Key issues and way forward

PPB can have a positive impact

- The primary aim of PPB is to generate diverse adapted varieties for use in local socio-ecological conditions.
- At the minimum, PPB must involve farmer participation in setting objectives and goals; sharing of genetic materials; in situ experimentation; and some active involvement in selection, whether early or late stage.
- Reviewed case studies suggest that PPB can produce positive results for farmers. Recorded successes include superior performance of PPB varieties over conventionally bred and local varieties; a shorter and less costly process; increased availability and earlier access to genetic materials and consequent expansion of biodiversity; and farmer empowerment and building farmer organisation.

Farmer organisation

- Farmer organisation is very important to facilitate participation and knowledge sharing. Successful forms of farmer organisation include co-operatives, and farmer research and experimentation groups. The aim of the farmer organisation is to carry the process institutionally at local level and to ensure farmers are driving and shaping the process.
- Farmer-to-farmer learning and sharing, and especially the farmer field school (FFS) methodology, appear to be very successful.
- Support is required to build independent smallholder farmer organisation to articulate farmer interests in seed and biodiversity conservation and maintenance, breeding and crop improvement, seed production and distribution.

Multidisciplinary research teams

- PPB is best carried out as a multidisciplinary research process, involving farmers and their organisations, NGOs, public sector breeders and research institutions, as well as end users. These could even be formalised in the form of research consortium agreements that have been negotiated with farmers.
- Involvement of government departments and extension creates a higher likelihood of processes being institutionalised.
- Participation of women should be encouraged and supported – case studies reveal the importance of both men and women being involved in deciding on traits and selection, for example, because there are gendered dimensions to the criteria.

Decentralisation

- Decentralised selection and comparative testing is usually more effective than centralised, on-station processes. It increases the number and range of test environments reduces costs by decentralising tests to different institutions/farmers, who can take responsibility just for their own tests; allows for collective decision-making; and allows for testing against other varieties. The main potential downside is lack of quality control.
- This requires decentralisation of resources, incentives and decision-making. Changes in the organisation and execution of national breeding and extension will be needed.

Germplasm ownership and access

- Farmer ownership of the process and products will be enhanced if farmer materials are used as parent materials. Germplasm should be made available to farmers at any stage in the process. In conventional systems, rejected lines are usually discarded. But individual farmers may favour lines that are rejected in the programme and should be able to take this material for their own use and dissemination to others. Final cultivars should also be available to farmers to use, multiply and distribute without constraint. One of the key benefits of PPB is availability of diverse materials to farmers.

Linking conservation, breeding, seed production and dissemination

- It is important to acknowledge that PPB is only one part of a bigger picture. Plant breeding on its own, no matter how democratically and inclusively it is done, is not going to resolve all the ills and challenges facing smallholder farming communities. PPB should be situated in a wider agenda of agro-ecological programming and support.
- For the purposes of analysis, we have

made conceptual distinctions between conservation and maintenance, repatriation and rescue of varieties, variety enhancement, multiplication, dissemination and use. In reality, these are or can be parts of continuous and integrated processes of crop and seed production cycling through the seasons. Wider agricultural biodiversity is a necessary basis for PPB, and pre-breeding activities to build this base may be required. The work of Bioversity International is a good example of such activities that shade into participatory breeding and selection as they develop. A key feature of PPB is a more overt recognition of the cyclical and continuous character of these processes, as opposed to a conventional linear process, which starts and ends with a defined product.

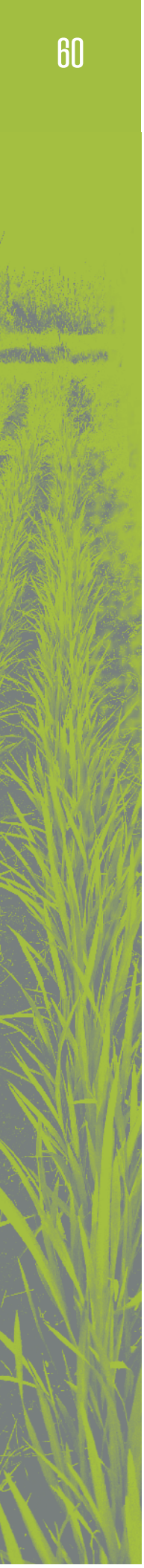
- Raise awareness on the importance of smallholder farmers' ongoing activities and varieties in conserving, maintaining and enhancing genetic diversity.

Seed laws and policies

- PVP and seed laws and regulations, as they are currently formulated, pose a significant obstacle to systematic participation of farmers with their own varieties in PPB, as well as to government participation and upscaling.
- There should be an immediate exemption to allow public sector entities to work through approved programmes to support farmer seed production and distribution that is not required to go through the existing formal registration and certification process.
- It is up to farmers whether they want to officially register and certify their varieties. However, technical requirements may be onerous and not always relevant to their situation, and there are costs attached.
- Advocacy is required to carve out space for PPB within the legal and policy frameworks, to allow the flexible registration and certification requirements that suit the specific contexts facing farmers as breeders and users of seed.

DUS, VCU and registration

- DUS needs to be relaxed, depending on the purpose of the seed. It may apply for large-scale commercial production, but is not equally relevant in farmer seed systems. Because there is a policy vacuum on farmer seed, the commercial standards bleed into farmer systems.
- Spaces should be opened for crowdsourcing, evolutionary plant breeding models and other innovations, without imposing unnecessary constraints on the use and distribution of materials.
- There is lack of official recognition of farmer testing, even if this is rigorous. Even where farmers do follow the procedures, bottlenecks in multiplication,



dissemination and promotion may limit greater adoption of varieties they have produced.
- PVS could be made a statutory requirement in formal sector/conventional breeding, with the objectives of ensuring seed is appropriate to the context, and to build farmer capability in crop improvement. PVS is a good entry point for farmers to acquire technical skills/knowledge on selection and breeding/crop improvement.
- Provide blanket protection of registered farmer varieties from biopiracy, even if the varieties are not protected under PVP laws, as a condition for engagement in registration processes.

Quality controls and certification
- ISTA standards and requirements for storage, packaging, labelling and marketing are designed for commercial production and not for farmer seed systems. However, they end up regulating farmer seed systems in the absence of any specific legislation or regulations covering the latter. The formal standards are fairly onerous for smallholder farmers to abide by, and may not be appropriate, especially when the seed is primarily for local dissemination.
- There is need for a set of flexible and context-driven quality standards and controls, based on farmer-user interactions and agreements (formal and informal). There are some existing practices. More investigation is required and ACB has been doing some background research on this.
- The scope of QDS could be expanded to incorporate farmer-based quality assurance and control processes and geographical expansion for distribution beyond the locality. Shared codes could be facilitated through farmer-to-farmer exchanges.
- Geographical expansion of QDS would require the development of quality control processes, including across agro-ecological zones and administrative and legal borders. The vision is for farmer-based processes. But external agents could also enter, with partial approaches and work with farmers to expand these together, in the same way that PPB can start in fairly narrow ways and expand outwards to encompass more complexity over time.