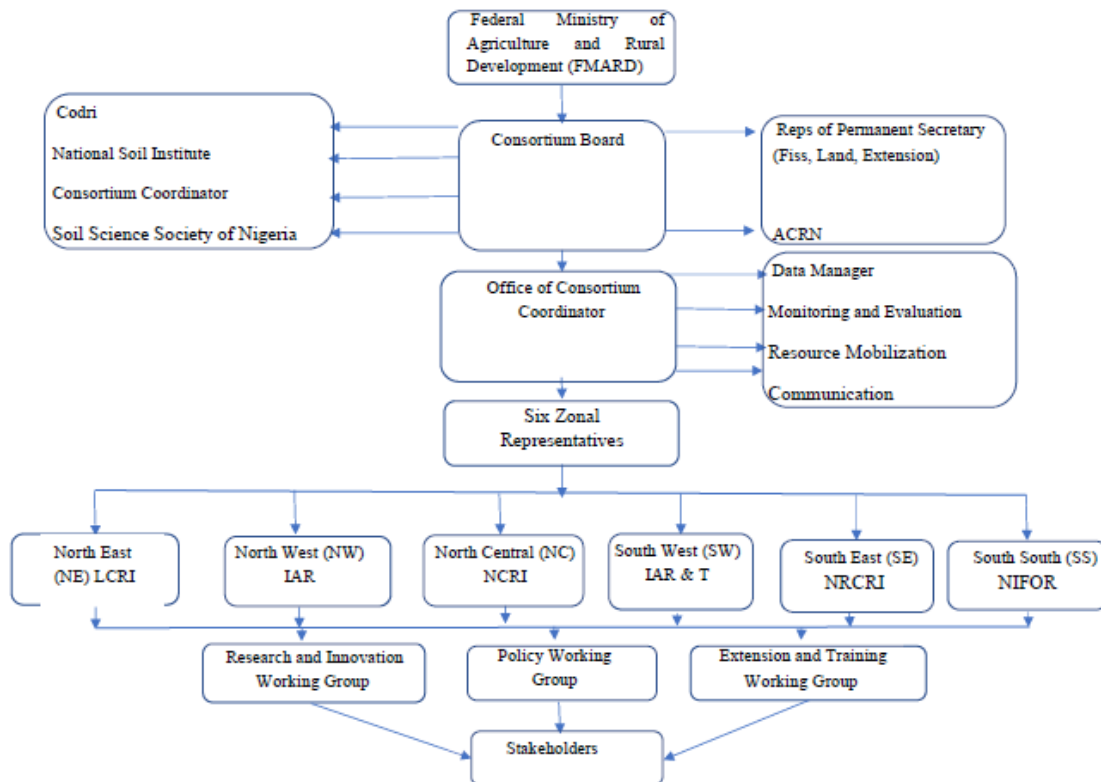
- Lack of a functional Website (www.nigeriasoilhealthconsortium.org)
- Insufficient number of knowledge and information products
- Lack of proper utilization of database

New directions include:

- Need to build more capacity in ICT or hire knowledgeable staff to improve data and metadata analysis and communication issues
- Need for fulltime staff for handling consortium activities
- Draw from experiences of others; not re-inventing the wheel
- Institutionalize an independent functional Nigeria Soil Health Consortium

Appendix

Organogram



Organogram of Soil Health Charter

Roles and Responsibilities

Federal Ministry of Agriculture and Rural Development

- Policy approval
- Funding

Consortium board

Decision making of the consortium activities

- Sourcing of funds
- Approval of work plans
- Appointment of coordinator
- Lobbying and advocacy

Consortium coordinator

- Implementation of policy and programs
- Draw the work plans
- Coordination of the implementation of the activities
- Management of the human resource of the consortium
- Fund sourcing
- Lobbying and advocacy
- Represent the consortium on the board
- Represent the consortium on other fora
- Data management
- Any other responsibilities as assigned by the board

Zonal representatives

- Implement the activities of the consortium at zonal level
- Generate and collate data

Working groups

- A. Research and Innovation
 - Identify ISFM technologies for scaling out
 - Technology validation for dissemination
 - Packaging of ISFM technologies for dissemination
- B. Policy working group
 - Develop policy briefs on ISFM
 - Advocacy and lobbying
 - Fund sourcing for research and extension
- C. Extension and Training working group
 - Develop and disseminate last mile delivery
 - Prepare training modules

- Work with policy and research innovation working groups
- Liaise with other extension organizations.

Stakeholders: The following were identified as relevant stakeholders and their roles were assigned by participants at the meeting.

- ADPs
- Local government
- Traditional and religious rulers
- Research institute and university
- Politicians include state executive, state legislative, national assembly, federal executive council
- Relevant ministry department and agencies
- NGOs
- Farmers group
- Security
- Bank of Agriculture/ Financial institutions
- School and colleges of Agriculture
- Agro input dealers (fertilizer and seed chemical)
- Donors

Stakeholder groups

ADPs

- Validation of technologies
- Dissemination of technologies
- Feedbacks on technologies
- Linkages between research and farmers/ credit agencies and input supply
- Conduct farmers training

Local government

- Participation in the dissemination of technologies
- Logistic supports

Traditional / religious leaders

- Mobilization /advocacy
- Conflict management

State government

- Mobilization/advocacy
- Conflict management
- Support –logistics and funds

MDAs

- Logistics and supports
- Advocacy

- Policy approval
- Provision of data

NGOs

- Logistic support and funds
- Advocacy
- Dissemination of technologies
- Knowledge sharing

Research institutes

- Technologies generation and development
- Zonal coordination of consortium activities
- Training and capacity building
- Logistic supports
- Supervise/coordinate the activities of the working groups
- Dissemination of technologies

Universities

- Technologies generation and development
- Training and capacity building
- Logistics support
- Laboratory analytical services
- Advocacy

Schools and colleges of Agriculture

- Training and capacity building
- Dissemination of technologies

Farmers based organizations (FBOs)

- Technology validation and dissemination
- Mobilization
- Advocate for policy
- Provide feedbacks on technologies

Agro dealers

- Provision of quality inputs
- Extension and dissemination
- Capacity building
- Support/logistics

Security

- Conflict management
- Provision of security

Financial institution

- Provision of credit

- Insurance cover

Donors

- Provision of funds
- Supervision
- Knowledge sharing

Appendix 3: Mali CSH Year 3 Annual report on progress

Supporting Soil Health Consortia in West Africa- facilitating wider uptake of better adapted ISFM practices with visible positive impacts on rural livelihoods

Mali Soil Health Consortium /

Consortium de Santé du Sol de Mali

Annual Narrative Report on Progress /

Rapport d'avancement annuel

Juillet 2016/N°01 et 02/Novembre2016/ Mars2017

AGRA Grant No.: 2013 SHP 005

Project Title:

Supporting Soil Health Consortia in West Africa- facilitating wider uptake of better-adapted ISFM practices with visible positive impacts on rural livelihoods

Period Covered:

Février 2016 au 31 Juillet 2016 à Mars 2017

Background and Introductory statement / Contexte et Préambule

Activities/ Activités

<fournir le compte rendu narratif des activités menées au cours de la période considérée>

De février à juillet 2016, les institutions partenaires ont procédé à l'identification des parties prenantes.

ONG GRAADECOS SIKASSO

Organisations Paysannes (OP) Djiguiya: 45 membres dont 13 femmes

Fousseini Diabaté :78263691 ;

Bakary Bengaly :66058450 ;

Benkadi: OP 86 membres féminin

Awa Diabaté : 83893200

Adjara Bengaly : 83333682

Yèrèdon: OP féminine de 65 membres

Djeneba Bengaly : 79169842

Mama Traoré : 92882632

Les OP Mamala, Kouloukan et Dialakoro sont constituées de producteurs qui évoluent autour du coton mais qui pratiquent la GIFS.

ONG MISSION SAHEL

Elle est basée à Bamako mais ses activités se déroulent dans la région de Sikasso

Liste des organisations paysannes en GIFS

N°	Cercles	Villages	Points focaux paysans
1	Bougouni	Toula	Sory DIAKITE Tél. : 77 50 27 00
2	Kolondièba	Zimpiala II	Chata KONE Tél. : 74 96 41 57
3	Yanfolila	Yanfolila	Sira SIDIBE Tél.: 74 48 8974
4	Koutiala	Siéso	Nouhoun DEMBELE Tel. : 60 61 84 86
5	Sikasso	Kassanso	Mamadou SOGODOGO Tel. : 65 56 36 69
6	Yorosso	Kifosso	Salimata CAMARA Tél. : 94 42 36 48

7	Kadiolo	Kadiolo	Salimata Bagayoko (voir Moumini Togola facilitateur Agriculture : 65218333
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AOPP MOPTI : IDENTIFICATION DES PARTIES PRENANTES

Village de Kiri, 5 paysans : Amagana Djimdé, Andogoly Djimdé, Diagame Djimdé, Moïse Guindo et Atimè Djimdé;

Village de Bérély, 9 paysans: Amadou Guindo, Amadou Sissi Guindo, Diougoly Guindo, Salimata Guindo, Aldiouma Guindo, Amadou lè Guindo, Hassimi Kassogué, Andongui Kassogué et Karim Sagara;

Village de Anakana, 11 paysans: Jean Douyon, Issa Douyon, Youssouf Poudiougo, Souleymane Douyon, Bourèma Douyon, Housseini Douyon, Bourèma A Douyon, Denis Douyon, Samuel Douyon, Hamadoun Douyon et Mamoudou Douyon;

Village de Téna, 6 paysans: Bourèma Togo, Saydou Togo, Djibril Togo, Moumouni Togo, Oumar Togo et Moumouni A. Togo.

Amagana DJIMDE (Kiri) = [62 20 13 43](#)
 Salimata GUINDO (Bérély) = [66 00 19 54](#)
 Amadou DOUYON (Anakana) = [79 37 69 52](#)
 Bourèma TOGO (Téna) = [95 05 75 52](#)
 Bourèma GUINDO (Nougoudama)= [78 54 62 41](#)
 Soumaïla GUINDO (Bana) = [75 04 91 44](#)

ONG SAHEL21

- Sahel 21 a mené des activités de sensibilisation et de formation au niveau de 124 producteurs sur les semences améliorées d'arachide et assuré l'approvisionnement de 54 producteurs en engrais.
- Certaines institutions ont bénéficié de la sensibilisation pour la bonne marche du projet consortium dans sa phase de réalisation d'une part et d'autre part la pérennisation de consortium après la phase projet. Cela s'est fait en une série de 04réunions dont la visite du coordinateur régional du projet au Mali. Au cours de sa visite, le coordinateur nous a donné des informations importantes telles qu'une éventuelle prolongation du projet qui ne sera pas à cause de la nouvelle structuration de AGRA. Les institutions qui ont participé à ces réunions de sensibilisation et d'information sont :
 ADAF Gallé, KILABO, GRAADECOS, AMAPROS, MISSION SAHEL, AOPP, DNA, MALIMARK, CNOP, SAA, IER/OFRA, SAHEL21, TOGUNA, IPR/IFRA.
- Un atelier de rédaction d'un article sur les activités sur la gestion intégrée de la fertilité des sols a été organisé du 09 a 11 février 2016, avec la participation de 22 personnes.
- Un documentaire sur la GIFS a été réalisé avec le concours de l'ORTM piloté par l'ONG MALIMARK en 2016. Les travaux ont démarrés le 30 /05/ pour terminer en Octobre 2016.

- Une formation sur la gestion du site web du projet Consortium a été organisée du 19 au 21 Juillet 2016. Les institutions présentes étaient l’IER, GRAADECOM, DNA, MISSION SAHEL, SAHEL21, MALIMARK. La formation a été dispensée par la société Terisys. Les représentants de dix (10) structures ont été formés.
- Deux ateliers de formation sur le plaidoyer ont été organisés dans les villes de Koutiala et Ouélessébougou. Koutiala du 12 a 13 Octobre 2016 avec 33 participants, Ouélessébougou du 19 a 20 Octobre 2016 avec 30 participants dont des maires et des représentants des conseils de cercle.
- Novembre 2016 : Organisation des ateliers locaux sur les leçons apprises
 - Kolokani : 03/11/2016 : 34 participants
 - Bougouni : 05/11/2016 : 37 participants
 - Koutiala : 07/11/2016 : 38 participants
- Atelier de capitalisation des leçons apprises du 23 au 24/11/2016 à Bamako : 30 participants.
- Atelier d’harmonisation des propositions techniques de production le 15 décembre 2016 : 27 participants.
- Mars 2017 : Organisation des ateliers de fin du projet Consortium
 - Kolokani : 11/03/2017 : 28 Participants
 - Bougouni : 15/03/2017 : 39 Participants
 - Koutiala : 17/03/2017 : 36 Participants
 - Atelier National : 13/03/2017 : 30 Participants.
- Au cours de ces ateliers de fin de projet, 200 copies de fiches techniques ont été distribuées, 72 copies de posters, 356 copies de 12 manuels, 16 copies de succès stories et 20 copies du document plaidoyer. Ces outils ont été distribués entre 20 structures et 65 producteurs repartis entre 38 organisations paysannes.
- Réalisation des cartes des principales cultures (Maïs, Sorgho, Mil et Niébé) et les technologies GIFS générées par le projet Consortium. Au total 220 copies ont été distribuées au cours des ateliers de fin du projet consortium.
- Participation de cinq (05) membres du projet Consortium Mali à l’atelier de clôture du projet consortium à Ibadan au Nigeria du 22 au 23 Mars 2017.

Achievements/ L’Accomplissement

OBJECTIF	ACTIVITÉ	Materielles et rapports produit	Le Resultat
Objectif 1 Inventaire des bénéficiaires dans le pays pour identifier les intervenants clés qui formeront le consortium	Identification des parties prenantes	Rapport d’identification des parties prenantes	405 membres

<p>Objectif 2 Améliorer la capacité des bénéficiaires et des institutions à fournir une connaissance technique et des solutions harmonisées sur les technologies GIFS</p>	<p>Information sensibilisation sur les activités du projet</p> <ul style="list-style-type: none"> • Formation de certains acteurs sur la gestion du site web 	<ul style="list-style-type: none"> ▪ Rapport de sensibilisation Rapport de formation 	<ul style="list-style-type: none"> ▪ 01 rapport 01 rapport
<p>Objective 3: Accroître la dissémination des innovations GIFS en développant une base nationale de données et des produits de connaissance appropriés</p>	<ul style="list-style-type: none"> • Elaboration de protocoles • Réalisation d'un article sur la GIFS • Réalisation d'un documentaire sur la GIFS • Ateliers de Plaidoyer sur la GIFS (Koutiala et Ouélessébougou) • Ateliers locaux sur les leçons apprises (kolokani, Bougouni, koutiala) • Atelier de capitalisation des leçons apprises • Atelier d'harmonisation des connaissances GIFS • Ateliers locaux de fin du projet consortium Mali (Kolokani, Bougouni, Koutiala) • Atelier National de fin du projet consortium 	<ul style="list-style-type: none"> • Formulaire document documentaire Rapport Rapports Rapport Rapport Posters Fiches techniques Manuels Succès Stories Document plaidoyer Cartes des cultures Rapport 	<ul style="list-style-type: none"> ▪ 02 formulaires 01 article Film disponible 01 document de plaidoyer reproduit en 20 copies et distribuées 01 rapport 01 rapport 01 rapport 72 copies distribuées 200 copies distribuées 356 copies distribuées 20 copies distribuées 20 copies distribuées 220 copies distribuées 01 rapport

Challenges and New Directions/ Défi et de nouvelles orientations

La pérennisation de consortium après la phase projet est un défi et une nouvelle orientation pour tous les intervenants dans le projet consortium.

Lessons learned/ Leçons apprises

L'identification des parties prenantes est une bonne chose car elle permet de savoir la compréhension de la GIFS au niveau des producteurs.

Les ateliers locaux sur les leçons apprises nous ont permis de savoir la praticabilité de la GIFS au niveau des producteurs d'une part et d'autres parts de recenser certains besoins des producteurs en outils de diffusion.

Appendices/ Annexes

- **Liste du personnel impliqué dans le projet (les nouvelles recrues et mise à jour sur la composition du personnel)**
- Dr. Diakalia SOGODOGO : Coordinateur du Projet Consortium : 69861513
- Mr. Bakary Youba COULIBALY : Adjoint au coordinateur : 75259820
- Dr. Béjamé COULIBALY : Gestionnaire du site web et de la base des données : 76470340
- Mlle Sara TOGO : Gestionnaire de la base des données : 79339073
- Mr. Yacouba KEITA : Comptable admis à la retraite, remplacé par Soumaïla TRAORE :76550118 / 66688741
- Mr. Boubacar TOURE: Chauffeur: 70231268

- **Liste des membres du consortium (ou mise à jour sur les membres du consortium - de nouveaux membres)**
- Dr. Bourama DEMBELE : DG/IER
- Dr. Ibrahima N'DIAYE : DS/IER
- Dr. Diarisso Niamoye NIARRO: 76029071
- Dr. Mamourou DIOURTE: Direction/IER
- Dr. Yacouba SYLLA: Direction/IER
- Dr. Amadou GAKOU : IER / ES : 79041871
- Dr Hamidou KONARE: IER/Sotuba Labosep : 76278734
- Mr. Oumar SAMAKE: IER/ Sotuba Labosep :
- Dr. Mama KONE: IER/Sotuba labosep (Projet fertilization Maïs – Niébé) : 66803291
- Dr. Lamine TRAORE : IER/Sotuba labosep (Projet PNT) : 66724326
- Dr. Cheick Hamalah DIAKITE : IER/Sotuba labosep : Cartographie : 76365484
- Mr. Abocar Oumar TOURE : IER/CRRRA Sotuba : 76036395
- Dr. Mamadou COULIBALY : IER /CRRRA Sotuba : 76390080
- Mlle Marie Louise SAMAKE : IER/ SRA Cinzana : 66899939
- Mr. Dramane DEMBELE : IER/ SRA Cinzana : 75264074
- Mr. Moussa MARIKO : IER/SRA Cinzana : 75259734
- Mr. Sory DIALLO: IER/SRA Cinzana: 76366288
- Mr. Sekou B. DIARRA: IER/SRA Cinzana- Comptable : 74667746
- Mr. Daouda TRAORE : Chauffeur IER/SRA Cinzana : 74423308
- Dr. Mohamed DICKO: IER/ CRRRA Niono, Projet OFRA : 78277716
- Mr. Moussa TRAORE : Chauffeur IER /CRRRA Niono : 73443582
- Mr. Mamadou OUOLOGUEM: CEFOR/IER : 76100362
- Mr. Abdoulaye H. MAIGA: Direction/IER : 66725419
- Mme Bengaly Korotoumou SANOGO : DNA : 76171396

- Mr. Sidiki SOUMANO : DNA : 76457237
- Mr. Nouhoum TAMBOURA : DNA : 76235371
- Les cinq Directions régionales de l’Agriculture (DRA) relevant de la Direction Nationale de l’Agriculture (DNA) sont membres.
- Mr. Massa BALLO : Le secteur d’agriculture de Kolokani : 75011594,
- Mr. Elisé GOITA : Le secteur d’agriculture de Bougouni : 78760328,
- Mr. Amadou SOGOBA : Le secteur d’agriculture de Koutiala : 79035994,
- Mr. Dramane SANOGO : Secteur d’agriculture de koutiala : 66789155
- Mr. Ousmane TRAORE : Sous-Secteur Touba Coura : 75492028
- Mr. Birama DAO : Le secteur OHVN de Ouéléssébougou : 76280291,
- Mr. Thiory KANE : Chambre d’agriculture de Kolokani : 75366584,
- Mr. Emmanuel KONE : Conseil de cercle Kolokani : 66697468
- Mr. Ouattisséké DIABATE : Chambre d’agriculture de Sikasso : 76113791,
- Mr. N’Golo TRAORE : Chambre d’agriculture de Bougouni : 64906263,
- Mr. Fousseini TRAORE : Chambre d’agriculture de Koutiala : 79048547,
- Mr. Oumar COUMARE: AOPP Bamako: 76170845
- Mr. Jacques TOGO: AOPP Mopti: 76639578
- Mr. Henri COULIBALY: AOPP Ségou: 76215546,
- AOPP de Bougouni,
- Mr. Dramane Jean KONE : AOPP de Koutiala : 79448111,
- Mr. Souleymane CAMARA: CNOP: 76039507
- Mr. Abou BERTHE: SG2000: 76463574
- Mr. Boubacar Sandinan CAMARA: ONG SAA/SG2000 : 74728545
- Mr. Sangaré ONG SG2000,
- Mr. Finemory CAMARA: ONG SG2000:
- Mr. Karmoko SAKO: ONG EUCORD: 76450320
- Mr. Bréhima TRAORE: ONG EUCORD: 76435875
- Mr. Baraïma DIALL: ONG ADAF/Gallé: 76339389
- Mr. Djibril KONE: ONG ADAF/Gallé: 20220033 / 76420703
- Mr. Oumar TRAORE: ONG KILABO: 76121407
- Mr. Bakary DOUMBIA: ONG KILABO: 76364218 / 67897664
- Mr. Tiécoura DIARRA: ONG MISSION SAHEL: 76491221
- Mr. Daouda Sory DEMBELE: MISSION SAHEL: 76473407
- Mr. Lassine KONATE: ONG MISSION SAHEL: 75252333
- Mr. Seydou TOGOLA: ONG SAHEL21: 79339073
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- **Liste des publications et des sorties générées par le projet au cours de la période de déclaration (s'il vous plaît assurez-vous que le bureau régional dispose d'une copie de toutes les publications ou les rapports générés)**
- Un protocole sur l'utilisation des doses d'engrais proposées par OFRA
- Un protocole sur l'utilisation de la fumure Organique.
- Un article sur la gestion intégrée de la fertilité des sols (GIFS),
- Un film documentaire sur la GIFS,
- Cinq (05) Posters destinés aux décideurs,
- Cinq (05) fiches techniques destinées aux techniciens,
- Douze (12) manuels pour la formation des producteurs destinés aux producteurs, traduits en langue locale Bamanankan,
- Un document sur le plaidoyer,
- Confection des cartes des cultures
Maïs (maïs hybride, maïs opv, maïs) : Douze (12) variétés améliorées Onze (11) Hybrides.
- Sorgho (sorgho hybride, sorgho opv, sorgho) : Neuf (09) variétés améliorées et Cinq (05) Hybrides.
- Mil (mil hybride, mil opv, mil) : Neuf (09) variétés améliorées et Trois (03) Hybrides.
Niébé (niébé) : Deux (02) variétés extra-précoces, quatre (04) variétés précoces, Trois (03) variétés intermédiaires et Trois (03) variétés tardives.
- Confection de la carte de Vingt Trois (23) technologies sur la GIFS par le projet consortium Mali.

Appendix 4: Niger CSH

Final narrative report project progress and achievements

**REPUBLIQUE DU NIGER
MINISTERE DE L'AGRICULTURE ET DE L'ELEVAGE
Institut National de la Recherche Agronomique du Niger (INRAN)
Département Gestion des Ressources Naturelles (DGRN)**

Le Consortium Santé du Sol Niger / Niger Soil Health Consortium (NiSHC)

Titre du projet:

**Consortium Santé du Sol :
Promotion des technologies de la Gestion Intégrée de la Fertilité des Sols (GIFS) au Niger**



Référence du financement : AGRA Grant réf. Nr. 2013 SHP 005

Rapport final

Période: Juin 2014 au 31 Mars 2017

**Pr. Guéro Yadji, Dr. Mahaman Sabiou, Dr. Maman Garba, M. Yahaya Issaka, M. Mamadou
A Kourna et Dr Gonda Abdou**

Avril 2017



Citation

Veillez utiliser la citation suivante pour citer ce document : Guéro Yadj, Sabiou M., Garba M., Yahaya I. et Gonda A., 2017. Consortium Santé du Sol Niger – Promotion des technologies de la Gestion Intégrée de la Fertilité des Sols (GIFS) au Niger. Final report. Institut National de la Recherche Agronomique du Niger (INRAN) B.P 429, Niamey, Niger, Pp. 28.

Résumé

Au Niger, les activités agricoles sont essentiellement pratiquées sur des sols naturellement pauvres. Les méthodes traditionnelles de culture, généralement utilisées par les producteurs, ne permettent pas l'amélioration de la fertilité de ces sols. Depuis quelques années, les projets de développement et ONGs travaillent en collaboration avec les services techniques pour la mise en place des boutiques d'intrants en vue d'en faciliter l'accès aux producteurs. Mais on constate que les interventions des acteurs de la Gestion Intégrée de la Fertilité des Sols (GIFS) ne sont pas coordonnées. La recherche agronomique conduite tant par les institutions nationales qu'internationales a produit un certain nombre de résultats sur la gestion et l'amélioration de la fertilité du sol. Cependant, l'adoption de ces résultats de recherche par les producteurs reste encore très faible.

L'Alliance pour la Révolution Verte en Afrique (AGRA) a appuyé la mise en place du Consortium Santé du Sol pour permettre aux parties prenantes de s'associer et joindre leurs efforts pour la promotion de la Gestion Intégrée de la fertilité du Sol (GIFS) de 2014 à 2017. L'objectif général du consortium santé du sol est de contribuer à la sécurité alimentaire à travers la promotion des technologies de la gestion intégrée de la fertilité des sols. Pour cela, les stratégies proposées étaient d'abord de mettre en place un cadre de concertation et de synergies entre acteurs de la GIFS. Ensuite, rassembler toute information sur la GIFS au Niger et en faciliter l'accès aux acteurs, notamment les producteurs cibles. Enfin harmoniser les connaissances sur la GIFS et les interventions des acteurs afin d'assurer la durabilité et l'efficacité des actions.

Les principaux résultats atteints par le consortium sont : (i) la mise en place d'une plateforme de concertation et d'échanges entre acteurs de la GIFS au Niger, organisée en cinq groupes de travail, notamment la recherche-vulgarisation, les intrants agricoles, la formation, la communication et la mobilisation des ressources ; (ii) la mise en place d'un réseau d'environ 40 institutions membres déclinées en 13 catégories, pour échanger sur toutes les questions de la GIFS ; (iii) l'amélioration de l'accès des acteurs à la connaissance des bonnes pratiques « *best-bet* » sur la GIFS à travers : la production de huit des fiches techniques et posters simples et d'un guide pour la conduite des démonstrations; (iv) l'amélioration de la capacité des acteurs à harmoniser et à consolider les connaissances sur la GIFS à travers plusieurs formations (v) ; l'harmonisation et l'amélioration de la collecte de données et de l'information sur la GIFS au niveau national et régional à travers la l'élaboration des formats harmonisés de collecte et de stockage de données GIFS; (vi) l'amélioration de la collaboration entre les acteurs dans l'harmonisation des pratiques de la GIFS à travers la production d'un document de plaidoyer, de synthèse et d'harmonisation des recommandations sur la GIFS au Niger.

A l'issue de cette phase de trois (3) ans du Consortium Santé du Sol au Niger, une structure formelle capable de regrouper et d'orienter les actions des acteurs de la GIFS a été mise en place. La base de données ainsi créée lui permettra de servir comme principal centre d'information sur la GIFS au Niger.

Remerciements

L'équipe du projet "Consortium Santé du Sol-Promotion des technologies de la Gestion Intégrée de la Fertilité des Sols (GIFS) au Niger" exprime ses sincères remerciements et sa gratitude aux différentes institutions pour leurs contributions diverses à la réussite de ce projet durant ces trois (3) années. Il s'agit particulièrement des personnes et institutions suivantes :

- Le Ministère de l'Agriculture et de l'Elevage, à travers son Secrétaire Général, pour avoir présidé le Comité de Pilotage, la Direction des Etudes et de la Programmation et la Direction de l'Agriculture pour sa précieuse collaboration ;
- A l'Institut National de la Recherche Agronomique du Niger (INRAN) et à l'Université Abdou Moumouni de Niamey pour avoir accepté de mettre en œuvre et coordonner le projet ;
- A l'Institut International pour l'Agriculture Tropicale (IITA) d'Ibadan, Nigeria pour son appui technique ;
- Aux autres équipes des consortia du Burkina Faso, du Ghana, du Mali et du Nigeria pour les échanges d'expériences et la collaboration dans la mise en œuvre du projet;
- Aux membres du consortium, notamment les Organisations Non Gouvernementales, les Organisations de Producteurs, les Institutions Financières, les projets, les agrodealers et les médias, pour leur contribution à la réalisation des activités.

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1. Introduction

Le consortium santé du sol est une initiative financée par l'Alliance pour la Révolution Verte en Afrique (AGRA) qui concerne 5 pays de l'Afrique de l'Ouest dont le Burkina Faso, le Ghana, le Mali, le Niger et le Nigeria. Ces pays connaissent en effet des difficultés pour l'amélioration de la production agricole. Le consortium regroupe tous les intervenants dans le cadre de la Gestion Intégrée de la Fertilité du Sol (GIFS ou « ISFM » en anglais) à des fins de production agricole, à savoir les institutions publiques de recherche et de vulgarisation, les décideurs politiques, les institutions de développement (projets et ONGs), les organisations paysannes, les fournisseurs d'intrants, les institutions financières et les médias.

Les constats de AGRA étaient que : (1) L'Afrique utilise environ 3 % de la fourniture d'engrais du globe ; (2) Le paysan en Afrique utilise environ 8 kg/ha par rapport à l'Asie où les paysans se servent d'environ 150 kg/ha ; (3) L'utilisation des engrais (organique et minéral) en combinaison avec une bonne culture accroît les rendements ; (4) La recherche indique que les engrais, en combinaison avec les autres pratiques d'intensification, triplent les rendements ; (5) Les interventions des acteurs de la Gestion Intégrée de la Fertilité des Sols (GIFS) ne sont pas coordonnées ; (6) L'accès aux engrais est très faible ; (7) Le manque de maîtrise des engrais et des technologies de la GIFS par les paysans et les agro dealers ; (8) La coexistence du public et du privé dans le système de vulgarisation ; et (9) Les aléas climatiques interfèrent dans la production agricole. Compte tenu de tous ces constats, AGRA avait pensé à regrouper tous les acteurs de la GIFS par pays en un regroupement dénommé **Consortium Santé du Sol**. L'ensemble des consortia forment le Consortium Santé du Sol Ouest Africain. Il existe aussi un Consortium Santé du Sol Afrique de l'Est et du Centre et un Consortium Afrique du Sud. Le Consortium Santé du Sol Africain regroupe tous ces consortia.

Toutes ces initiatives de formation de consortium ont bénéficié d'un support financier de AGRA. Le budget total du Consortium Santé du Sol du Niger s'élève à cent quatre-vingt-dix-huit mille sept cent dix-neuf dollars (198,719.00 US\$), pour une durée de trois (3) ans.

1.1 Objectifs

L'objectif global du consortium est de contribuer à la sécurité alimentaire au Niger à travers une large diffusion des technologies de gestion intégrée de la fertilité des sols (GIFS).

Les objectifs spécifiques sont: (i) Améliorer l'accès des petits agriculteurs et autres parties prenantes aux innovations de la GIFS ; (ii) Renforcer les capacités des acteurs et des institutions à fournir des connaissances techniques et des solutions harmonisées sur la GIFS ; (iii) Améliorer la diffusion des innovations de la GIFS en développant une base de données et les produits de partage des connaissances appropriées ; (iv) Faciliter la collaboration entre les intervenants afin d'améliorer le partage des connaissances et la communication de l'information sur la GIFS, tant au niveau national que régional.

2. Méthodologie

La première année, la cellule de coordination du projet a été formée. Elle a préparé le lancement du projet par une identification des membres potentiels, en s'appuyant sur la liste des projets en cours et des ONGs intéressés par la gestion intégrée de la fertilité du sol (GIFS). Ensuite les groupes de travail ont été constitués avec définition de leur cahier de charges.

Pour avoir la situation de référence de la GIFS au Niger, une enquête a été menée. Celle-ci a permis non seulement de définir une situation de départ à partir de laquelle l'évaluation d'impacts du projet consortium sera faite, mais aussi et surtout de définir des priorités pour les actions à mener. Les étapes clés de cette enquête étaient: (i) le partage et la validation du questionnaire suivis de son placement au niveau des acteurs de la GIFS ; (ii) l'établissement du masque de saisie, le dépouillement, la saisie et l'analyse des données ; et (iii) la rédaction du rapport de l'enquête. L'objectif est d'informer et de sensibiliser les acteurs sur le Projet Consortium Santé du Sol au Niger et de vulgariser les textes réglementaires de la CEDEAO sur l'importation et la distribution des intrants agricoles de qualité. Il s'agit notamment : (i) du règlement harmonisé C/REG.13/12/12 portant sur le contrôle de qualité des engrais dans l'espace CEDEAO ; (ii) du règlement C/REG.4/05/2008 portant sur l'harmonisation des règles régissant le contrôle de qualité, la certification et la commercialisation des semences végétales et plants dans l'espace CEDEAO ; (iii) du règlement C/REG.3/05/2008 portant sur l'harmonisation des règles régissant l'homologation des pesticides dans l'espace CEDEAO.

Les rencontres avaient été organisées dans les 8 régions du Niger, et l'atelier a concerné toutes les catégories d'acteurs des filières intrants: utilisateurs, importateurs, fabricants, distributeurs, grossistes, détaillants, revendeurs, transporteurs, ONGs, projets de développement rural, etc. La mission qui était composée de l'assistant de la coordination, du chargé du suivi et évaluation, du chef de groupe de travail intrants, du chargé de communication et du comptable a aussi permis d'échanger avec les acteurs sur l'avancement du remplissage des fiches d'enquête relatives à la situation de référence et la création des points focaux. La coordination et les présidents de groupes de travail ont discuté et décidé de la création d'un site web pour la visibilité du consortium.

Dans la perspective de la création d'une base de données GIFS, il a été procédé à une large recherche bibliographique dans les centres de documentation des institutions de recherche et de vulgarisation. Les documents obtenus (les articles scientifiques, les mémoires de fin de cycle, des thèses, des livres et des rapports) ont été triés, et seuls ont été retenus les documents traitant de la GIFS. Des données brutes sur les expérimentations agronomiques à long terme, les démonstrations et les champs écoles paysans ont aussi été collectées auprès des acteurs.

Le consortium se veut être un centre de référence sur la GIFS, en réponse au besoin exprimé par les utilisateurs des résultats de la recherche. Cette base de données va permettre: (i) de rassembler les informations sur la GIFS qui étaient au départ dispersées et non accessibles à la majorité des utilisateurs finaux ; (ii) de mieux cerner les priorités nationales en matière de recherche sur la

GIFS ; (iii) de faciliter la production des outils de partage d'information simplifiés pour les producteurs.

Un atelier a été tenu à Dosso du 03 au 07 Janvier 2015 et a regroupé essentiellement des chercheurs en sciences du sol. Il a eu pour objectif de développer les premiers éléments pour la mise en place d'une base de données sur la GIFS. Au cours de cet atelier, les participants se sont essentiellement penchés sur la sélection et la catégorisation des documents collectés. Environ 150 travaux de recherche sur la GIFS au Niger ont été retenus. Un canevas a été adopté au niveau régional pour le stockage et l'organisation des données rassemblées.

Le Consortium Santé du Sol Niger a organisé une dizaine d'ateliers et participé à plusieurs réunions au niveau national et régional (tableaux 1, 2, et 3).

2.1 Ateliers nationaux

Table 1: Ateliers nationaux organisés dans le cadre du consortium

Thème de l'atelier	Date / lieu	Objectifs
Lancement des activités du Consortium	03 Juin 2014 à Niamey	Regrouper et informer officiellement les différents groupes d'acteurs du démarrage officiel du projet ; Partager la vision et les programmes d'AGRA d'une part, et les projets financés par cette alliance au Niger.
Sensibilisation / information des acteurs sur les règlements CEDEAO sur la qualité des intrants	17 au 26 Août 2014, au niveau des 8 chefs-lieux de régions	Informier et sensibiliser les acteurs sur le Projet Consortium Santé du Sol au Niger et vulgariser les textes réglementaires CEDEAO sur l'importation et la distribution des intrants agricoles de qualité.
Eléments de la base de données: GIFS au Niger	3 au 7 Janvier 2015 à Dosso	Développer les premiers éléments pour la mise en place d'une base de données sur la Gestion Intégrée de la Fertilité du Sol (GIFS/ISFM) au Niger.
Echanges sur la collecte des éléments de la base de données GIFS	21 au 23 Janvier 2015 à Dosso	Discuter avec les structures de vulgarisation sur les éléments de la base de données proposée lors de l'atelier précédent, afin de déterminer la forme que va prendre cette base.
Assemblée générale des acteurs du GIFS	12 au 14 juin 2015	Faire le bilan des activités réalisées en première année du consortium et discuter sur les leçons apprises et les perspectives ; Présenter et discuter le PTBA 2015; Mettre en place les groupes de travail et discuter sur leurs tâches.

Formation de 13 chercheurs et 10 vulgarisateurs sur la gestion des données GIFS	19 au 20 Novembre 2015 à Niamey	Renforcer les capacités de 13 chercheurs et 10 vulgarisateurs sur le traitement, l'analyse et l'interprétation des données GIFS.
Formation des agro-dealers et des facilitateurs	10 au 11 Décembre 2015 à Zinder	Renforcer les capacités de 27 agro-dealers sur le montage des dossiers bancables et de 24 facilitateurs des champs écoles paysans sur la connaissance et l'utilisation des intrants agricoles.
Réunion du Comité de pilotage	22 Décembre 2015 à Niamey	Présenter les bilans technique et financier de l'an 1 et de l'an 2 du projet, les leçons apprises ainsi que les différentes perspectives.
Rédaction d'outils de partage sur la GIFS	26 au 29 Déc. 2015 à Dosso	Former les participants et produire des outils de vulgarisation en matière de GIFS.
Synthèse / harmonisations des acquis et recommandations GIFS Consortium Santé du Sol	27 au 28 Février 2017 CERRA de Maradi.	Compléter et amender la proposition du groupe de travail Niger en se focalisant sur les principales cultures (mil, sorgho, niébé, arachide, et riz); Identifier les meilleurs outils permettant de cartographier les recommandations; Identifier des options appropriées pour les principales cultures.
Comité de pilotage élargi aux points focaux et aux groupes de travail sur les leçons apprises	16 mars 2017 à Niamey	Présenter les acquis du projet et amener les acteurs à avoir la même compréhension quant aux perspectives sur la diffusion à grande échelle de la GIFS; S'entendre sur le rôle que le Consortium peut continuer à jouer dans la promotion de la GIFS.
Assemblée générale des acteurs du Consortium Santé du Sol Niger	17 mars 2017 à Niamey	Amender et adopter les projets de statuts, de règlement intérieur et de la charte du futur consortium; Examiner et adopter les bilans technique et financier des trois (3) années de mise en œuvre du consortium.

2.2 Participation des ateliers nationaux organisés par des Projets membres

Table 2. Ateliers organisés par les partenaires dans le cadre du consortium

Atelier	Date lieu	Objectifs
Projet PAQSEN	10 Mai 2016 à Niamey	Installation du Comité National de Contrôle des Engrais (CONACEN).
Atelier de revue et de programmation OFRA	23 et 24 Avril 2015 Dosso	Présentation des résultats et du PTBA.
Formation sur les outils d'optimisation de l'utilisation d'engrais (OFRA-Optimisation de la Recommandation d'Engrais en Afrique)	31 Mai au 1er Juin 2016 à Zinder, 03 juin 2016 à Tahoua	Former les agents de base sur l'utilisation des outils d'optimisation d'engrais
Atelier Gestion Durable des Terres (GDT)	19 au 21 Mai 2015	Lancement du plan stratégique de la GDT
Projet Renforcement des Associations des Fournisseurs des Intrants Agricoles (RAFIA)	09 juillet 2015	Restitution de l'étude d'impact dans le cadre de RAFIA
Projet Optimisation des Recommandations d'engrais en Afrique (OFRA)	13 au 17 Octobre 2016 à Maradi	Retraite de rédaction d'articles.

2.3 Ateliers régionaux

Table 3. Participation aux ateliers régionaux dans le cadre du consortium

Atelier	Date lieu	Objectifs
AGRA Consortium Santé du Sol Afrique de l'Ouest	10-12 Décembre 2014 à Ibadan, Nigéria	Lancement régional consortium
Formation sur la production des outils de partage d'information sur la GIFS	26 au 28 Novembre 2014 à Kumasi, Ghana	Elaboration des outils de partage GIFS
Atelier AGRA, Mali	11 au 13 Février 2015 à Bamako, Mali	Bilan 2014 et planification des activités 2015
Gestion et analyse des données GIFS WASHC	25 au 29 Mai 2015 à Ibadan, au Nigéria	Formation sur la gestion et l'analyse des données GIFS
Atelier WASHC, Niamey	17 au 19 Février 2016 à Niamey	Bilan et planification des activités
Atelier OFRA	06 au 20 Mars 2016 à ACCRA, au Ghana	Rédaction du livre d'OFRA
Septième Conférence de la Société Africaine de Science du Sol	29 Mai au 05 Juin 2016 Ouagadougou, Burkina Faso	Présentation des travaux
Atelier WASHC, IITA Ibadan, Nigéria	31 Octobre au 2 Novembre 2016 à Ibadan, Nigéria	Gestion de l'information et des données en GIFS pour les Consortia Santé du Sol de l'Afrique de l'Ouest
Atelier OFRA, CABI	05 au 10 Décembre 2016 à ACCRA, au Ghana	Rédaction d'articles scientifiques OFRA à ACCRA
Atelier de clôture du projet WASHC	22 au 23 mars 2017 à Ibadan, au Nigeria	Présentation des résultats et bilan des activités

3. Principaux résultats

Ils sont exposés par objectif spécifique tel que fixé par le projet. Chaque résultat concentre les produits des activités planifiées et exécutées.

3.1 Le NiSHC comme source de connaissances et d'informations sur la GIFS est mis en place (Résultat 1)

3.1.1 Structures mises en place

La structure du consortium est présentée à la figure 1. Une unité de coordination basée à l'INRAN et composée de cinq (05) membres a été mise en place: un coordonnateur issu de la Faculté d'Agronomie de l'université Abdou Moumouni de Niamey, un assistant au coordinateur issu de l'INRAN, un Chargé du suivi et évaluation de la DEP/MAG/EL, un comptable de l'INRAN et une assistante administrative recrutée.

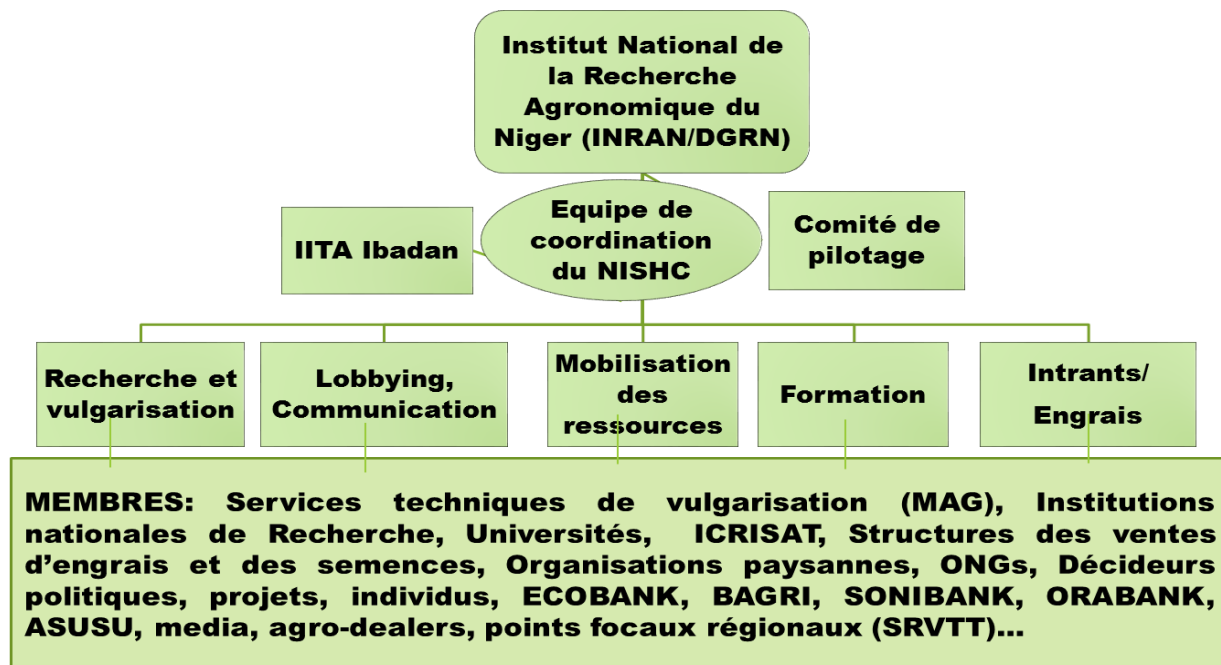


Figure 1. Organigramme du Consortium Santé du Sol-Niger

3.1.2 Cahier de charges et fonctionnement du consortium

L'équipe de coordination

Le rôle principal de l'équipe de coordination est la facilitation des échanges du savoir entre les intervenants dans le cadre de la santé du sol et la mise en œuvre des activités du projet. Le coordonnateur du projet a pour charge de convoquer et présider les réunions, d'initier les réseaux d'e-mails, d'organiser des ateliers et d'aider à la mise en place des groupes de travail. Le secrétariat du consortium est logé à l'INRAN / DECOR et est opérationnel depuis Mai 2014. Le secrétariat reçoit quotidiennement des requêtes d'informations sur la gestion de la fertilité du sol des cultures dunaires, irriguées et maraichères auxquelles il répond et / ou oriente le requérant vers d'autres sources d'informations ou personnes compétentes.

Les groupes de travail

L'équipe de coordination est appuyée dans la mise en œuvre des activités par cinq (05) groupes de travail constitués des membres, dirigés par des présidents et dotés de cahiers de charges bien définis. Ces groupes travaillent avec des personnes ressources compétentes issues des membres, sur les tâches qui leurs sont assignées à travers des rencontres périodiques :

Le groupe de travail intrants agricoles est présidé par le responsable de la division intrants à la Direction Générale de l'Agriculture. Ce groupe a pour objectif d'améliorer l'approvisionnement des producteurs en intrants agricoles de qualité et a pour tâches la sensibilisation des membres sur les réglementations des intrants agricoles, la formation des membres d'OPs sur la connaissance et l'utilisation des intrants agricoles, et des agro-dealers sur le montage des dossiers bancables.

Le groupe de travail formation est présidé par un enseignant chercheur en agropédologie de la Faculté d'Agronomie de l'Université de Niamey. Ce groupe a pour objectifs de renforcer les capacités des acteurs de la GIFS et a pour tâches principales l'identification des besoins en formation des acteurs et l'organisation des ateliers de formation.

Le groupe de travail Recherche et Vulgarisation dirigé par le chargé de programmes de la Fédération des Coopératives Maraichères du Niger (FCMN- Niyya). Ce groupe a pour objectif de faciliter l'accès à l'information sur la GIFS et a comme tâches la collecte et l'analyse des documents pour l'alimentation de la base de données, la création de la base de données, la définition des priorités de recherche en matière de GIFS, la définition des canaux les plus performants en matière de diffusion de l'information, la synthèse et la simplification de l'information sur la GIFS en vue de la rendre accessible aux utilisateurs, la conception, la production et la diffusion des outils de partage et des produits de connaissances sur la GIFS.

Le groupe de travail lobbying et communication présidé par un ingénieur agronome chef de la division innovations et transfert des technologies à la Direction Générale de l'Agriculture. Ce groupe a pour objectifs d'améliorer la visibilité des activités du consortium santé du sol, de

sensibiliser les acteurs sur l'importance de la GIFS et de contribuer au suivi et évaluation du consortium. Les principales tâches du groupe sont: l'élaboration et la mise en œuvre de la stratégie et du plan de communication du consortium, la création et l'animation d'un site web du consortium, l'élaboration des rapports d'étapes, des lettres et bulletins d'information, ainsi que des articles à paraître dans les journaux, le suivi et évaluation du projet, la diffusion des notes sur la politique de GIFS à l'intention des décideurs et le lobbying auprès des décideurs en vue de les sensibiliser sur l'importance de la GIFS.

Quant au groupe mobilisation des ressources présidé par un agropédologue chercheur à l'INRAN, il a comme objectif principal de mobiliser les ressources nécessaires à la pérennisation du consortium santé du sol. La tâche principale de ce groupe est le développement des stratégies de mobilisation de ressources humaines et financières pour une meilleure animation du consortium et dans la perspective de sa pérennisation.

Les points focaux régionaux

Ce sont les chefs de services de vulgarisation et du transfert de technologies (SRVTT) des Directions Régionales de l'Agriculture (8 au total dans le pays). Ces points focaux régionaux représentent le consortium pour non seulement contribuer à la diffusion des produits de partage de connaissances élaborés sur la GIFS, mais aussi à remonter les besoins exprimés et le feedback des producteurs vers le consortium.

Le Comité de pilotage

Le Consortium Santé du Sol a un comité de pilotage (arrêté N°207/MAG/SG/DEP du 14 octobre 2015) présidé par le Secrétaire Général du Ministère en charge de l'Agriculture. Le secrétariat du Comité de Pilotage est assuré par l'Unité de Coordination. Ce comité est constitué de 10 membres qui sont les représentants de la Direction des Etudes et de la Programmation du Ministère en charge de l'Agriculture (DEP/MAG), de la Direction Générale de l'Agriculture, de la Faculté d'Agronomie de l'Université Abdou Moumouni de Niamey, de l'Institut National de la Recherche Agronomique du Niger, des Organisations Paysannes (OP), des Organisations Non Gouvernementales (ONG) intervenant dans le domaine agricole, des distributeurs d'intrants agricoles (Agro-dealers), du Réseau des chambres d'agriculture (RECA), des institutions financières, des projets intervenant dans la Gestion Intégrée de la Fertilité du Sol (GIFS) et des médias.

Le Comité de Pilotage peut faire appel à toute autre personne physique ou morale dont il juge l'appui nécessaire à l'accomplissement de sa mission. Il est en charge de l'orientation, de la programmation et du suivi de l'exécution du projet. Il veille aussi à l'application des décisions et recommandations des missions de supervision. Le Comité de Pilotage se réunit en session ordinaire deux fois par an, sur convocation de son président, sur un ordre du jour déterminé. Il peut se réunir en session extraordinaire en cas de besoin.

Le comité s'est réuni deux fois : (i) le 22 Décembre 2015 en vue d'examiner les bilans technique et financier des deux premières années, ainsi que la programmation de l'an 3 du projet,

l'élaboration de la stratégie de communication et de son plan d'actions ; et (ii) le 16 Mars 2017 où les discussions ont porté sur les leçons apprises et la pérennisation du consortium.

Catégories de membres

Le consortium santé du sol a vu la participation de membres issus d'environ 13 catégories d'acteurs, à savoir : les institutions nationales et internationales de recherche, les institutions académiques, les services techniques de vulgarisation, les décideurs politiques, les organisations non gouvernementales (ONGs), les projets de développement, les organisations paysannes, les fournisseurs d'intrants agricoles, les fabricants d'engrais, les institutions financières et les communicateurs (média). Chacune des structures membres a nommé un représentant qui constitue le point focal du consortium.

La figure 2 présente la distribution des acteurs du consortium selon leur influence et leur intérêt. On note quatre groupes d'acteurs: les groupes B et D sont en bonne position dans la dynamique actuelle du consortium. Par contre, il y a un travail important à réaliser pour que les groupes A et C rejoignent B et D respectivement.

3.1.3 Mise en place d'un réseau d'échanges sur la GIFS

Ainsi, un réseau d'environ 40 institutions membres déclinés en 13 catégories pour échanger sur toutes les questions de la GIFS a été mis en place (Cf. annexe sur la liste et détails sur les institutions membres).

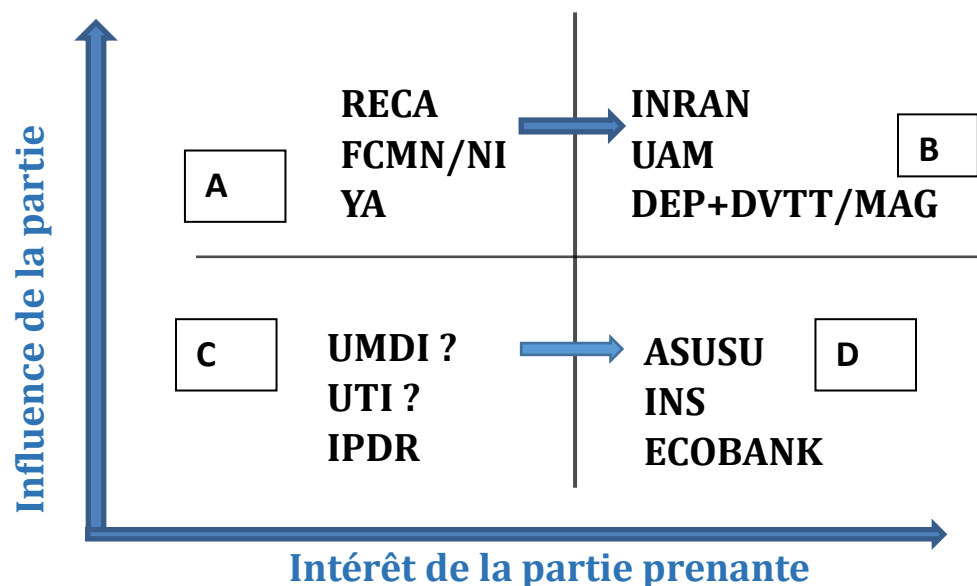


Figure 2 Distribution des membres du consortium selon leur intérêt et influence

3.1.4 Etude sur les « technologies/outils, niveau des connaissances des acteurs sur la GIFS » - Situation de référence

Connaissances sur la GIFS

La majorité des répondants (90%) connaissent ou ont au moins une fois entendu parler de la GIFS. Les répondants ont, à l'unanimité, trouvé la bonne définition de la GIFS. Cependant, ils n'ont pas tous la même compréhension de ses éléments tel que le montre le tableau 4.

Au vu de ce tableau, on note que la grande majorité des répondants connaissent la place des engrais et des ressources biologiques dans la GIFS, mais sous-estime la place des ressources génétiques (variétés améliorées). Cependant, elle y intègre parfaitement les conditions locales.

Table 4. Connaissance des éléments de la GIFS

Eléments	Répondants (%)
Engrais et ressources biologiques	65
Matériel génétique	28
Adaptation aux conditions locales	62
Cultures intercalaires céréales / légumineuse	56
Agriculture de conservation	39
Agroforesterie	54
Inoculation au rhizobium	20
Irrigation	21

En se référant au Tableau 5 ci-dessous, on relève que les agro-dealers n'ont pas d'accès à l'information sur la GIFS. Les institutions financières et les ONGs ont peu accès à cette information.

Table 5 . Accès à l'information sur la GIFS des différents groupes d'acteurs

Type d'acteur/ Institutions	Répondants (%)	
	Non	oui
Institutions académiques	0	100
Fournisseurs d'intrants	67	33
Projets de développement	33	67
Service de vulgarisation	33	67
Organisations paysannes	0	100
Institutions financières	67	33
Centre internationaux de recherche	33	67
Système national de recherche agronomique	11	89
Organisation non gouvernementales	50	50
Medias	0	100
Moyenne	29	71

Si le tableau 5 illustre l'accès à l'information des répondants, le tableau 6 expose leur accès aux outils de partage.

Table 6. Accès aux outils de partage de connaissances sur la GIFS des répondants

Outil de partage de connaissances	Répondants (%)
Brochures	38
Affiches	15
Démonstrations	32
Champs écoles	32
Journées porte ouverte	31
Les documents de recherche	37
Livres et Revues	23
Journaux scientifiques	32
Médias (radio, télévision, radio et télévision)	8
Autres (Internet, Modules formation, et Rapports)	18

Les documents écrits (produits de recherche, brochures et articles des journaux scientifiques) sont les principaux outils de partage. Viennent ensuite les champs écoles et les démonstrations. Les premiers intéressent un public lettré et les seconds les producteurs généralement analphabètes. On note aussi que les masses média occupent une faible place (8%) comme l'indique le Tableau 5.

Les agrodealers, les services de vulgarisation, les projets de développement rural et les institutions financières connaissent moins les innovations relatives à la GIFS (Tableau 7).

Table 7. Connaissance des innovations sur la GIFS par catégories d'acteurs

Type d'acteur/ Institution	Répondants (%)	
	non	oui
Institutions Académiques	33	67
Agro dealers	68	
Projets de Développement	57	29
Services de vulgarisation	32	56
Organisation des producteurs	25	75
Institutions Financières	67	33
Centres Internationaux de Recherche en Agriculture		68
Système National de Recherche Agronomique		100
Organisations non Gouvernementales	50	50
Médias	0	100
Moyenne	36	53

Sources d'informations sur la GIFS

Les sources d'informations devraient être constituées uniquement des outils de partage des informations relatives à la GIFS, mais on constate que les répondants citent aussi les institutions. En fait, ces répondants se rendent aussi dans les institutions de recherche, de formation et de développement pour obtenir des conseils ou toute autre information. Il s'agit principalement de comment utiliser les engrais commerciaux et les variétés améliorées. En ce qui concerne l'utilisation des ressources biologiques et de la combinaison (engrais organique-engrais minéraux) et des variétés améliorées, les répondants utilisent surtout des supports écrits (revues, livres, brochures, fiches techniques...) pour compléter leurs informations issues des institutions. On note une utilisation faible des technologies de l'information (média et internet).

En considérant l'utilisation des connaissances, il apparaît clairement que l'emploi de celles-ci est destiné au renforcement des capacités des producteurs, des agents de vulgarisation et des élèves. Elles servent également à réaliser des démonstrations. Par ailleurs, 31% des répondants utilisent les connaissances à titre personnel et moins de 20% l'utilisent pour conseiller les décideurs.

Produits du Savoir

D'une manière générale, on constate que la majorité des acteurs ne sont pas formés en matière de production des outils de partage de connaissances (Tableau 8). Le groupe des agro-dealers, des institutions financières et des communicateurs n'ont pas assez d'initiation dans ce domaine. Le Tableau 8 montre que les groupes des OP, des chercheurs et des services techniques ont été relativement plus formés dans la production de ces outils. Toutefois, les fiches techniques et les articles scientifiques sont les outils que certains acteurs sont capables de produire.

Table 8. Formation sur la production des outils de partage de connaissances

Type d'acteur/ Institution	Répondants (%)	
	Non formés	Formés
Academic Institutions (AI's)	33	
Agro-inputs-dealers	67	33
Development projects	51	14
Extension services (Ess)	44	36
Farmer-based Organisations (FBOs)	38	38
Financial institutions (FIs)	67	33
International Agricultural Research Centre (IARC)	33	33
National Agricultural Research Systems (NARS)	33	56
Non-governmental Organizations (NGOs)	63	13
Media House	100	0
Moyenne	47	31

3.1.5 Mise en place de la base de données

L'atelier d'Ibadan, du 31 Octobre au 2 Novembre 2016, a permis d'adopter les modalités harmonisées de saisie et traitement de données. Les entrées ont concerné les cultures alimentaires de base au Niger (mil, Sorgho, Niébé, Riz). Le Tableau 9 affiche les types et le nombre de données enregistrées et le Tableau 10 nous montre un exemple des données héritées.

Table 9. Types et quantité des données entrées dans la base de données GIFS

Rubriques sur le données GIFS harmonisées sur les cultures vivrières au Niger	Nombre des entrées
Information administratives et sources	66
Description	68
Informations techniques	68
Caractéristiques du site	100
Traitements	421
Rendements	602

La base de données va permettre de:

- Générer des informations pour les outils d'aide à la décision
- Organiser des informations pour faciliter leur visibilité et leur accessibilité
- Répertoire des informations sur la GIFS
- Déduire les gaps en matière de recherche sur la GIFS. On peut citer à titre d'exemple : (i) Les recherches complémentaires sur les autres techniques culturales (associations) ; (ii) Le besoin d'étendre les recherches sur les parties du pays non encore étudiées ; (iii) L'absence des données sur la composition de la fumure organique ; (iv) La base de données permettra aussi de capitaliser les données héritées non publiées (Tableau 10).

Table 10. Exemple des données héritées non publiées

Nom de l'essai/ traitements	Localité et année de début	Dispositif expérimental
Essais à long terme sur la gestion des résidus de récolte (Résidus de récolte, engrais minéral, combinaison résidus de récolte et engrais minéral)	Sadoré, 1982	Block de Fisher (RCBD) avec 4 répétitions
Micro-dose d'engrais en milieu réel (témoin, DAP, NPK 15-15-15 et NPK 15-15-15 +PNT)	Karabédji, 1999	producteurs avec 2 répétitions par champ
Données brutes sur les tests de démonstration et champs écoles paysans (3 années).	Toutes les régions, 2009-2012	Technologies GIFS comparées à la pratique paysanne

3.2 L'accès des acteurs à la connaissance des bonnes pratiques « *best-bet* » sur la GIFS est amélioré (Résultat 2)

3.2.1 Elaboration des outils de partage de connaissances sur la GIFS

Les productions des outils de partage se résument à l'élaboration de :

- Huit (08) fiches techniques sur le mil, le sorgho, l'oignon, la tomate, la pomme de terre, l'aubergine et le poivron ;
- Quatre (04) posters sur la microdose, la fabrication du compost en tas, l'amendement avec les feuilles du neem et le Zai ;
- Trois (03) messages de sensibilisation destinés aux agriculteurs.

3.2.2 Elaboration d'un guide pour la conduite des démonstrations

Un guide national sur la conduite des démonstrations a été conçu pour harmoniser la conduite des démonstrations, mais l'atelier national pour son adoption n'a pas pu se tenir avant la clôture du projet. Ce guide des démonstrations est destiné à l'usage des techniciens de recherche, des agents de vulgarisation des services techniques de l'Agriculture, des ONGs et des projets, des animateurs d'OPs, des Agrodealers.

3.2.3 Evaluation des activités et de l'utilisation des outils élaborés et mis en place

Dans le souci de mieux apprécier les impacts de son intervention, le Consortium Santé du Sol a jugé nécessaire d'entreprendre une enquête afin d'évaluer les formations organisées et l'utilisation des outils de partage des connaissances de la GIFS diffusés pour l'atteinte des objectifs fixés. Cette enquête a été menée d'Avril à Mai 2016 et un rapport a été élaboré. Les résultats ont révélé que plus de 95% des répondants sont au moins satisfaits des formations/ateliers et des outils de partage de connaissances de la GIFS produits par le consortium. Les répondants ont exprimé leur désir d'avoir des formations et matériels tels que les fiches techniques sur plusieurs thèmes. Les résultats montrent aussi que 83.2 % des répondants utilisent les connaissances acquises sur la GIFS. 54.4% des répondants ont exprimé avoir des difficultés dans la mise en pratique de ces connaissances. L'utilisation des médias audio visuels, la sensibilisation des producteurs, les ateliers et formations, les démonstrations en milieu paysan parmi tant d'autres sont les recommandations faites pour une bonne vulgarisation des connaissances de la GIFS. La concertation et la participation de tous les acteurs s'avèrent nécessaires pour une bonne dissémination et une meilleure utilisation des connaissances de la GIFS afin d'atteindre les objectifs du projet.

Aussi, les activités menées sur le terrain par le suivi évaluation dans le but d'apprécier la mise en œuvre des activités du Consortium Santé du Sol en général, notamment le niveau de diffusion et d'utilisation des outils élaborés, les points positifs, les points à améliorer ainsi que les difficultés rencontrées, a permis de découvrir la dynamique en cours sur le terrain en matière de GIFS. En vue de renforcer cette dynamique et de garantir la durabilité des actions réalisées, la mission formule les recommandations telles que : (i) la généralisation des formations des producteurs sur les outils de partage afin de renforcer leurs capacités en matière de GIFS et d'assurer la durabilité des actions dans ce domaine; (ii) la mise en place d'un dispositif simple de suivi des effets des outils de partage et l'identification des personnes ressources dans les villages (animateurs endogènes) pour la collecte et la remontée des données sur ce sujet; (iii) la formulation des dossiers de requête, le cas échéant, pour l'amélioration des outils de partage en fonction des réactions des producteurs; (iv) l'amendement des outils de partage en fonction des observations faites par les acteurs, et l'accélération de la multiplication et leur mise à la disposition des utilisateurs; (v) la réalisation d'une étude sur les raisons expliquant le niveau avancé de la région de Maradi par rapport aux autres régions dans le domaine de l'adoption des technologies, en collaboration avec la Faculté d'Agronomie de l'Université Abdou Moumouni de Niamey.

3.3 La capacité des acteurs à harmoniser et à consolider les connaissances sur la GIFS est améliorée (Résultat 3)

3.3.1 Formation des acteurs

Le rôle important des vulgarisateurs dans la mise en œuvre des activités du consortium a nécessité leur prise en compte dans la formation sur la gestion et l'analyse de données GIFS destinée aux chercheurs. Les capacités de 13 chercheurs et 10 vulgarisateurs ont été renforcées sur le traitement, l'analyse et l'interprétation des données GIFS. Les facilitateurs des champs écoles paysans et les

chefs des Districts Agricoles (CDA) nouvellement recrutés ont été ciblés pour la formation sur la connaissance et l'utilisation des intrants agricoles. Ainsi 24 facilitateurs des champs écoles paysans ont été formés sur la connaissance et l'utilisation des intrants agricoles.

Les agro-dealers d'Agadez et de Diffa ont été considérés lors de la formation sur le montage des dossiers bancables, car n'ayant pas pu bénéficier de celles délivrées par les projets PASDIN (agro-dealers de Dosso, Niamey et Tillabéri) et RAFIA (agro-dealers de Maradi, Tahoua et Zinder). Un renforcement des capacités de 27 agro-dealers sur le montage des dossiers bancables a été organisé et a regroupé 20 agro-dealers d'Agadez et de Diffa, ainsi que 7 autres de la communauté urbaine de Zinder. On note également la participation du représentant de la Banque Agricole du Niger (BAGRI).

3.3.2 Elaboration de 4 modules de formation

Deux (2) modules de formation sur la gestion et l'analyse des données sur le logiciel R ont été élaborés. Auxquels viennent s'ajouter deux (02) autres modules de formation dont un sur le montage des dossiers bancables et le deuxième sur l'utilisation des intrants agricoles.

3.3.3 Elaboration des répertoires des boutiques d'intrants et magasins de stockage

A partir des résultats des projets PASDIN et RAFIA, un premier répertoire des agrodealers et une carte de leur distribution sur le territoire national ont été produits en 2015. La coopération avec l'ONG Cultiver de Nouvelles Frontières en Agriculture (CNFA) porteuse du projet REGIS-AG financé par USAID a permis d'actualiser ces premiers documents en 2016, tout en s'étendant sur l'ensemble du pays.

3.4 La diffusion des innovations sur la GIFS est améliorée (Résultat 4)

3.4.1 Mécanisme actuel de partage d'informations

Pendant le projet, la diffusion des innovations GIFS a été opérée selon la figure 3. A partir de cette figure 3 on relève que l'unité de coordination, les points focaux régionaux, les représentants des institutions membres et le site web sont les principaux canaux de diffusion des produits de partage. Une stratégie de communication et son plan d'action ont été élaborés et validés. Leur mise en œuvre sera effective dans le cadre de la pérennisation du consortium.

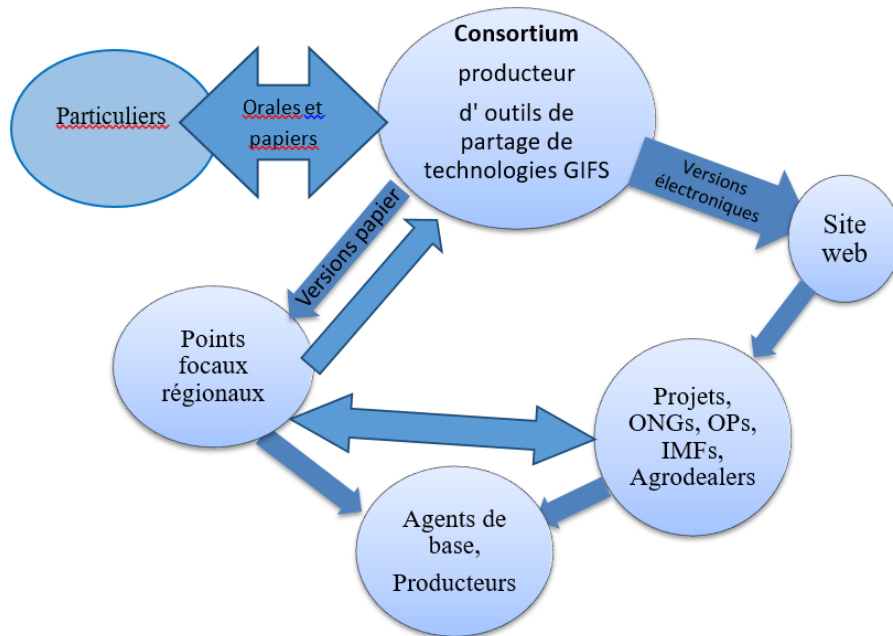


Figure 3. Mécanisme actuel de diffusion d’outils de partage des technologies GIFS

3.4.2 Sensibilisation sur les réglementations CEDEAO sur les semences, Engrais et pesticides

Ce sous résultat a été atteint grâce à la coopération avec le Projet d’Amélioration de la Qualité et des Standards des Engrais au Niger (PAQSEN).

3.4.3 Création et animation d’un Site web (partage d’informations et de documentation sur la GIFS)

Un site web, dont l’adresse est : <http://www.soilhealthconsortium-ne.org/>, a été créé avec une moyenne de 100.000 visiteurs par an. Tous les documents de partage sont logés dans ce site et peuvent être consultés.

3.5 La collecte de données et de l’information sur la GIFS au niveau national et régional est harmonisée et améliorée (Résultat 5)

3.5.1 Elaboration d’un format de collecte de données GIFS (version Excel)

Elle a débuté par la revue des différents protocoles d’expérimentation des champs écoles paysans (CEP) et des démonstrations. Le Guide pratique du facilitateur du champ école paysan validé est un document adopté par le Ministère de l’Agriculture. Le dispositif d’apprentissage au niveau des CEP est constitué de deux parcelles à savoir la Gestion Intégrée des Productions et de Protection

(GIPP) et la Pratique Paysanne (PP). Il apparaît que les traitements sans répétition des éléments de la GIFS sont utilisés dans les CEP. Les éléments de la GFIS sont constitués des combinaisons: semences améliorées-engrais minéraux, semences-engrais organique, pratique moderne-semences améliorées-engrais minéraux, semences améliorées-engrais minéraux-bio pesticides, semences locales-engrais, etc.

Les données fournies par les CEP sont les rendements en grain et en biomasse. Les résultats des CEP peuvent faire l'objet d'une comparaison interannuelle. Malgré l'existence d'un important réseau de champs écoles sur le territoire national, les données ne sont pas bien harmonisées et sont peu disponibles. Une première tentative de collecte et de traitement des résultats des CEP a été menée en s'appuyant sur les régions de Zinder et Maradi.

Le consortium a également élaboré un projet de guide national de démonstration en milieu paysan qui n'est pas encore validé.

3.5.2 Elaboration et diffusion d'un document de synthèse et d'une note d'orientation politique sur l'amélioration de la productivité des sols au Niger

Un document de synthèse intitulé « **Sol et productivité agricole au Niger** » a été rédigé. De ce document, une note d'orientation politique sur l'amélioration de la productivité des sols au Niger a été tirée et diffusée.

3.5.3 Elaboration et diffusion d'un communiqué final suite à la réunion sur les leçons apprises

Le comité de pilotage élargi du 16 mars 2017 a discuté des leçons apprises à l'issue de ce projet. Dans le cadre du développement des partenariats et des stratégies, les participants ont proposé de: (i) approcher le Haut-Commissariat à l'Initiative 3N pour examiner la possibilité d'une collaboration dans le cadre du FISAN (Fonds d'Investissement pour la Sécurité Alimentaire et Nutritionnelle) et la composante renforcement des capacités techniques; (ii) examiner l'intégration de la GIFS dans le cadre des activités du projet Scaling up Resilience (SUR) et (iii) renforcer la communication pour développer le partenariat avec les projets intervenant dans le domaine de la GIFS. A cette même occasion, des recommandations ont été formulées à savoir (i) faciliter l'harmonisation des stratégies d'intervention des acteurs sur le terrain par l'élaboration des normes à respecter par tous les acteurs et la création des conditions de la mise en place des interprofessions. L'Etat devra accentuer ses efforts pour faciliter l'accessibilité des intrants aux producteurs et explorer auprès des institutions de formation la possibilité d'intégrer les curricula de formation en vulgarisation ; (ii) les partenaires doivent poursuivre leurs appuis techniques et financiers pour la promotion de la GIFS ; et (iii) aux institutions financières de s'investir davantage dans la connaissance des opportunités d'affaires du secteur agricole et de son financement.

3.6 La collaboration entre les acteurs dans l'harmonisation des pratiques de la GIFS est améliorée (Résultat 6)

3.6.1 Appuis techniques aux acteurs (2 conventions RECA/CRA, REGIS)

Deux protocoles d'entente ont été signés avec le REGIS-AG et la Chambre régionale d'Agriculture (CRA) de Diffa. Pour le REGIS-AG, cela a permis de faire la mise à jour du catalogue des fournisseurs d'intrants dans trois (3) régions du Niger, à savoir Maradi, Tillabéri et Zinder. Quant à la CRA de Diffa, elle a sollicité l'appui du Consortium Santé du Sol pour le diagnostic des insuffisances notées dans l'utilisation des intrants lors des investigations antérieures dans le cadre des activités du conseil local de gestion. Un protocole d'entente a été signé et a permis de mettre en place des tests de démonstration sur la fertilisation du poivron sur les exploitations agricoles du sud-est de Diffa. Ces tests ont permis de caractériser les exploitations agricoles et de faire des recommandations visant à améliorer la gestion de la fertilité des sols sur les sites étudiés. Aussi, il est apparu clairement que la texture des sols, le taux de matière organique et le sodium échangeable ont eu des effets significatifs sur le rendement du poivron.

3.6.2 Elaboration d'un format standardisé de stockage de données GIFS à l'échelle régionale (description du format Excel et annexe)

Un format Excel harmonisé a été retenu lors de l'atelier du 31 Octobre au 2 Novembre 2016 à Ibadan- Nigéria et qui comporte les feuilles suivantes :

1. Feuille sur les informations administratives des travaux : celle-ci renferme le numéro de série, le titre de l'article, la référence bibliographique, l'auteur, la date de publication, la source du document, le financement, l'institution, le contact....
2. Feuille sur la description des travaux : celle-ci renferme le numéro de série, le type d'expérimentation, les facteurs étudiés, la gestion de l'essai, les dates de début et de fin, la durée, le nombre de saisons, la spéculation, le pays, les systèmes de culture, la zone agro écologique concernée.
3. Feuille sur les éléments de méthodologie : celle-ci renferme le numéro de série, le plan d'échantillonnage, le dispositif expérimental, la collecte des données, la codification des données manquantes, la présentation des données, l'intégrité des données et le format du fichier.
4. Feuille sur les caractéristiques du site : celle-ci renferme le numéro de série, les coordonnées géographiques, la classification des sols, la texture, l'élévation et les propriétés physico-chimiques des sols.
5. Feuille sur les traitements imposés : celle-ci renferme le numéro de série, le numéro du traitement, le nom du traitement, le type de jachère, la gestion de jachère, la variété utilisée, les doses d'engrais, la densité de semis, le chaulage, la gestion de l'eau, la conservation de l'eau et du sol, la gestion des ravageurs, la gestion des mauvaises herbes et autres ressources organiques.

3.6.3 Synthèse des acquis sur les recommandations GIFS (paquets des technologies)

Les acquis sur la GIFS ont été discutés lors de l'atelier de Maradi sur les recommandations d'engrais en considérant l'actuelle approche intégrée de AGRA, avec ses trois (03) niveaux international, systèmes et agriculteurs. A titre d'exemple, les tableaux 11 et 12 montrent les options GIFS respectivement pour le mil et pour le niébé.

Table 11. Options GIFS pour le mil

Fumure de Fond	Fumure d'entretien	Semence de qualité	Adaptation locale	Gaps
22,5 unités de P205 /ha et 3 tonnes par ha de fumure organique avant semis Application localisée de fumure organique (300 g /poquet)	45 unités d'N en 2 applications (la 1 ^{ère} après le démariage, la 2 ^{ème} à la montaison)	Zone sahélienne (300-700 mm): CIVT, HKP, SOSAT, GB, Ankoutess, Moro	Culture en bandes alternées avec niébé à haut potentiel de fixation d'azote Zai ou demi-lune avec 300g de fumure organique bien décomposée par poquet Paillage avec résidus de cultures	Micro-dose Niébé, arachide, Maïs, blé, sésame, voandzou
		Zone nord Soudanienne (>700 mm) : HKP, P3 Kollo, Mil local	Machinisme: Prototypes disponibles pour préparation du sol, semis, désherbage et battage	Poursuivre des travaux sur certaines formules de fertilisation avec des oligo-éléments
		Hybrides à haut rendement et tolérants aux maladies en évaluation	Transformation: Couscous et dégué à Pain, biscuits et gâteaux, Séchoir solaire	Besoin d'évaluation des exigences en fertilisants des hybrides
	Micro-dose : 6 g par poquet de NPK 151515 ou 2 g de DAP au semis ou au démariage ; plus 1 g d'Urée par poquet au démariage ou au tallage- début montaison OFRA: outils optimisation d'engrais Harmonisation avec la microdose			Besoin de prototypes pour l'application localisée d'engrais

Table 12. Options GIFS pour le niébé

Fumure de Fond	Fumure d'entretien	Semence de qualité	Adaptation locale	Gaps
45 unités de P205 /ha (100kg de STP ou 300kg de SSP) /ha et 3 tonnes par ha de fumure organique avant semis	Recommandations d'engrais dose optimale OFRA	Variétés à haut rendement et précoces ((IT90K372-1-2) ; Résistantes au striga (IT97K499-35) Culture associée (KVX30-309-6G, TN5-78)	Cultures en bandes, Association/rotation avec les céréales Sacs PICS <u>Machinisme:</u> Prototypes disponibles pour préparation du sol, semis, désherbage et battage Transformation: Farine de niébé non floculante pour la purée, le pain, biscuits, gâteaux, Beignés ou Kossai Séchage amélioré des produits transformés (béroua, couscous, farine)	Développer la tolérance au striga et aux sols pauvres en phosphore Dose d'engrais dans le cadre de la microdose Besoin de vulgarisation à grande échelle de la farine de niébé

3.6.4 Elaboration et adoption d'une charte et des textes statutaires du consortium

La recherche agronomique conduite tant par les institutions nationales qu'internationales a produit un certain nombre de résultats sur la gestion et l'amélioration de la fertilité du sol. Cependant, l'adoption de ces résultats de recherche par les producteurs reste encore très faible. L'Alliance pour la Révolution Verte en Afrique (AGRA) a appuyé la mise en place du Consortium Santé du Sol pour permettre aux parties prenantes de s'associer et de joindre leurs efforts pour la promotion de la Gestion Intégrée de la Fertilité du Sol (GIFS) de 2014 à 2017. La nécessité de consolider et pérenniser les résultats tangibles atteints exige la mise en place d'une structure conçue et adoptée par les acteurs. Le consortium restera une plateforme d'échanges entre acteurs et de synergie en vue de faciliter la diffusion des technologies sur la GIFS. A cet effet, il constituera un centre de référence en matière d'informations sur la GIFS.

Dans la perspective de la pérennisation de cette expérience, le projet Consortium Santé du Sol a évolué en une association dénommée Consortium Sante du Sol Niger (CSS-Niger). La charte et les textes réglementaires de cette association ont été adoptés lors de l'assemblée générale du 17 Mars 2017. Ces textes seront soumis au Ministère de l'Intérieur pour la reconnaissance de l'association.

4. Difficultés rencontrées et dispositions prises

Comme contraintes principales partagées au niveau régional, on peut retenir la complexité, la sensibilité dans la gestion et l'héritage des données GIFS collectées.

Dans le cadre de l'élaboration de la base de données au Niger, et pour des questions de propriété intellectuelle, beaucoup d'acteurs étaient réticents à partager leurs données. Le consortium a cependant rassuré les contributeurs que les données brutes ne seront pas publiées, que les sources seront citées et que les requérants qui auront besoin de plus de détails vont être orientés vers les différents auteurs.

5. Leçons apprises et perspectives

Les leçons apprises de cette phase du consortium sont :

- La bonne collaboration entre les différents partenaires et l'engagement fort des acteurs qui sont nécessaires pour l'atteinte des objectifs fixés,
- Les problèmes de la gestion des données sont institutionnels et nécessitent également un appui institutionnel,
- L'existence de plusieurs projets et programmes dans les différents pays et
- La complexité des certains sujets qui a été sous-estimée.

Quant aux voies pour aller de l'avant, il y a une grande nécessité de maintenir, d'entretenir et de pérenniser les réseaux des différents consortia.

6. Conclusion

En conclusion, on note une satisfaction générale de tous les acteurs au vu des résultats atteints par le projet Consortium Santé du Sol. Un cadre de concertation et de synergie a été mis en place et a été doté des outils tels que le réseau de acteurs, la base de données GIFS et des outils de partage de connaissances harmonisés pour assurer la coordination des acteurs sur les questions relevant de la gestion de la fertilité des sols.

Les acteurs ont jugé nécessaire de continuer avec le consortium pour une large diffusion des technologies GIFS, étant donné que la majorité des acteurs, y compris les services étatiques de vulgarisation, ont beaucoup d'insuffisances dans ce domaine et sont sans financement conséquents ; et ont en plus continuellement besoin de renforcement de capacités.

7. Annexes. Liste des documents élaborés

Nr	Titre	Année	Observations
1	Fiche technique sur les demi-lunes agricoles	2015	1
2	Fiche technique Microdose mil avec NPK et Urée	2015	1
3	Fiche technique Microdose Mil avec DAP et Urée	2015	1
4	Fiche technique Fertilisation du sorgho	2015	1
5	Fiche technique Fertilisation aubergine	2015	1
6	Fiche technique Fertilisation tomate	2015	1
7	Fiche technique Fertilisation oignon	2015	1
8	Fiche technique Fertilisation poivron	2015	1
9	Fiche technique Fertilisation pomme de terre	2015	1
10	Poster compost aérien	2015	1
11	Poster Microdose mil	2015	1
12	Poster Zai ou Tassa	2015	1
13	Message séquencés	2015	3
14	Stratégie et plan de communication	2015	2
15	Rapport mise en place du consortium	2015	Rapport d'étape
16	Rapport renforcement de capacités consortium	2015	Rapport d'étape
17	Rapport base de données GIFS	2015	Rapport d'étape
18	Rapport stratégie d'engagement des acteurs	2015	Rapport d'étape
19	Chapitre 11 du livre de OFRA	2017	Avec OFRA
20	Guide méthodologique des démonstrations	2016	1
21	Module gestion de données GIFS	2015	1
22	Module analyse statistique avec R	2015	1
23	Module montage dossiers bancables	2015	1
24	Module connaissance et Utilisation des intrants	2015	1
25	Charte du consortium Sante du sol, Niger	2016	1
26	Avant-projet des statuts et règlements intérieures	2016	2
27	Communiqué final sur les leçons apprises	2016	1
28	Base de données GIFS au Niger	2016	Excel
29	Format de collecte de données GIFS	2015	Excel
30	Format de stockage de données GIFS	2016	Excel
31	Document de synthèse GIFS	2016	1
32	Quelles orientations pour l'amélioration de la productivité des sols au Niger ? note politique	2016	1
33	Répertoire des agro dealers	2015	1
34	Répertoire des agro dealers	2016	Avec REGIS AG
35	Répertoire des magasins de stockage	2016	Avec REGIS AG

Acknowledgements

This project is realized with funding from the Alliance of a Green Revolution in Africa (AGRA). The project is led and coordinated by the International Institute of Tropical Agriculture (IITA), through the Partnership for Development directorate. The project is implemented at country level through the following national research institutions:

- CSIR-Soil Research Institute (CSIR-SRI), Ghana
- Institut d'Economie Rurale (IER), Mali
- Institute for Agricultural Research (IAR), Nigeria
- Institute of Agricultural Research and Training (IAR&T), Nigeria
- Institut de l'Environnement et de Recherches Agricoles (INERA), Burkina Faso
- Institut National de la Recherche Agronomique du Niger (INRAN), Niger

The above-mentioned institutes are acknowledged for the contribution to the project, for leading the project in the respective countries and hosting the soil health consortium in their country. For each of the CSHCs there are many partners are involved in the implementation of the activities and without their support the project could not have been realized. Their contribution is herewith acknowledged. For details on the partners in the respective soil health consortia please refer to the consortium website and documents issued by the soil health consortia.



The Ghana Soil Health Consortium

