Genetic Resources of Crop Plants in South Asia

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Abstract

Vavilov and several other eminent explorers recognized South Asia to be a true cradle of life and agriculture as seen from the rich biodiversity and also from archeological evidence. This region is known for immense genetic variability in rice, small millets, leguminous crops, vegetables, tropical fruits, fibre crops, sugarcane, grasses, oilseeds, spices, condiments and also medicinal and aromatic plants. In addition, wild progenitors and related taxa of domesticated species contain valuable genes for adaptation to stress environments. Exchanges from other regions of crop diversity have also significantly added to the diversification of indigenous crops. Remarkable diversity in agro-climatic factors, topographical conditions, soil status, farming systems and farmer's preferences have led to an amazing build-up of an enormous gene reservoir that is highly sought by plant breeders. Population pressures and development needs are, however, increasing at a fast pace resulting in habitat degradation, intensive cropping patterns, varietal replacements and genetic erosion of plant wealth. Narrowing of genetic base in cropping systems is alarming because of implied increase in vulnerability of crops to widespread losses due to diseases and pests. Strength of crop improvement programs and management of plant genetic resources vary a great deal in different countries. Some national programs have developed notable infrastructural facilities, scientific capability and useful linkages. Regional collaboration is growing in conducting joint explorations, adopting common quarantine procedures, exchanging germplasm and developing trained manpower. Shortage of regular funding is a common constraint. Besides bilateral arrangements, FAO and several International Agricultural Research Centres are assisting the national programs of this region, particularly in collecting, evaluating, documenting, conserving, networking and utilizing crop genetic resources. Other noteworthy features include the remarkable growth of the private sector in seed business, emergence of Non-Governmental Organizations and growing public concern about conservation and availability of plant genetic resources for research purpose with a view to sustaining advances in crop productivity and also in stabilizing agricultural production.

Discussion

Nakagahra, M. (Japan): As the research areas on plant genetic resources are expanding rapidly, we are faced with problems relating to facilities as well as a shortage of research staff. What is the situation in India?

Answer: India is also facing this problem. To alleviate this constraint, we have set up units of plant genetic resources in research centers or institutes dealing with particular crops by providing funds. We also offer incentives and we have expanded our training programs to achieve uniformity of methodologies and increase the scientific content of different activities. We are also linking our national base collection to over 30 active germplasm sites for different crops or crop-groups to conduct germplam conservation work by redeploying existing staff.

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Kikuchi, F. (Japan): Could you outline the actual situation of *in situ* conservation in South Asia?

Answer: While there is a growing awareness about the value of *in situ* conservation programs, such projects are still in the initial stage from the scientific point of view. "Sacred Graves" practice is common in the region. In India, seven biosphere reserves have been established out of the 14 identified for this program. Nakrek Biosphere Reserve in Meghalaya protects and preserves *Citrus* germplasm. There is a wide scope for improving the scientific content of our *in situ* programs and effort in progress in this direction.