

# Farmers and Researchers Involvement in Plant Breeding Development

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## Perspective

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## ABOUT THE STUDY

Since the earliest days of crop cultivation by humans, plant breeding has been done. The intensity of plant breeding has developed over the past 100 years, and it is today acknowledged as a complex fusion of science (or sciences) and utility. There has been on-going push to develop better new crop cultivars due to the rising desire for a balanced and healthy diet as well as the growing requirement to feed the world's population. The methods used to create these are more frequently based on our grasp of pertinent science, particularly genetics, but incorporate a multidisciplinary understanding that optimises the methods used.

There are opportunities for farmer participation in all phases or stages of a plant breeding programme, including setting goals, generating variability, choosing experimental varieties and evaluating them, as well as producing and disseminating seed of new varieties. Roles and responsibilities can be divided in a variety of ways, and collaboration between farmers and scientists can take many different forms. Researchers have attempted to categorise Participatory Plant Breeding (PPB) strategies based on the type of collaboration or the location of decision-making. Farmers participate in every PPB programme by sharing their expertise, information, and, in some situations, genetic material.

Farmer varieties can be utilized as breeding parents in crossover programmes, or farmers can offer their own check or control types to studies. Farmers may also manage trials on their own property, conduct them, and make various selection decisions as a direct part of the breeding process. As a result, in addition to knowledge and genetic material, farmers also significantly contribute labour and practical skills for the evaluation and selection of test entries in PPB programmes. The terminology for PPB has not been fully standardized, as with any emerging field of study, and it is used variably by various research organizations.

To help the reader understand the expanding PPB literature, some of the more frequently used words are defined in the following paragraphs. PPB is a general word that refers to all methods of plant breeding that involve close cooperation between farmers and researchers, as it is in this chapter. However, some authors concentrate on the collaboration's role in the breeding programme and the condition of the germplasm being used. Participatory variety selection, or PVS, is one of the phrases that are most frequently used in this context. It refers to the involvement of farmers in the evaluation of final, stable cultivars.

Thus, the term Participatory Plant Breeding (PPB) is only used when farmers' participation to the project's initial stages of variety development are required. Decentralized plant breeding emphasizes the value of selection in the target environment, i.e., farmer's fields, based on ideas about how plant genotypes and the environment interact. However, this strategy can also include farmer involvement in the selection and spread of cultivars. In order to avoid creating an artificial distinction between "participatory" and "non-participatory" breeding methodologies, the term Client-Oriented Plant Breeding (COB) has been proposed. The improvement of the client orientation of formal breeding programmes, with productivity increases and research efficiency as the key goals, demonstrates the fundamental strength of participatory techniques.

Participation of stakeholders other than farmers has been more significant in PPB programmes in recent years, especially when biodiversity conservation and breeding operations are linked to value chain growth. These initiatives frequently employ multi-stakeholder strategies and a range of participants in the food supply chains to achieve their objectives. Tradespeople, food processors, chefs at restaurants, and urban consumers are a few examples of stakeholders. Given the rather ambiguous terminology, we employ PPB in its broadest sense throughout this chapter, with an emphasis on illustrating the wide variety of objectives pursued by PPB programmes and the varied strategies for accomplishing them.