MEMORANDUM OF UNDERSTANDING (MOU)

BETWEEN

THE CLIMATE CHANGE ADAPTATION AND AGRIBUSINESS SUPPORT PROGRAMME (CASP) OF THE FEDERAL MINISTRY OF AGRICULTURE AND RURAL DEVELOPMENT OF NIGERIA (FMARD)

AND

INTERNATIONAL CENTER FOR AGRICULTURAL RESEARCH IN THE DRY AREAS (ICARDA)

FOR CONDUCTING

SUSTAINABLE LAND MANAGEMENT ACTIVITIES

IN CASP AREAS OF THE SAVANNAH BELT OF NORTHERN NIGERIA

PARTICIPATORY SELECTION OF CONTEXT-SPECIFIC SOIL AND WATER CONSERVATION PRACTICES FOR NORTHERN NIGERIA

TECHNICAL REPORT

2018

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SUGGESTED CITATION:

Dessalegn B., Diwediga B., Zucca C. (2018). “Participatory selection of context-specific soil and water conservation practices for northern Nigeria”. Technical Report. International Center for Agricultural Research in Dry Areas (ICARDA). Rabat, Morocco.

DISCLAIMER

Contents

1. Introduction

Agriculture is an important sector in the Nigerian national economy. The sector is also a major contributor to the national GDP and food security and creates informal jobs for over 70% of the population (Idowu et al., 2011). However, the sector is heavily dependent on rainfall which is affected by Climate Variability (CV). Population growth and the increasing demand for land have resulted in extensive and unsustainable land degradation (Ibrahim et al., 2018).

The Northern Nigerian States have especially been affected by CV as manifested through increasing temperatures and decreasing rainfall resulting in recurrent drought. Various efforts have been made and are being made to adapt to current and potential effects of CV in the country. For instance, several dams were built in Kano, Jigawa, Katsina, and Sokoto States to ensure constant supply of water and enhance the sector's resilience to drought.

ICARDA in close partnership with the Climate Change Adaptation and Agribusiness Support Programme (CASP) of the Federal Ministry of Agriculture and Rural Development of Nigeria (FMARD), worked towards mainstreaming climate adaptation measures through landscape rehabilitation efforts in seven States. These include Borno, Yobe, Jigawa, Katsina Zamfara, Kebbi, and Sokoto which are located in the Savannah belt on the dry northern region of the country (Fig. 1).

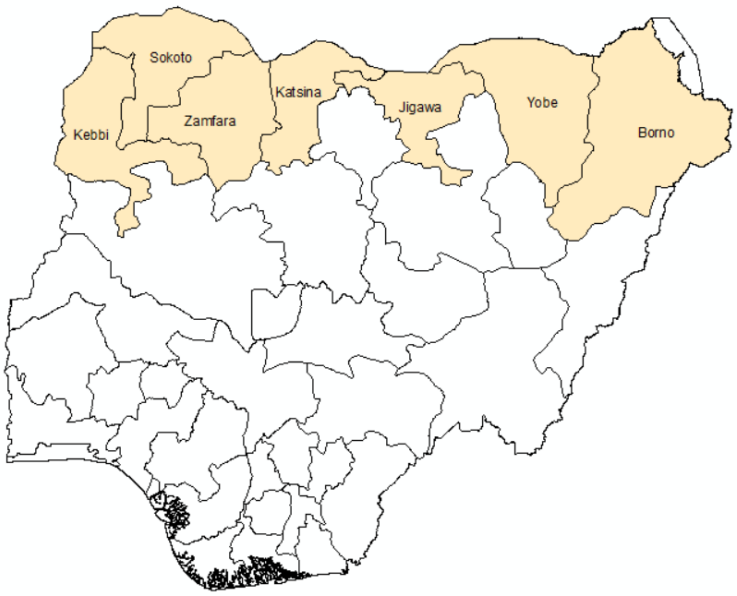


Figure 1. IFAD-CASP Project targeted States

The project focused on promoting sustainable land management practices including soil erosion control, and water and soil conservation measures through participatory approaches that involved and engaged local communities and State representatives.

As part of this collaborative work, ICARDA has developed a community-based participatory approach to evaluate sets of potential soil and water conservation (SWC) and water harvesting (WH) practices and identify those responding to the specific community needs. This was done in the framework of the broader participatory planning process established by CASP. The identification process was based on the results of the diagnostic survey conducted by ICARDA on the current adoption of SWC/WH practices by farmers in the CASP sites, particularly on the assessment of the effectiveness of these practices (Diwediga and Zucca, 2018a).

The following steps were followed to design the potential sets of SWC/WH practices, or matrices of options (MOs), which were proposed to the evaluation of the communities (Diwediga and Zucca, 2018b):

1. Compile the techniques currently practiced, based on the survey results, and identify needs for improvement/integration of the current practices;
2. Identify “cross-fertilization” potential by evaluating the possibility to transfer know-how from similar/neighboring communities, or, in other terms, to introduce techniques already applied locally;
3. Identify, based on international literature, further feasible options that are in use in the same agro-ecological and socio-economic contexts, in Nigeria or elsewhere, and that could be reasonably adapted.
4. Conduct participatory community meetings to discuss the proposed MOs, and set-up demonstrations in fields of farmers interested in adopting those deemed as most suitable.

This report describes the methodologic approach purposely designed by ICARDA to implement step 4, gives detailed information about the two warm-up exercises conducted in two sample communities, and summarizes the results of the work done in all the target communities.

2. Background: field demonstrations and potential for technology adoption

Technology a*doption* occurs when a decision to start using a new technology is made. Adoption of improved agricultural technologies by small-holder farmers has not been as forthcoming as anticipated. The slow rate of adoption has been attributed to several factors including

characteristics of the adopters (age, gender, level of education, etc.) and change agents (extension agents), farmers' attitudes to change and risk, as well as the overall accessibility, affordability, and applicability of the proposed technologies (Ziervogel et al., 2005; Hansen et al., 2007; Salehin et al., 2009, Rousan, 2007, Rogers, 2003). Effective involvement of farmers in technology development and adaptation processes has also been identified as an essential criterion to foster ownership, build trust and increase sustainable adoption (Hoffmann et al., 2007).

Moreover, it is important to recognize that adoption of new technologies and innovative practices is a *process* that begins with *knowledge* through adequate exposure to the technology. In the ideal scenario for adoption, this stage will be followed by *persuasion* where individuals are interested to learn more about the technology. If intrigued enough, the individual weighs the costs and benefits of adoption to make an informed decision. He/she then *tests* the technology to a varying degree before the final conviction to adopt the technology. The process, however, is not automatic. "Pioneer" farmers often get to decision and implementation faster becoming early adopters, while it takes the risk-averse ones much longer time before they make that decision ("laggards"). This process was first highlighter by Rogers in his Diffusion Curve presented in Fig. 2 (Rogers, 2003).

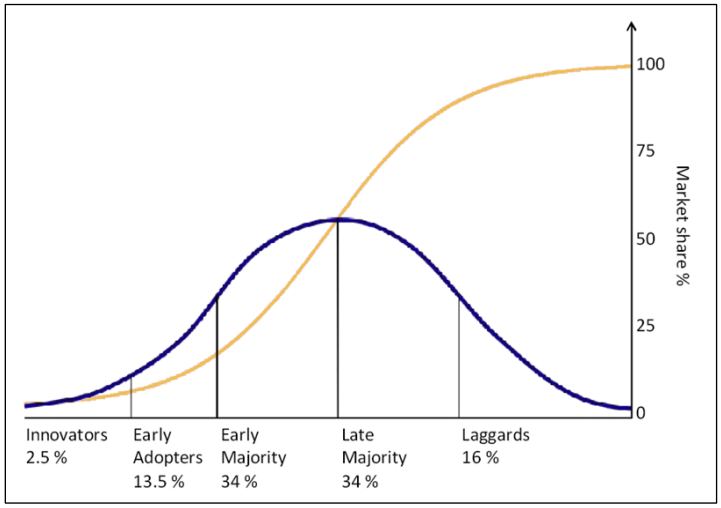


Figure 2. Roger's Diffusion Curve.

It is, however, important to keep in mind that early adopters and laggards often have different access to key factors that influence adoption including access to information, inputs, credit, land, water, markets, etc. Marginalized groups including young men, women and the elderly, often fall under the latter because of lack of access to these essential capitals and capabilities.

It is thus very important that any plan to out-scale or disseminate proven agricultural technologies acknowledge such differences and find ways to create *inclusive and equitable* opportunities for access to information and technology and create an enabling environment and catalyze the process to induce change among all social groups within a community. A participatory method helps bridge the gap between technology transfer agents and potential adopters and is key for effective adaptation of the technology to meet community specific contexts through *learning-by-doing*. Field demonstrations are one of the successful mechanisms to showcase the benefits of agricultural technologies for targeted communities (Olarinde et al, 2017). Having the demonstration sites inside the community and on the lands of farmers that people know further enhances the likelihood of other farmers adopting the technologies.

3. Method - A Participatory approach

It is against this background that the project devised a participatory method to ensure active engagement of the members of the community in technology selection, adaptation, and subsequent adoption of selected SWC and WH technologies.

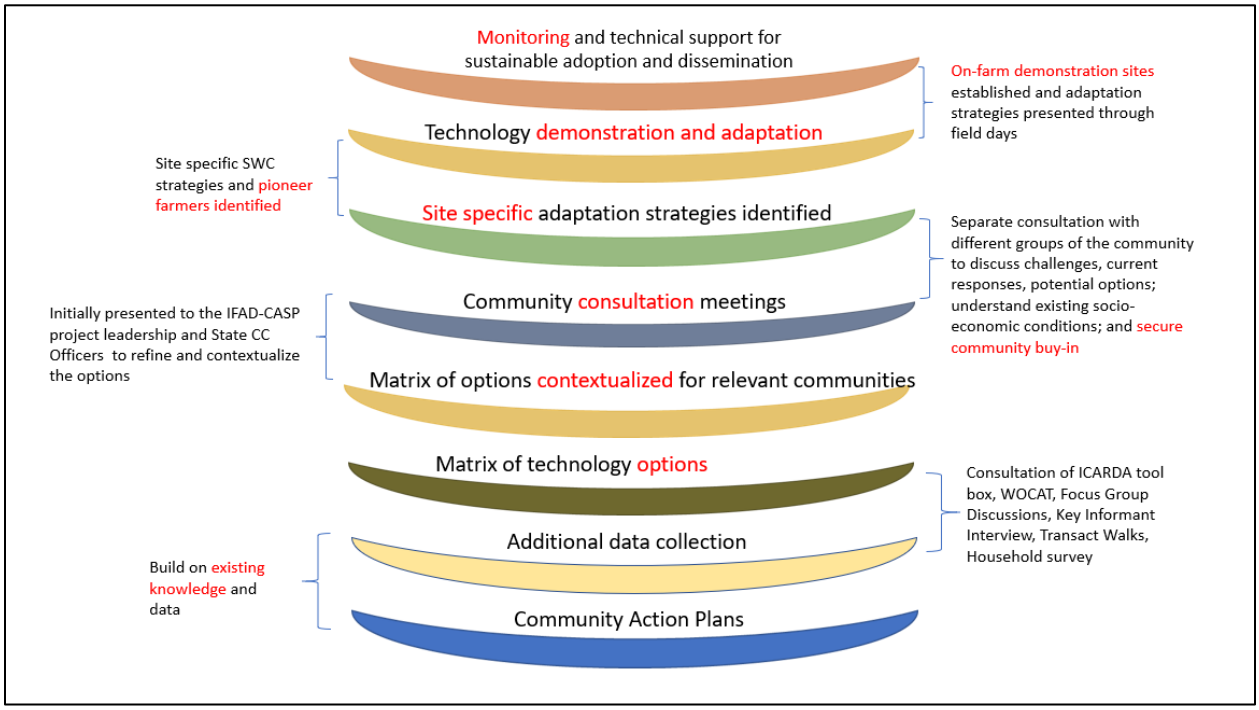
Participatory community meetings were organized to discuss proposed MOs and select preferred options and pioneer farmers who are willing to test the options on their fields. The method was gender-sensitive and ensured that both men and women had equal opportunities to hear about the options, weigh the benefits and costs of each choice, and make the decision to test them on their respective farms. As such the approach accounted for differences in roles, preferences, as well as natural, physical, and financial capabilities between different groups of the society.

This is in line with the vast literature on technology adoption which identifies a gender gap in technology adoption with women being less likely to adopt new technologies because of their relatively lower access to information, land, credit, and markets (Conley and Udry, 2010, Mendola, 2007, Neill and Lee, 2001). But when given access to improved technologies, women have been known to be good stewards of natural resources, and good mediums to trickle down secured benefits to members of the household (Alene et al., 2008, Deere, 2010, and Doss, 2001). The active and inclusive engagement of targeted communities was thus seriously and intentionally considered as key component of the approach.

The approach builds on the community Action Plans drafted by CASP, and on the participatory efforts deployed by ICARDA during steps 1 to 3 (as defined in section 1) to develop a matrix of technology options that could address key challenges identified by the respective communities,

which generated an extensive dataset. The approach has several stages and is graphically summarized in Figure 3.

Figure 3. Schematic presentation of the different stages of the approach designed for technology identification and adaptation



Description of the participatory approach

Stage 1: – focused on participatory engagement of State level technical experts and practitioners to screen through the menu of options generated through the participatory community survey (Step 1, page 5), narrow down, and prioritize among the choices to a few that can realistically be promoted for adoption in targeted communities. This was done in recognition of the important role of context – bio-physical and socio-economic, in determining farmers willingness and ability to adopt, and to harness the wealth of intrinsic local knowledge to assess the validity, applicability, affordability and alignment with critical challenges identified by the community.

Stage 2: focused on participatory engagement of farmers to discuss and select preferred technologies from among the matrix of contextualized options resulting from stage one of the approach; and identifying pioneer farmers who are willing to test the technology on their farms. Separate meetings were held with men and women members of the community to create a suitable environment for women to freely engage in discussions and share their opinions. The

discussions are also useful to gain insight into the logic behind farmers' decisions to use different SWC packages to address challenges of land degradation on their land; as well as the sources of the technologies currently in use i.e. based on indigenous knowledge, national extension systems, NGOs, etc.; and existing technical challenges in impending the technology.

While each community is different and will have its unique ways of organizing, thereby calling for specialized and targeted points for discussion, this stage of the approach included the following core components:

(i) Presentation of the main challenges identified by the community during the participatory community survey and our understanding of it,
(ii) Current SWC techniques practiced in the area and explanations on their shortcomings,
(iii) Presentation of alternative technology packages – including the benefits of adopting them compared to current practices and the challenges they are meant to address,
(iv) Community discussion to answer their questions,
(v) Collective prioritization of the proposed packages,
(vi) Identification of pioneer farmers (those spontaneously volunteering) who are willing to test the technologies on their fields, and
(vii) Implementation of selected SWC techniques through field demonstration

Stage 3: focused on conducting follow up meetings with community development agents (CDAs) and volunteer farmers to select the ideal farm locations to demonstrate chosen technologies. At this stage, special attention is also given to the sensitization of village-level CDAs who served as the main extension agents in the communities about selected technologies to ensure that they will be well equipped to support potential adopters.

Stage 4: focused on the actual demonstration of the technology through events scheduled to ensure participation of the community including men, women, and youth. During this stage, it is advised that extension agents make frequent visits to the field to ensure proper adaptation of the technology to local conditions, and transfer of required knowledge and skills to pioneer farmers. This is an important stage of the adaptation and technology promotion process as it plays a critical role in the effective and successful demonstration of the technology to gain the attention of other potential adopters.

Specific Guidelines to organize and moderate the community discussions were developed and shared with the project team (Annex 1).

4. Practical demonstration of the Approach

The approach was initially presented to CASP Program Officers who met in Dutse, Jigawa State, in July 2018; and right after practically demonstrated in Gana-Kaya and Dagwaje villages of Jigawa State through community discussions separately held with men and women members of each community (Figure 4). It was later replicated in other target communities selected by ICARDA and CASP teams.

Figure 4. Focus Group Discussions held with men (left) and women (right), respectively in Dagwaje and Gana-Kaya villages.

4.1 Lessons learned from pilot exercise in Dagwaje and Gana-Kaya

Community discussions were held in Dagwaje and Gana-Kaya villages in Jigawa State. The community were mobilized by the CDAs in close collaboration with the CASP officers. As this was a demonstration of the approach, the meetings were attended by CASP officers from the other six States, the CASP project Leader, as well as other relevant technical specialists and community groups.

The purpose of the meeting was first explained to all members of the community. The contextualized technology options for the villages were then presented while making direct linkage with key challenges identified by the community during previous discussions held at Step 1 of this project. This was made through a pre-prepared chart detailing the challenges to be addressed, current community practices used to address them, and the improvements recommended by the project (Figure 5 and Table 1).

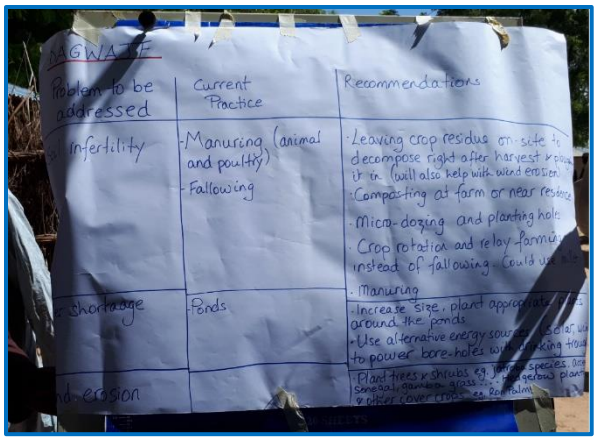


Figure 5. Technology chart for Dagwaje village.

Table 1: Transcription of the technology chart presented in Dagwaje village

Problem to be addressed	Current practice	Recommendations
Soil infertility	Manuring (animal and poultry), and fallowing	-Leaving part of crop residue on-site to decompose right after harvest and plough it in (will also help with wind erosion) -Composting at farm or near residence -Micro-dosing and planting holes -Crop rotation and relay farming instead of fallowing (could use millet) -Manuring
Water shortage	Ponds	-Increase pond size, plant appropriate plants around ponds -Use alternative energy sources (solar and wind) to power bore-holes without drinking trough
Wind erosion	-	-Plant trees and shrubs e.g. Jatropha species, Acacia Senegal., Gamba grass, etc. Hedgerow planting and other cover crops, e.g., Ron Palm

After the general presentation of the technology options, the group was divided into men and female groups to foster free discussion and debate over the technologies. It also helped reduce

the group to a more manageable size to have meaningful discussions with sufficient opportunity to respond to questions from the community and address rising concerns. The separation of the groups also allowed project team to learn more about the challenges to and opportunities for technology adoption from different perspectives. For instance, the women were more concerned about leaving crop residue on site as it is a main source of feed for their livestock, about challenges of transportation as it relates to moving organic material and fetching water required for composting at farm sites, and about maintenance of wind and solar energy sources. These issues were not raised by the men group who focused more on the types of trees and shrubs that could be planted, challenges with marketing agricultural produce, price and access to agricultural inputs, etc.

Through the discussions, men and women were able to identify the technologies they considered suitable for adoption under their conditions. Unlike dominant views that women have little access and control over land, we learned that most of the women own land they inherited from their parents. We also found that while there were similarities in their choices, there were slight differences in priority. As an example, for the women resolving the water problem was of a higher priority while addressing soil infertility was of prior concern for the men. Their willingness to volunteer their land as demonstration plots for selected technologies were also influenced by these differences in perspectives. Holding separate discussions with men and women members of the community was thus quite useful to have a more comprehensive understanding of the challenges and potentials within the community.

The community discussion was later followed by focused meetings with CDAs. Together with the CDAs the project team was able to directly work with volunteer farmers to implement and demonstrate technology options on their fields.

4.2 Summary of the outcomes from all target communities

Following the demonstration in Dagwaje and Gana-Kaya, during the period July-August 2018 the approach was replicated by the ICARDA/CASP team with other 6 communities located in Katsina, Zamfara, Kebbi, and Sokoto. In all cases, consultations, technology identification, and demonstration processes were facilitated through village-level CDAs who serve as the main extension agents in the communities. The village-level CDAs were effectively engaged to ensure full ownership and continued use of the approach to introduce the technology to other communities within their respective mandate areas; and pave the path for sustainable monitoring

of the adoption process. The CDAs thus served as a good linkage between the project and the community.

Many CDAs focusing on different topics and representing 8 villages selected from the 5 States were engaged to promote adoption of improved technologies using the project devised participatory approach. The numbers of committee members of the CDAs involved in the identification and implementation of site-specific technology packages are presented in Table 2.

According to the information collected from the field, transfer of information and provision of advisory services are rarely provided through government-funded extension agents and are often sourced from big projects and NGOs. For instance, the communities contacted in Katsina State had no access to extension agents while others mostly depended on NGOs and project-based delivery systems. The number of female extension agents was also very small though the communities did not have strict cultural or religious restrictions to official male-female interactions. Types of agricultural extension services provided included group training, farmer field schools, and business development. Some of the information collected about the extension-driven dissemination activities in the target communities are summarized in Table 3.

The participatory approach was used to contextualize and narrow down the matrices of options (MOs) developed for the targeted communities, a summary of which is shown in Table 4.

Table 2: Number of members of CDAs involved in technology identification and implementation in each target community

	State/Community							
N. of members (total and women) by type of CDAs	Katsina Baawa	Katsina Garu	Zamfara Yautabaki	Zamfara Goran	Kebbi Masama	Sokoto Badau	Sokoto Kebbe	Jigawa Dagwaje
CDA executive committee	7	6	6	6	7	10	6	7
Of which women	1	1	2	1	1	4	1	2
CDA_Agric & agribusiness_commitee	5	5	5	3	10	11	10	5
Of which women	1	1	2	1	3	4	0	1
CDA_work_commitee	5	5	5	3	11	11	10	5
Of which women	1	2	2	1	3	4	0	1
CDA_water_commitee	5	5	5	3	11	11	10	5
Of which women	0	2	2	1	5	4	2	2
CDA_procurement_commitee	5	5	5	3	10	5	10	5
Of which women	1	1	2	1	4	2	0	0
CDA_enterprise_commitee	5	5	5	3	10	11	10	5
Of which women	1	2	0	0	1	2	3	0

Table 3: Extension Service delivery at the village-level in each target community

	Katsina Baawa	Katsina Garu	Zamfara Yautabaki	Zamfara Goran	Kebbi Masama	Sokoto Badau	Sokoto Kebbe	Jigawa Dagwaje
Agents, information sources	NA	NA	Supporting consultants, IFAD-CASP, Government	Unknown	IFAD-CASP, Sasakwa global (NGO)	IFAD-CASP, NGO (e.g. Sasakwa), Government	IFAD-CASP, Media, Government	Government, NGO
Funding sources	NA	NA	Local government, IFAD-CASP	Government	IFAD CASP program	IFAD-CASP, Government	IFAD-CASP, Government	Government, Programs
Dissemination approach	NA	NA	Training, Farm field & business school	Farmers training, Participatory meetings	Group trainings, Farmer field school	Grouping for awareness creation	Group training, Group meetings	Group trainings, Field demonstrations
Frequency of visits	NA	NA	Weekly, bi-weekly	Bi-weekly	Weekly	3 times per month	Weekly, On need	Weekly/bi-weekly
Technologies promoted	NA	NA	Varietal performance of cowpea, Fertility improvement using manure, Seed production	Transplanting rice, Fertilizer application, twinning, Pesticide application	Rice spacing, rice transplanting	Rice production	Rice spacing, Time frame for fertilisation and weeding	Rice spacing, Fertilisation application
Promotion approach	NA	NA	Farm field & business school, Training	Farmers training, Participatory meetings	Farmer field schools	Farmer field school	Farmer field school, awareness creation	Group trainings, Field demonstrations

Table 4: Summary of the contextualized and prioritized technology options (TO) in target communities

	Katsina Baawa	Katsina Garu	Zamfara Yautabaki	Zamfara Goran	Kebbi Masama	Sokoto Badau	Sokoto Kebbe	Jigawa Dagwaje
TO1	Planting grasses	Planting grasses/shrubs	Planting grasses/shrubs	Planting grasses/shrubs	Sand bagging	Contour ridges	Planting grasses	Manuring
TO2	Sand bagging	Sand bagging	Sand bagging	Sand bagging	Contour ridging	Stone bunds	Contour ridging	On site crop residues
TO3	Manuring	Stone bunds	Soil bunds	Soil bunds, Stone bunds	Integrating trees in farming	Planting grasses	Cover cropping	Rotation
TO4	Mulching	Manuring	Manuring	Manuring	Planting grasses	Sand bagging	Burying crop residues	Tree planting
TO5	Bore-holes/Open wells	Bore-holes/Open wells	Composting (cow and poultry dungs, green manure, crop residues)	Composting (cow and poultry dungs)	Composting (manure, animal dungs, crop residues)	Composting (green manure, animal dungs, Biodegradable wastes)	Composting (reen manure, animal dungs, Biodegradable wastes)	Composting (manuring, crop residues, animal dungs)
TO6			Bore-holes/Open wells	Bore-holes/Open wells	Contour bunds (earth and stones)		Household small reservoirs	Ponds for multiple purposes

The number of discussions held in each community depended on the population size. For instance, more than 2 FGDs were held in Zamfara and Sokoto communities as compared to one FGD in Kebbi. Some details about FDG participation is given in Figure 6.

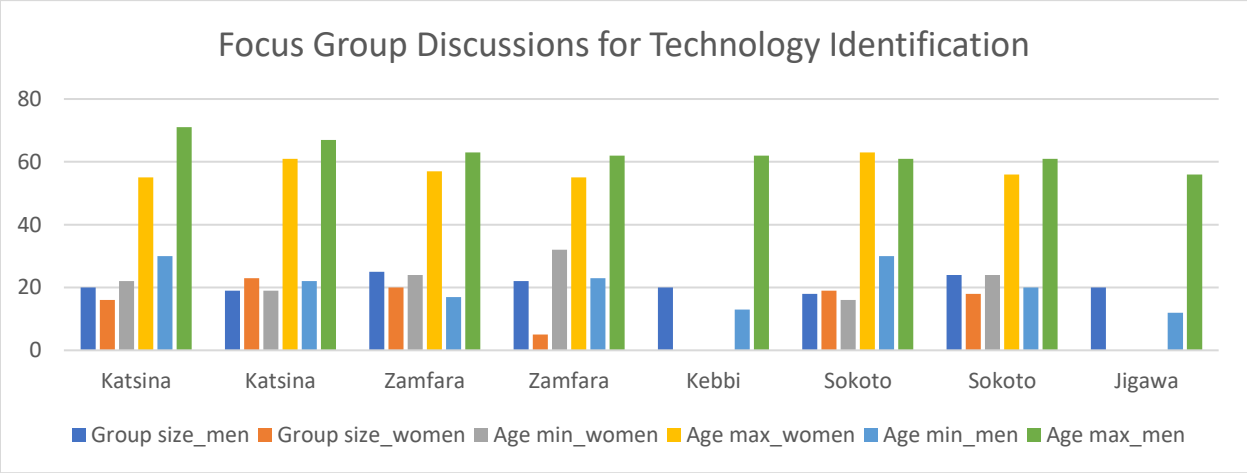


Figure 6. Focus Group Discussions (FDGs) for Technology Identification in selected communities.

Sex-disaggregated data were collected at each site to identify disparities, if any, among members of the community concerning access to land, credit, information, markets, agricultural inputs and advisory services. Having a good understanding of the general context within which technologies are promoted is key to devising appropriate and sustainable dissemination strategies. Analysis of collected data indicate that all groups of the community including men, women, youth and elders can acquire and own land through inheritance, purchase or rent. All are also equally allowed to acquire credit in the form of seeds or cash to purchase various agricultural inputs including agro-chemicals, sprayer, water pumps, work-bulls, and ridgers. However, eligibility for credit depends on membership and ownership of share from the financial service associations (FSA) – a criteria that is difficult for women and youth to meet. Repayment of loans are predominantly linked to harvest in almost all the communities consulted except for one community in Zamfara and one in Jigawa where repayments depend on specific time spans or on amount of loan taken.

In each village 5-6 technologies were selected by the community and demonstrated on pioneer farmers' lands. Demonstrations were documented and georeferenced. CASP officers and CDAs will be in charge to monitor and evaluate the demonstration trials.

5. Results Summary

The community-based participatory approach was devised by ICARDA to support effective adaptation and successful adoption of site-specific technology packages. During the period July-August 2018 the approach was demonstrated in two villages and implemented in a total number of 8 communities located in Katsina, Zamfara, Kebbi, Sokoto, and Jigawa States. Further target communities were identified to be engaged later. The site-specific technologies were selected through a rigorous process which included screening of a matrix of options by State level technical experts and CASP officers to ensure the technologies fit-for-purpose based on local bio-physical and socio-economic conditions. The contextualized technologies were then openly and inclusively discussed by different groups in each of the communities. The discussions were found to be informative and instrumental in raising community awareness on existing challenges, reasons behind the ineffectiveness of some of their current practices, and benefits of adopting proposed site-specific solutions. Following the discussion, community-selected technologies were demonstrated on farmers' fields. Demonstrations will be monitored and evaluated to generate feed-back for the CASP project and to support future scaling.

The approach was simplified and captured as an easy-to-use manual to promote its effective replication in all communities covered by the CASP project (Annex 1).

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Annex 1: Guideline for Site-Specific Technology Identification

The purpose of this guideline is to provide clarity on the procedures to be used to solicit required information from targeted communities, and to ensure that similar approaches are used across the CASP programme area to present recommended Soil and Water Conservation (SWC) techniques and practices.

Section I: General guideline

1. The IFAD-CASP team goes through the matrix of options for each village developed by the ICARDA team and does the first screening of the proposed technologies based on its knowledge of the community and overall socio-economic and bio-physical conditions prevalent in the area.

2. The technologies selected by the team should then be presented and discussed with the community for a second screening to ensure compatibility, acceptability, affordability, sustainability, etc. This will be done through carefully planned focus group discussions (FDGs) with various members of the community. Details on the FDG are presented in Section II below.

3. The team conducts a follow-up meeting with the CDA and the community soon after the first meeting to identify pioneer farmers who are interested and willing to test the technologies. These will be expected to make their field available for on-farm site demonstrations of improved soil and water conservation (SWC) and water harvesting (WH) practices for the community

   Note: It is important to make sure that the CDAs and relevant extension and other service providers are well informed about the technical aspect of all proposed technologies to ensure sustainable adoption; and are involved in the entire technology promotion and adoption processes.

4. Implementation on the ground should begin soon after the identification of willing farmers. It is equally important to keep the momentum of the technology promotion process including frequent visits and follow-ups to ensure that farmers understand the concept, as well as details of the technology package (software and hardware) for sustainable adoption.

Section II: Participatory approach for technology adoption

1. It is important to meet with the men and women members of the community separately. This will create a suitable environment for women to effectively engage in discussions and share their opinions.

2. The size of the group is also important to create a suitable environment for effective discussions. As a rule-of-thumb, FDGs should be held among a maximum of 10-12 people. If and when appropriate, it would be good to meet with the youth and elders of the community separately to create opportunities for young farmers to voice their opinions freely.

3. The timing of the meeting should be carefully planned, accounting for seasonal demands, to make sure that members of the community are not needlessly taken off and kept away from their work. Moderators of the discussion should also keep an eye on the duration of the meeting (not too long), and consciously monitor and ensure that all represented members of the community have equal opportunities to voice their opinions.

4. Start with a general introduction of the objective of the meeting. Something along the line:

   Thank you for making the time to come and meet with us today. We called for this meeting to follow up with you on our previous missions and promises. If you recall, in our last visit we identified some of the major soil and water management challenges faced by the community. Since that time, we have done a diagnostic analysis to see what you are currently doing to address these issues, identify ways to improve on them and make them more effective, and also recommend new strategies for improved soil and water management in your community. Today, we would like to go through the recommendations with you and identify the ones that match your needs and that you can easily adopt. We value the opinions of each person represented in this group and so it is essential that only one person speaks at a time.

5. Start the discussion by explaining what is good and what is wrong with the current SWC/WH practices or what needs to be done to make it more effective. This is best done by problem category. E.g. gully erosion as one category, soil infertility as another category, etc. Update the list of current practices by adding additional ones that the farmers may indicate.

6. Introduce the recommended improvement as well as techniques/practices, that other CASP targeted communities are implementing, within the specific problem category. This will require in-depth explanation (if possible assisted by pictures and or video demonstrations) so farmers could understand it better. Moderators, should go to this meeting well prepared to answer questions from the community including costs of recommended packages (in parts or in whole), expected benefits (if possible in numbers e.g., expected increase in yield, in reduction of costs in N, etc.). Farmers are generally risk-averse and hence reluctant to adopt new technologies that are complex, costly, and without a clear understanding of expected benefits. The recommendations should then be specific. As an example, avoid suggesting the introduction of crop rotations unless you have in mind a specific recipe including specific crops, related inputs and farming operations, costs, etc.

The following questions are suggested to promote effective discussions.

<u>For the women group</u>:

Start by asking the women's role in agriculture in the area. This could include planting, weeding, harvesting, etc. (*This is important because in most cases women, while active members of the agricultural labor force, rarely identify themselves as farmers. Asking them to describe their tasks highlights their important contribution to themselves as well as the moderator). This information will be available from the survey dataset, before the team meeting and hence will be useful to confirm recorded data.*

As a follow up, ask the women – how many of those present own their land. This is important to know, as it will give the CASP team an opportunity to identify and use woman-owned land for technology demonstration.

<u>For both men and women groups</u>:

1. How many of the farmers present here currently practice the technology? (*here referring to the technology described as current practice in the matrix e.g. manuring or composting*). Are there other technologies you are currently practicing to address the problem?
2. We have learnt that the current practice is not delivering results as expected because _____ _____ (*e.g. for composting to work effectively you need to add liquid, do not add plastic, etc.)*

3. Who among you have heard of _____ from the newly proposed technology package? Then describe what it is, why it is recommended i.e. the expected benefits, by when they should expect to see the benefits, the costs associated with adopting the technology, etc.
4. Ask the participants if they have understood the proposed technologies. This can be done by asking them to explain it back to you.
5. Ask the participants to rank the technologies by their preference. And explore why they chose one over the other. Sometimes they choose a technology because they have not fully understood the potential benefits of the others, or because they perceive it to be complex, etc. Defend the technology, with the aim of providing additional information to enhance overall understanding of the technology and its adoptability (not with the aim of "selling" it). So, this stage of the dialogue will help you clear uncertainties and encourage them to adopt new technologies. This should be done by each problem category.
6. After the menu of options in each problem category are discussed and ranked, ask the participants which among all the technologies presented (across all categories) they would prefer to implement immediately? This could be due to gravity of the problem, and/or ease of the technology.
7. Identify a few farmers who are willing to test any of the proposed technologies on their farm. CDAs and Local Gov't Support Officers should take note of these farmers, follow up with them, and ensure their participation in the follow up meetings with technical experts who will be using their farm as demonstration sites.