



The crowdsourcing approach

For more information about the 'Seeds for Needs' initiative, see:

- Factsheet 1
A participatory approach for landrace evaluation
- Factsheet 3
Strengthening the informal seed system through community seedbanks
- Factsheet 4
Diversity in durum wheat landraces to tackle drought
- Factsheet 5
Molecular techniques to map farmer and breeder preferences – an innovative approach towards participatory plant breeding
- Factsheet 6
Improving Ethiopian durum wheat landraces through breeding

In order to speed up farmers' evaluation of the varieties while collecting scientific data on how they adapt to climate change, we used a crowdsourcing approach. Varieties were distributed in two areas, involving 200 farmers in 12 villages. The total area covers 350 km² with different climatic conditions.

With the crowdsourcing approach, we moved from having two plots in the research station with 400 samples of varieties evaluated by farmers and scientists (where the first selection process happened), to a much more decentralized system that involves more farmers testing the varieties in their own fields using their own farming practices. This way we can better capture their needs and preferences, and at the same time test the varieties under more diverse growing conditions.

Farmers were given three varieties to blind test (out of a larger selection) and one control – an improved variety called Assasa that is widely used in both areas. To understand the different climatic conditions in the 12 villages, we used iButtons®, sensors that register temperature and humidity eight times a day throughout the growing season (Fig. 1). At the end of our study, the village leader and a small team, composed of scientists and extension agents, collected agronomic and morphological information for each variety, such as plant height, number of effective tillers (extra shoots generating from one seed), spike length, seeds per spike and grain yield. Farmers also provided quality scores for each sample they received (see Factsheet 1).

Our progress

- Three villages - Adkunti, Hadnet and Rehsetu – were 2°C warmer than other villages in the study
- This temperature difference heavily affects both crop performance (mainly plant height) and farmers' preference of the varieties

- The crowdsourcing approach has been very effective in disseminating seeds that match farmers' needs in a short time. This approach can also trigger a positive snowball effect. In 2013, the 200 farmers we worked with, committed to sharing the seeds they tested with other farmers. This resulted in 550 farmers using these varieties in their fields in 2014. After only 2 years, hundreds of farmers already have the possibility to use better adapted material. This is a significantly faster process compared to a standard breeding programme.
- The initiative shows that existing landraces have the potential to provide immediate options for managing climate-related risks. This calls for a broader use of traditional material conserved in genebanks.

Looking ahead

This work has several implications:

- Landrace performance needs to be tested against different climatic conditions to fully appreciate their potential and to better understand whether they meet farmers' needs.
- To upscale the initiative and make it more sustainable, we need to strengthen local seed systems. The seeds we have tested with farmers

cannot be found commercially, so there is a need to make them widely available to communities.

- By engaging with current and new strategic partners, the approach could become a standard for releasing climate-smart technologies (e.g. more crops/landraces, more farmers, other types of technologies) to farmers in a quick and effective way.

Fig. 1 - Mean temperatures in the 12 villages throughout the growing season. Three villages (Adkunti, Hadnet and Rehsetu) stand out as the warmer ones. Humidity measures were similar across all villages.

