



GIPB GLOBAL PARTNERSHIP INITIATIVE FOR
PLANT BREEDING CAPACITY BUILDING
harnessing plant genetic resources for development

Food Security: Conservation, Use and Delivery of Plant Genetic Resources for Food and Agriculture

Global food production has grown faster than population over the last century, due to improved varieties and good crop management adopted by farmers. Better access to food at lower prices is one of the humankind's greatest achievements.

Elements of food security through sustainable production:

- conservation of Plant Genetic Resources for Food and Agriculture (PGRFA)
- use of PGRFA in developing new improved varieties by plant breeding
- delivery of the new varieties to farmers



Plant Genetic Resources: raw material (conservation)



Plant Breeding: improving plants (use of PGRFA)



Improved variety (plant breeding product)



Seed sector (delivery to farmers)



Food security (outcome)

Three key elements linked in food security: Conservation, Plant Breeding and Seed Delivery

Conservation of PGRFA

Collections of genetic material should include all biodiversity associated with a particular crop. This is the raw material for plant breeders to develop new varieties adapted to marginal growing areas, resistant to pests and with higher yields. PGRFA must be adequately sampled and conserved for present and future use. Many initiatives support conservation, including the International Treaty on Plant Genetic Resources for Food and Agriculture.



Plant Genetic Resources for Food and Agriculture: conservation for present and future use to improve production

Cassava mosaic virus, in 1989, decimated harvests throughout Uganda, causing a loss estimated at US\$ 60 million/year, food shortages and even localized famine. Plant breeders selected resistant varieties from among 100 000 cassava seedlings derived from conserved genetic resources.



Use of PGRFA

Plant breeding is the art and science of genetically improving plants for the benefit of humankind. It explores genetic diversity as raw material in developing new improved varieties. Progress is achieved through many different techniques ranging from simply selecting plants, in farmers' fields, with desirable characteristics for propagation, to more complex molecular techniques.

Plant Breeding: use of Plant Genetic Resources for Food and Agriculture



In countries such as Brazil there are well structured plant breeding programs and seed sector, making available to farmers improved varieties packed with technologies. For example, the improved soybean variety Cristalina, adopted in the Brazilian savannah, has become the most widely grown variety in history and resulted in a yield increase of about 6%, corresponding to more than US\$100 million increase in yearly revenue.

Delivery of Improved Varieties

The seed sector is key in transferring plant breeding results - the new varieties - to farmers. This sector produces and distributes seeds with good germination quality and high purity of the new varieties that are essential for farmers to grow a productive crop.

Delivery: the seed sector is key in transferring technology from plant breeding fields to farmers' fields



Only an efficient seed distribution system is able to bring improved varieties, packaged with technology, to the farmers' fields.

Strategic Directions

Governments, policy makers, donors and society as a whole have to understand that only an integrated investment in Plant Genetic Resources for Food and Agriculture, including Plant Breeding and the Seed Sector, is able to make available to farmers improved varieties for sustainable agriculture, thus ensuring enough food for a world, ever at risk of hunger.