

Info Note

Climate Services for Agriculture in Rwanda

Initial findings from PICSA monitoring and evaluation

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Key messages

- More than 2,600 farmers have been trained in the first year rolling out PICSA in Rwanda.
- Farmers find the different elements of the PICSA approach useful and are using them in their decision-making processes, namely historical climate information, participatory budgets, and seasonal forecast.
- As a result of the PICSA training and the information shared, the vast majority of those farmers are making changes in their crops, livestock, and/or livelihood enterprises.
- Farmers are sharing the different PICSA tools and information with their peers.

Participatory Integrated Climate Services for Agriculture (PICSA) is an approach that seeks to build resilience at the farm level by supporting decision-making through the integration of information on location-specific climate, crops, livestock, and livelihoods. It emphasizes practical hands-on methods that can easily be used and understood by farmers by integrating livelihood alternatives to those on-farm.¹ PICSA² is led by the University of Reading (UoR) based in the UK, and has been supported by the CGIAR Research Programme on Climate Change, Agriculture and Food Security (CCAFS).

Climate and weather information in accessible forms is presented in collaborative and participatory forums, for use by groups of smallholder farmers. Empowered to interpret the data, farmers are able to identify the variability of local climatic patterns amongst other factors so as to consider their implications for crop and livestock production. By gaining access to new and enhanced climate information and decision-making tools, supplemented with the farmers' own experiences, farmers

are better able to assess their crop, livestock and livelihood options and identify those most suited to their environments. Better informed decision-making is enabling farmers to manage risk and adopt farming practices more resilient to variable climatic conditions.

PICSA as part of Rwanda Climate Services for Agriculture

As part of the Rwanda Climate Services for Agriculture (RCSA) project, PICSA is being disseminated through farmer promoters. Farmer promoters are part of the *Twigiri Muhinzi* system of extension that the Rwandan Government has developed alongside One Acre Fund.³ This requires a training approach that cascades PICSA through a series of different training workshops. First, an expert training of International Center for Tropical Agriculture (CIAT) staff, alongside Rwanda Agriculture Board (RAB), Rwanda Meteorological Services (Météo Rwanda), and a range of NGOs before these expert trainers then train farmer promoters to go on and train their fellow farmers.

In the first year of the RCSA project, the PICSA approach has been implemented in four districts: Burera, Ngorero, Nyanza and Kayonza (figure 1). This process began with University of Reading training and working with senior project staff to prepare for implementation and then providing support during the implementation. Météo Rwanda and CIAT experts prepared historical climate products for various stations. During an initial expert trainers workshop, 31 senior staff from Météo Rwanda, Rwanda Agriculture Board, CIAT and a series of NGOs⁴ were trained. This training prepared a core team of PICSA trainers to train intermediaries in the PICSA approach in the following four years of the project and

¹ <http://www.walker.ac.uk/projects/participatory-integrated-climate-services-for-agriculture-picsa/>

² <https://ccafs.cgiar.org/publications/participatory-integrated-climate-services-agriculture-picsa-field-manual#.V8zQT036u00>

³ http://rab.gov.rw/about-rab/news-details/?tx_ttnews%5Btt_news%5D=417&cHash=d0a1d0426134382691d69d76030871ac

⁴ Rwanda Development Organisation, Radio Huguka, OTP, Send a Cow Rwanda, DERN, IMBARAGA Rwanda Farmers Organisation



Figure 1: Map of Rwanda showing districts where PICSA had been implemented. Provinces/regions: East (pink), West (orange), North (yellow), South (blue), City of Kigali (cyan).

beyond. In the two parallel training sessions that followed (covering the four districts), a combination of CIAT staff and expert trainers trained 48 farmer promoters in the PICSA approach. The farmer promoters then implemented the PICSA training with 2,631 farmers. Of these farmers, 48% (1,254) were women.

How did the respondents react to the different elements of the PICSA approach?

To understand how farmers reacted to the new information and tools they were introduced to through the PICSA approach, a quantitative survey was undertaken with 214 trained farmers (randomly selected) across the four districts. The survey was carried out in March 2017 by a team of ten enumerators using tablets and Open Data Kit⁵ software to complete the survey. The questionnaire was intended to understand how households reacted to the concepts and tools introduced during the PICSA trainings in the communities in which it has been rolled out. The questionnaire included sections on the training and the individual elements of PICSA, the changes that participants have or have not made as a result of the training and an indication of the impact of those changes on the household.

Survey respondents were asked whether or not they had received training on the specific elements after being shown a familiar prompt (an image) from the training that identified each of them (Table 1). Respondents were then

asked whether or not they felt that the element had been useful in their planning and decision making for the coming season.

Almost all of the farmers were trained on most of the PICSA elements. This is impressive as the different elements will have been split across several meetings (a range of between one and nine meetings with an average of four per farmer). Overwhelmingly, those who were trained reacted positively to the different tools and found them useful in their planning and decision making. There was little difference when respondents were split by gender.

Table 1: PICSA elements and their perceived usefulness

PICSA element / tool	Respondents trained (n=214)	Trained respondents who found the element useful in their planning and decision making		
		All	Female	Male
Resource allocation maps	205 (96%)	200 (98%)	110 (96%)	90 (99%)
Historical climate information	211 (99%)	207 (98%)	114 (99%)	93 (98%)
Probabilities and risks	204 (95%)	199 (97%)	106 (96%)	93 (100%)
Crop and variety options	213 (100%)	209 (98%)	115 (97%)	94 (100%)
Livestock and livelihood options	209 (98%)	203 (97%)	111 (97%)	92 (98%)
Participatory budgets	191 (89%)	186 (97%)	101 (96%)	85 (99%)
Seasonal forecast	208 (97%)	202 (98%)	110 (96%)	92 (99%)
Short-term forecast	183 (86%)	181 (99%)	99 (100%)	82 (98%)

Respondents considered the most useful elements to be the crop options discussions (based on the historical climate information) and the seasonal forecast. Most of the elements had similar levels of favor in both female and male groups apart from the crop, livestock, and livelihood options matrices which were considerably more popular with female respondents (12% of females

⁵ <https://opendatakit.org/>

compared to 3% of males considered this the most important tool).

How are farmers' attitudes changing as a result of the PICSA training?

How respondent's attitudes to farming had changed as a result of the training was investigated using a series of Likert style statements. Overwhelmingly, respondents said that the training they had received had made them more confident in planning and decision making about their farming and livelihood enterprises (Table 2) and that they expect to improve their household food security and income as a result of the training. Respondents also reported that, following the training, they now see farming as more of a business than previously and that they now feel better prepared to cope with bad seasons caused by the weather.

Table 2: Respondents' attitude towards farming after the training

	All (n=214)	Females (n=119)	Males (n=95)
The training that I have received has made me more confident in planning and making decisions about my farming and livelihood	96%	94%	99%
The training that I have received has influenced my planning and decision making over the past season	95%	93%	98%
The decisions that I have taken because of this training have improved my household food security	85%	80%	91%
The decisions that I have taken because of this training have improved the amount of income that my household receives	81%	75%	88%
As a result of the training that I have received I now see farming as more of a business than I did previously	96%	93%	99%
As a result of the training I am now more confident to talk about livelihood or farming with my fellow farmers	96%	93%	99%
Following the training I feel that I am more able to cope with bad years (caused by the weather)	92%	90%	96%
Thinking about the training I felt that it took too much of my time	27%	29%	26%
The training was too difficult to understand	28%	25%	31%

Are farmers making changes to their practices following the PICSA trainings?

Following the questions on the different tools / elements of the PICSA approach, respondents were asked about the changes that they had made in their crop, livestock, and/or livelihood enterprises as a result of the training. The overwhelming majority (93%) of respondents had made changes in their crops, livestock, or livelihood enterprises (Table 3). A slightly larger proportion of males had made changes than females.

The most popular type of enterprise for changes was crops (Table 4), with 90% of respondents making changes in their crop enterprises (a significantly⁶ larger proportion of males [96%] than females [85%] made changes in their crops). A quarter (24%) of respondents had made at least one change in their livestock enterprises (males: 23%; females: 24%) and almost one fifth of respondents (17%) had made changes in their livelihood enterprises (these changes were significantly⁷ more popular with males [23%] than females [12%]).

⁶ 1% level

Table 3: Have farmers made changes following the PICSA training?

	Yes	No
All (n=214)	93%	7%
Female (n=119)	91%	9%
Male (n=95)	97%	3%

Table 4: Changes in different enterprises

	All (n=214)	Females (n=119)	Males (n=95)
Crops	90%	85%	96%
Livestock	24%	24%	23%
Livelihoods	17%	12%	23%

Impacts of changes that respondents have been making

The survey provided the opportunity for respondents to expand briefly on the impact of the changes that they had made in their crops, livestock, and livelihoods.

Crops

There were a wide range of impacts that respondents described from their changes in crop enterprises. A lot of the impacts stemmed from the increased yields that respondents felt had resulted from the changes that they had made. The increased yields had resulted in respondents seeing increased income as they had been able to sell some or more of their produce; increased food security as they were able to feed their family for longer periods and/or the whole year. The increased income that respondents had recorded had been used to help pay for school fees for family members, pay for medical insurance (*Mutuel de Sante*), and also to invest in farming through buying or renting land for further cultivation, buying livestock (cattle, pigs, goats, sheep and chickens), and investing in more seeds. Other respondents talked about investing increased income in houses, land, bicycles, setting up electricity to their homestead, televisions, buying solar lamps, and setting up a boutique.

Livestock

Respondents also mentioned a range of positive impacts from the changes they had made in their livestock enterprises. Interestingly, a large number of respondents flagged the impact of their livestock changes on their crop enterprises, saying that the use of manure from their livestock enterprises was increasing their crop production. The direct impact on livestock enterprises were increased income and the increase of milk, meat, or eggs for their children (food security). Medical insurance and school fees were also supported due to the changes respondents had made.

⁷ 5% level

Livelihoods

Livelihood changes had also led to positive impacts for respondents. The most mentioned impact was improved food security and the increased ability to pay for medical insurance. Some respondents that had made changes in their livelihood enterprises had used the benefits to invest in new land, new livestock, and also paid their children's school fees.

Are farmers sharing the information that they have learnt in the PICSA training?

The PICSA elements and the way information is presented within the approach has been designed to be shared by farmers. Most of the respondents in the survey had shared information that they had learnt in the PICSA trainings with their fellow farmers (outside of the training and their household). Males (97%) were significantly more likely to share information with their peers than females (86%), though females were clearly still very likely to share the information and tools with their peers.

Males were sharing with an average of 15 farmers and females an average of 10 farmers. When combined each respondent was sharing with an average of 13 farmers. Respondents to the survey had therefore shared information from the training with 2,412 farmers. When these results are extrapolated to all of the trained PICSA farmers it can be estimated that trained PICSA farmers (2,631) have shared some relevant information with up to 30,000 of their fellow farmers.

Conclusion

The initial results presented in this Info Note demonstrate that PICSA is reaching a large number of farmers and that the majority of them are making changes in their farming and other livelihood systems as a direct result. Farmers have indicated that these changes are having a positive impact on their farming and livelihoods. Work is now underway to scale out the process in the remaining districts of Rwanda.

Research led by



Further Reading

- Dorward, P., Clarkson, G. and Stern, R. 2015. Participatory Integrated Climate Services for Agriculture (PICSA): Field Manual. Walker Institute, University of Reading.
- Nsengiyumva G., Kagabo MD., Clarkson G., Dorward P. 2017. Participatory Integrated Climate Services for Agriculture (PICSA) Specialist Intermediary Training in Nyamata, Rwanda. CCAFS Workshop Report. Wageningen, Netherlands: CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS).
- Kagabo MD., Nsengiyumva G., Clarkson G., Dorward P. 2017. Participatory Integrated Climate Services for Agriculture (PICSA) Intermediary Training in Muhanga, Rwanda. CCAFS Workshop Report. Wageningen, Netherlands: CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS).

This brief summarizes preliminary findings of an evaluation of the first year of the PICSA roll-out in the Rwanda Climate Services for Agriculture Project. A full report is forthcoming.

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CCAFS and Info Notes

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