

Info Note

Scaling up climate services for agriculture in Mali

Initial findings from piloted implementation of PICSA approach in Africa RISING project intervention zone, southern Mali

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Key messages

- PICSA has improved farmers' ability to manage climate risks in agricultural and non-agricultural activities. Thus, scaling PICSA to a larger population of farmers would improve food security in the region and in the country at large.
- 200 rural farmers were trained on the PICSA approach in Bougouni district in May 2017.
- Trained farmers found the PICSA approach very useful, viz. information on seasonal forecasts, resource allocation maps, and participatory budgeting.
- A majority (59%) of farmers have improved their management practices for crops, livestock, and other livelihood enterprises.
- Farmers are sharing information they received during the PICSA training with their peers.
- Through historical climate information, farmers were able to understand the concepts of climate change and variability, and adjust their perception that rainfall was steadily decreasing.

The Participatory Integrated Climate Services for Agriculture (PICSA) approach, designed by the University of Reading (UoR), focuses on improving farmers' livelihood and resilience against the effect of climate change. It provides farmers with accurate, locally specific climate and weather information; coupled with diverse, locally pertinent options for crops, livestock and other livelihood activities; and the use of participatory planning tools to improve and enlighten their decision making based on their individual situations. PICSA is a step by step approach, primarily designed for field extensionists

to help them integrate new tools in their activities with farmers and improve the efficiency and impact of those activities on farmer's enterprises.

PICSA implementation in Mali under Africa RISING project by CCAFS



Figure 1. Photo of the participants who took part in the PICSA training of trainers.

In West Africa, the PICSA approach has been implemented in Ghana¹, Mali² and Senegal¹, under the CCAFS funded project "Capacitating African Smallholders with Climate Advisories and Insurance Development (CASCAID-I)" lead by the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) and World Agroforestry (ICRAF). This yielded a collaboration between the CCAFS and Africa RISING programs to scale out climate information services (CIS) in the Africa RISING sites (Figure 2) in Bougouni, Mali, through the dissemination of the PICSA approach, in order to capacitate farmers and enable them to practice more productive, resilient, profitable and sustainable intensified

¹ [An investigation of the effects of PICSA in Northern Ghana](#)

² [Assessment of the use of PICSA in Mali and Senegal](#)

crop-livestock systems linked to markets. A training³ on the PICSA approach was organized in early May 2017 in Bougouni district. In total, 19 agricultural intermediaries, from diverse institutions including NGOs, research organizations, and national institutions, were trained on PICSA. Eight of these agents trained 200 farmers (of which 43% were women) in four villages in Bougouni, namely Dieba, Flola, Madina, and Sibirila, by the end of May 2017.

In order to understand the usefulness of the PICSA approach for farmers and their different agricultural activities, two quantitative field data collections were conducted using the computer assisted personal interview and face-to-face methods. In total, 61 randomly selected farmers, across the four villages were interviewed. The first survey was carried out in October 2017. It aimed at evaluating the PICSA components and their usefulness while collecting farmers' agricultural activities and socio-economic information. The second survey was to collect information about crop production and the impact of PICSA training on farmers' livelihoods. The questionnaire was developed and administered using the Open Data Kit (ODK) platform.

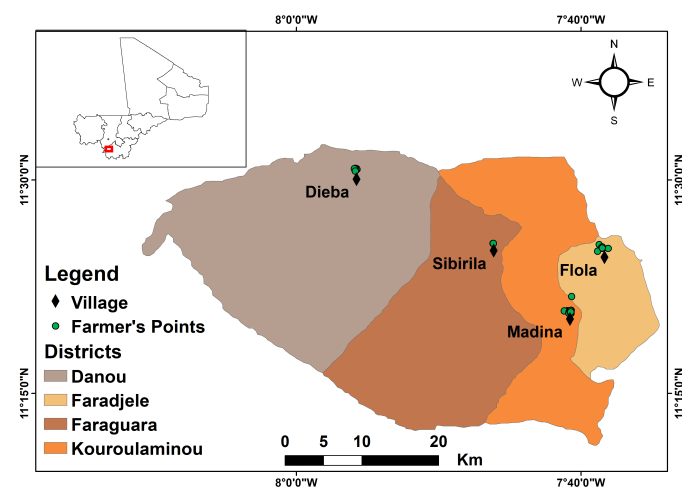


Figure 2. Map of the districts covering the villages where PICSA was implemented in Bougouni, Mali.

Respondent reaction to PICSA training

The randomly selected farmers who took part in the training were questioned on the different components of the PICSA approach, the information they received and their usefulness. The PICSA approach consists of a range of steps on which farmers are trained in three to five meetings based on their availability. Prior to starting the questionnaire, farmers were first asked if they had been trained on PICSA, and then asked if the information received had been useful in their planning and decision making for the previous crop season. Nearly all the farmers received a training on the different PICSA

components and the majority (over 87%, see Table 1) declared that the information they received on each of the steps was useful in their planning and decision making. There was no dissimilarity in the responses when respondents were split into female and male groups.

PICSA elements and tool	Respondents trained (n=61)	Trained respondent who found the elements useful in their planning and decision making		
		All	Female	Male
Resource allocation map	61 (100%)	53 (87%)	22 (88%)	31 (86%)
Historical climate information	61 (100%)	55 (90%)	23 (92%)	32 (89%)
Probabilities and risks	60 (98%)	54 (90%)	23 (92%)	32 (89%)
Crop and variety options	60 (98%)	54 (90%)	23 (92%)	31 (89%)
Livestock and livelihood options	61 (100%)	52 (85%)	22 (88%)	31 (86%)
Participatory budgets	60 (98%)	54 (90%)	23 (92%)	31 (89%)
Seasonal climate forecast	61 (100%)	55 (90%)	23 (92%)	32 (89%)
Short-term forecast	60 (98%)	54 (90%)	22 (92%)	32 (89%)

Table 1: PICSA elements and their perceived usefulness.

Farmers were also queried about which of the PICSA elements they found to be the most important. The analyzed results show that seasonal climate forecast (SCF, 43%) and resource allocation maps (RAM, 21%) were classified as the most important PICSA components. Farmers declared that the SCF had helped them understand how the season would be and helped them to plan activities through improved decision making, while the RAM gave them the opportunity to better understand their household resources and improve their allocation while improving their management. Farmers also stated that the historical climate information helped them understand the concept of climate change and variability and clarify their fallacious belief that the amount of rainfall has been decreasing constantly over the years.

Farmers' management changes and perceived impact on crops, livestock and other livelihoods

The survey also included questions to investigate the changes made by farmers to their different enterprises—namely agricultural activities that included crops and livestock, and non-agricultural activities (e.g. commerce) and the impact those changes had on their enterprises. In total 59% of the trained farmers declared having made changes to their crops, livestock and other livelihood activities. This included only 24% of the women interviewed against 84% of the men interviewed (Figure 3).

³ Empowering farmers with climate information for agricultural decision making in rural Mali

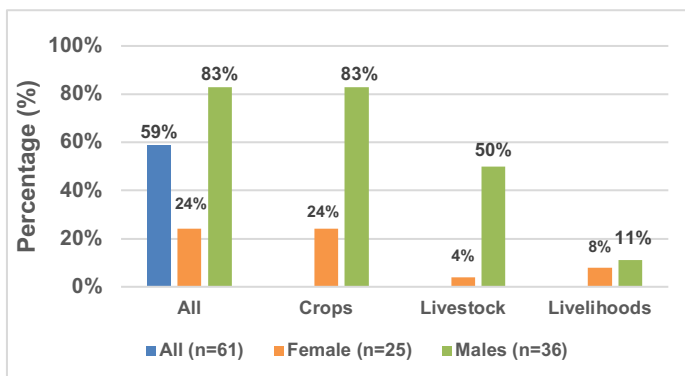


Figure 3. Farmers who made changes in their different enterprises as the result of the PICSA training.

Figure 3 shows that all the farmers, who declared having made changes to their activities (agricultural and non-agricultural) as a result of the PICSA training, have made changes to their crop management. Approximately one third of these farmers have made changes in their livestock activities, and a smaller portion, one tenth of the respondents, made changes in their other livelihood or non-agricultural activities. Women farmers did not make substantial changes in their activities, which may be because they are not the decision makers.

Crops

The quantitative data analysis revealed that 59% of the respondents made changes on their crop management practices, with the main crop management change being sowing date (92%), seconded by the choice of a new variety (75%) and the choice of a new crop (17%) which included groundnut, maize, millet, sorghum and rice.

Among the farmers who made changes on their sowing dates, 70% (women: 12%, men: 58%) sowed early because of the seasonal climate forecast (ii) and secondly, they wanted their crop to take advantage of the first rain and the humidity in the soil. They declared that this had a positive impact on their crop development which successfully germinated and reached maturity by the end of the cropping season. In addition, farmers also reported an improvement in the water stress resilience of their crops during the dry spell periods due to the soil and water conservation techniques. A large proportion of interviewed farmers (91%) wished to have made more changes on their crop management, but were hindered by lack of finances (86%), lack of labor availability (50%) and limited access to input (33%).

Livestock

Amid the respondents who affirmed having made changes to their practices as a result of the PICSA training, 64% (4% being women) were owner of a livestock herd. 83% of the latter farmers have made changes on their livestock management (5% being women). The majority of farmers (89%) decided to build a

shelter to protect their livestock from the dry spell forecasted to be longer than normal early in the season that year and from the predicted above normal rainfall amount expected in the region which had a positive impact on their livestock health. The second most livestock management change carried by farmers is the vaccination of livestock (53%), followed by livestock feed improvement (37%), and decrease in livestock size (32%). Women focused on vaccinating their livestock and decreasing the size of their herd. These management changes had positive impact on farmers' activities, ranging from increase in milk production, consequently increase in revenues and food security. In addition, farmers stated that this has improved their animal health and increased their weight, while reducing animal's mortality rate.

Other livelihood

Nearly a third of the farmers who made changes on their activities management as a result of PICSA stated having other livelihood activities with the majority doing commerce. Sixty percent (60%) of these farmers (33% women) declared having made changes on their non-agricultural activities. The majority of farmers had improved on their non-agricultural activities management (83%), followed by increase and decrease in the size of these latter. Farmers declared that these new managements practices have resulted in revenue increase (83%).

Farmers' attitude changes as a result of PICSA information sharing

Attitudes	All (n=38)	Females (n=7)	Males (n=31)
The information received has made me more confident in planning and decision making	86%	86%	97%
The information received through the training has influenced my planning and decision making over the past season.	86%	86%	97%
I feel I am more resilient and able to cope with bad years (caused by weather) thanks to the training.	86%	86%	97%
The decision that I have taken because of the information received through this training have improved my household food security.	86%	86%	97%
The decision that I have taken because of the information received have increased my household income	86%	86%	97%
Thanks to the training, I have been able to improve the health care of my household members.	83%	86%	94%
Thanks to the training, I have been able to pay my children's education.	74%	71%	84%
As a result of the training that I have received, I now see farming	86%	86%	97%

as more of a business than I did previously.			
Following the training and the result of the decisions I made, I feel like my social status has improved.	71%	86%	77%
Thinking about the training I felt that it took too much of my time.	57%	71%	61%
I think the training could have been done earlier in the year to allow me to plan my agricultural season early before the start of the cropping season.	86%	86%	97%

Table 2: Respondents' attitude towards farming after the information received during the training.

Farmers who made changes to their agricultural and non-agricultural management were questioned on their behavioral change towards farming using Linkert style statements. Eighty-size percent of farmers declared that, thanks to the information received, they have improved their planning and decision making over the past season (Table 2). They also feel more resilient and able to cope with bad years (caused by climatic risks), and they now see farming as a business. Farmers also stated that they would have loved if the training was done earlier in the years to allow them to plan their cropping season activities on time. Actually, the training was conducted in the third week of May coinciding with the beginning of farming activities. This may be the reason why they felt the training took much of their time, particularly women (71%) as they were tied up with both farming and household chores.

Spillover effect: are farmers sharing the information received and how was it useful to their peers?

Respondents were asked if they had shared the PICSA information with their peers, as the components of the approach have been designed to be shared by farmers. Results showed that 75% of the respondents (including 64% of the women, and 83% of the men) shared information with other peers in their rural areas.

On average, six women and eight men received PICSA information from a PICSA female trainee, while 11 women and 14 men received PICSA information from a PICSA male trainee, suggesting that men are more likely to share the information received than women; this difference may be attributed to cultural beliefs and the exposure men have compared to women. Respondents shared PICSA information with 10 women and 12 men on average. Thus, 1012 farmers (460 women and 552 men) received PICSA information from the survey respondents. Consequently, we can deduce that the 200 trained farmers shared the PICSA information they received with a total of 3300 farmers in their area. This demonstrates the interest farmers in Bougouni have in the PICSA approach.

During the survey, 52 farmers (of which 10% were women) who did not attend the PICSA training were also surveyed. Results show that 54% of these farmers declared having received information from the PICSA trainees. Thirty-two percent of farmers reported having made changes in their agricultural activities as a result of the information they received from PICSA trainees and have found PICSA elements useful.

Conclusions

The implementation of the activity "Scaling out Climate Information Services use through the Participatory Integrated Climate Services for Agriculture approach to developing Climate-Smart Villages in the Africa RISING site of Bougouni, Mali" allowed for the capacity building of 200 farmers in decision making processes in agriculture using climate information services. The majority of farmers who took part in the training found it very useful as the tools and information provided helped them to plan their agricultural activities. Thus, it is worth scaling PICSA out to a larger number of farmers to improve their ability to manage their agricultural and non-agricultural activities.

Further reading

- Dorward P, Clarkson G, Stern R. 2015. Participatory Integrated Climate Services for Agriculture (PICSA): Field Manual. Reading: Walker Institute, University of Reading.
- Dayamba DS, Ky-Dembele C, Bayala J, Dorward P, Clarkson G, Sanogo, D, Mamadou LD, Traoré I, Diakité A, Nenkam A, Binam JN, Ouedraogo M, Zougmore R. 2018. Assessment of the use of Participatory Integrated Climate Services for Agriculture (PICSA) approach by farmers to manage climate risk in Mali and Senegal. *Climate Services* 12-35.

This brief summarizes findings of the activity “Scaling out Climate Information Services (CIS) use through the Participatory Integrated Climate Services for Agriculture (PICSA) approach” as part of the collaboration between CCAFS and Africa RISING.

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