

Session I

Agricultural biodiversity and resilience in livelihood systems

Innovative approaches in climate change adaptation

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Globally, climates will remain unstable long after atmospheric carbon dioxide peaks. So climate adaptation in agriculture is not a one-time effort; agricultural practices will need to be updated recurrently. Climate-smart agriculture needs a quick-paced process of continuous, massive discovery of locally appropriate solutions. The good news is that, as mobile telephone coverage expands in rural areas, simpler, more data-rich and cost-efficient information-and-communications-technology-based systems become possible. Also, new sensor technologies can help to track local climates with more detail, which in turn helps to compare diverse options across different places, taking into account the diversity of agricultural systems and local cultures.

Bioversity International has developed a novel “farmer citizen science” approach, taking advantage of these technological possibilities. In this approach, each farmer tries and ranks a small number of technologies (for example, crop varieties or management practices), characterizes local conditions with cheap, reliable weather sensors, and shares information by mobile phone. The resulting information serves to create empirical, location-specific advice on climate-smart practices for farmers, helping them to constantly adapt to shifting climatic and social conditions.

The first results of experiences with this new approach show that farmers are highly motivated to participate, that the approach is relatively easy to implement and upscale and that the resulting information is of good quality. Remaining challenges are the ongoing construction of a user-friendly platform that standardizes data to make it globally comparable and accessible and the training of agricultural researchers, extension agents and farmers in using the approach.

Key words: climate change adaptation, crop improvement, information, management practices, participatory methodologies

Agricultural diversification for climate change risk management in smallholder agriculture systems

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Agricultural diversification is thought to be an effective measure to reduce production risks related to climate change for individual smallholders in order to improve overall production stability and keep up with global food demand under climate change. Although diversification of crops and production systems is an established strategy for many smallholders today, crop and system switching under the transformative characteristics of climate change brings in new practices and technologies and additional costs and risks. New crops require farmers and other value chain actors to overcome initial learning and investment. They can also introduce hosts of infectious diseases, or have uncertain markets. We carried out a review to understand under which agro-ecological and socio-economic conditions agricultural diversification will be an effective climate change adaptation measure for smallholders.