

Topical Synthesis Paper

Agrobiodiversity, Seeds & Climate Change



Alliance



ISSD Africa Topical Synthesis Paper

Title: Agrobiodiversity, Seeds & Climate Change

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This report synthesises learning from the action research and dialogue activities conducted under the Integrated Seed Sector Development in Africa (ISSD Africa) programme, 2019-2023.

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Under the ISSD Africa topic “Effective seed insecurity response” the Alliance of Bioversity & CIAT and partners conducted activities in Ghana, Kenya, South Africa, South Sudan, Uganda, Zambia and Zimbabwe.

Cover photo:

The bean diversity garden of Joy Mugisha, Sheema, Uganda
Credit: Ronnie Vernooy, Alliance Bioversity & CIAT

1. Background

Across Africa, erratic and less predictable rainfall, higher temperatures, heat spells, and recurring droughts are predicted to become more frequent. This is leading to changes in cropping seasons and crop growing cycles and occurrence of new pests and diseases. Because of these irregularities and uncertainties, farmers can no longer rely on crops and crop varieties that used to do well, with negative impacts on nutrition and food security and the capacity of farmers to withstand shocks. Unexpected, major events, such as the COVID-19 pandemic, put additional stress on farmers' seed systems, affecting timely, affordable, and easy access and supply of seed of preferred varieties in the short and medium terms.

Increased access to inter and intra-crop genetic diversity may provide farmers an opportunity to switch to crops that are more resilient under new conditions. Farmers may also switch to varieties of the same crop that are better adapted to their local agroecological situation. However, the potential of local diversity is not always well understood, and many research and development initiatives have neglected the key contributions of farmer varieties and related knowledge.

Although some international and regional seed and seed related agreements exist to improve access to (new) crops and varieties, national governments and key agricultural organizations, as key actors in seed sector development, often have limited capacity to implement these agreements. Other policy and legal challenges exist, including how to develop effective and fair regulatory systems for smallholder farmers to obtain benefits derived from the use of (their) plant genetic resources. Moreover, the space for multi-stakeholder collaboration and exchange of germplasm and related knowledge at national and regional levels is often limited.

Effective strategies at scale are needed to improve access to and availability of a wide gene pool of crop genetic resources for a diverse range of users and agro-ecologies to adapt to climate change and deal with the major shock caused by the COVID-19 outbreak across the globe.

2. Approach and ambition of the topic

Through collaborative review, research and reflection activities, partners in East and Southern Africa, answered the following key question: What effective scaling strategies could improve access to and availability of a wide gene pool of crop genetic resources for a diverse range of users and agro-ecologies to adapt to climate change and deal with the major shock caused by the COVID-19 outbreak across the globe? Activities included:

Identifying of gender responsive crop development strategies that can be scaled to ensure that seed systems offer a diversity of crops and crop varieties that allow farmers and their communities to respond timely and effectively to climate change. Activities carried out included a literature review of crop diversity and resilience (led by the Alliance) combined with a review of African crop diversity studies (by all partners). One report, one brief, one video, and one journal article were produced.

Strengthening the networking of organized farmers, through their community seedbanks, as a means of (women) empowerment and advocacy, toward building resilient seed systems that recognize and support farmer-managed seed systems. Activities included capacity building on community seed banking; the international courses offered by WCDI and the Alliance), the development of a seed portal (Kenya), a community seed bank platform (Uganda), a protocol for the collaboration between the national genebank and community seed banks (all partners), and a webinar of the use of ICTs for community seed banking (led by the Alliance). One blog, three briefs, and one protocol were produced. A complementary activity was the identification of good models of demand driven, cost effective and agroecological responsive farmer seed enterprises as means to solidify farmer-managed seed systems and contribute to integrated seed sector development. A review study was carried out of selected African and Asian cases (Uganda, Zimbabwe; India and Nepal). One report and one journal article, were published.

Reviewing policies and policy initiatives in support of the scaling of resilient farmer-managed seed system strategies responsive to climate change. A review of 14 African countries was carried out resulting in a report and brief (all partners). Partners in South Sudan adopted the Seed Hub proposal developed with partner inputs.

3. Outcomes and lessons learned

3.1 Effective gender responsive crop diversity strategies

A compilation of good practice case studies was put together which highlight that crop diversity and crop diversification can produce multiple agronomic, environmental, economic and social benefits. Two additional good examples were identified: the “Seeds for Needs” program that uses a holistic crop improvement methodology from characterization of (novel) germplasm to expanding the use and availability of seeds in community seedbanks, resulting in improved nutrition and food security, income generation and adaptive capacities (several countries); and the Open Source Seed Systems project (Kenya, Tanzania, Uganda) through which novel crop diversity was sourced through the multilateral systems of the International Treaty on Plant Genetic Resources for Food and Agriculture, combined with gender sensitive, participatory variety selection and seed/crop value chain development for good performing varieties with good adaptive capacity, taste, and nutritional value (bean, millets, sorghum).

All these initiatives demonstrate that adaptation to climate change can be achieved through diverse, but effective pathways of crop diversification leading to various positive results and related improved knowledge and skills, less pest and disease incidence, improved soil fertility, increased food security, more income generation opportunities, and improved nutrition. What is required is a favourable seed policy and legal environment that supports smallholder farmers to govern and manage their own seed systems and create opportunities to enter the seed market.

Links:

- Seeds for needs: Citizen science & crowdsourcing: <https://www.cgiar.org/innovations/seeds-for-needs-citizen-science-and-crowdsourcing/>;
- Report: Policy dialogue and workshop on open source seed systems: <https://alliancebioiversityciat.org/publications-data/report-policy-dialogue-workshop-open-source-seed-systems-climate-change>;
- Mobilising crop diversity for climate change and resilience: Field Experiences from Africa: <https://issdafrica.org/2021/09/20/mobilizing-crop-diversity-for-climate-change-adaptation-and-resilience-field-experiences-from-africa>;
- Review: Does crop diversification lead to climate-related resilience? Improving the theory through insights on practice: <https://www.tandfonline.com/doi/full/10.1080/21683565.2022.2076184>

3.2 Mechanisms to strengthen the involvement of organized farmers in seed sector development

Through pilot initiatives in Kenya and Uganda, a national seed portal and a national community seed bank platform were established to exchange seed and related knowledge; create synergy and give farmers a voice in policy debate/development. These are examples of the use of novel ICTs that have the potential to strengthen community seed banking organizationally, technically and policy wise, but for smallholder farmers accessing and using them is not that simple. More efforts are needed to support farmers to use these tools. Inspired by the example of South Africa, the “Protocol of collaboration between the National Genebank and community seed banks” (developed jointly by all ISSD Africa Theme 3 partners) as an instrument to build a national conservation system, was very well received and immediately put to good use in Kenya, Uganda and Zimbabwe, resulting in new agreements to strengthen collaboration. The targeted capacity building activities contributed to strengthen the existing community seed banks and establish a few new ones (e.g., Ghana, Kenya, Uganda, Somaliland, South Sudan, Sudan, Zambia). The work at scale in East and Southern Africa inspired initiatives in Ghana and the Horn of Africa to set up the first ever community seed bank there.

Another very important strategy to strengthen community seed banks is through local seed business development as a sustainability strategy. The review of successful cases (from Africa and Asia) made this clear. This leads to the recommendation to identify value addition opportunities for community seed banks from the very beginning, which can work as a motivation and incentive at the same time. Women, as seed custodians and managers, are playing key roles in many community seed bank activities, and deserve more recognition and support.

3.3 Supportive scaling policy practices

The main finding of a review of seed (related) policies and laws in 14 African countries is that, although in most countries there is some form of acknowledgment that farmer-managed seed systems exist, there are not many positive results related to recognition of and concrete support for farmer-managed seed systems (policy, legal, technical, operational, and financial support). Much remains to be done to promote and support the use of diverse genetic resources for climate change adaptation, e.g., through the strengthening of national and (sub)regional collaboration on integrated seed sector development and more support for farmer-managed seed system activities, such as community seed banking and local seed business development. Inspiring examples of new practices can be found in many countries, spearheaded by civil society and in a few cases supported by governments, which can serve as examples to inform and reform existing seed (related) policies and laws.

Originally not envisioned, but an important output, is the Seed Hub concept note: the creation of a hub of expertise to service projects within the participating countries (or at a subregional level), providing technical backup on tools, methods, information sources, data management, compliance with applicable regulations and agreements etc.; pooling, exchanging and evaluating genetic resources; facilitating knowledge exchange between seed sector actors; and developing agreements to be approved by competent authorities within the participating countries to support the movement of people, knowledge, genetic resources, between the countries. The Seed Hub concept was developed by the Alliance and WCDI in collaboration with ISSD Africa partners in Eastern and Southern Africa, and endorsed by authorities in Kenya, Tanzania, Uganda and Zimbabwe, and, more recently (September 2022), embraced by seed sector stakeholders in South Sudan.

Links:

- Policies, laws, and regulations in support of farmer-managed seed systems: still a long way to go. A review of 14 countries in Africa: <https://hdl.handle.net/10568/128579>;
- Seed hubs for East and Southern Africa: mobilizing knowledge and resources for resilient seed systems: <https://hdl.handle.net/10568/111026>;

4. Conclusion and next steps

Although good agrobiodiversity initiatives and practices can be found across Africa, much remains to be done to strengthen smallholder farmers' adaptive capacities through recognition of and support to farmer-managed seed systems that contribute to integrated seed sector development, at local, regional and national levels; and even continentally. Of high priority are the following action areas:

- Further strengthening of community seed banks and networking of community seed banks, and collaboration between the community seed banks and national genebanks for the exchange of seed and related knowledge and the creation of a dynamic national agrobiodiversity conservation system;
- Recognition and reward of women's seed management roles, as seed custodians, but also in value addition activities, e.g., seed production and distribution, value chain development of produce or processed produce (e.g., composite flour made of cassava and millet);
- Incentives for crop diversity/diversification as a key strategy to adapt to climate change, provide healthy food, and generate income generation opportunities;
- Pro-farmer seed system policy development, in support of community seed banks, local seed enterprises, registration of farmer (improved) varieties, and Farmers' Rights in general.

One promising strategy for national government and seed sector stakeholder to pursue to work collaboratively in these action areas is through the creation of and support to Seed Hubs as national/subregional platforms for concerted action and policy development (reform). A seed hub offers multidisciplinary expertise to service initiatives/projects within the participating country or countries; provides technical backup on tools, methods, information sources, data management, compliance with applicable regulations and agreements etc.; facilitates the pooling, exchange and evaluation of genetic resources; promotes knowledge exchanges between seed sector actors; and assists in preparing agreements to be approved by competent authorities within the participating countries to support the movement of people, knowledge, genetic resources, between the countries.

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