

Importance of Passport Data in Plant Genetic Resources Management

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Conservation of Plant Genetic Resources (PGR) without use has little importance. PGR are conserved for use by people as food, medicine, fibre, fodder and building material. Conversely, use without conservation means neglecting the genetic base needed by farmers and breeders alike to increase productivity in future. To be of use, material held in genebank must be well documented. This entails maintaining passport data, giving location, site characteristics, species, cultivators, characterization data, recording highly heritable character that can be used as a basis to distinguish one accession from the other and evaluation data giving traits such as yield, quality, phenology, growth habit and reaction to pest disease and abiotic stresses. Without these, genebanks run the risk of becoming libraries without readers.

Information system, which improves access to data, is becoming increasingly important worldwide. To cite an example is the data management model and computer based information system developed by CIMMYT known as the International Crop Information System (ICIS). The ICIS structure supports the shared development of tools for management and analysis of data on genealogy, nomenclature, evaluation, and characterization of genetic resources. The CGIAR Centres are taking steps to coordinate the genetic resources documentation and information system to ensure that databases operating in various centres are compatible to provide international access to the information.

Need for Passport Data Update

- Passport information of the PGR is important at national, regional and global levels to backup conservation of rapidly disappearing genetic stocks for future use in crop improvement programmes.
- The information may aid in rapid identification of required accession and/or characteristics and may help to prevent excessive duplication of efforts while showing where the gaps are.
- Passport information on the origin of the accession is also relevant. Base of access to the information

may make it the basis for both breeders (as is the case) and farmers (as it should also be) to use the materials.

Realizing this importance, the activity of passport data updation was enhanced and efforts from all angles have been taken to get the minimum passport information.

Method of collection of passport information: The structure of information documentation has been improved with the addition of more fields which have now been raised to 17 descriptors to document most of the user driven information. Efforts are on to augment passport information on the germplasm stored from different sources to accomplish the above mentioned needs. In this regard the donors of crop germplasm have been contacted through letters and in person and have been persuaded to provide whatever passport data they have. Besides this the germplasm collection reporters and exotic collection registers, collection memoir and catalogues are being screened to get all the passport information available on the accessions. The result of this activity in various crops by the respective crop curators is given in the Table 1. The descriptors that have been included in the proforma for passport updation are given in Table 2.

The Indian National genebank houses 2,02,228 germplasm accessions of various crops and is the fourth largest in its resource. The stored accessions include both indigenous germplasm augmented through crop specific and multicrop collection expeditions and exotic resources introduced from foreign countries. The status of the information documentation was reviewed and it was observed that only a small fraction of the total germplasm had relevant passport information (10-15%). Since this activity has been assigned utmost priority in most of the genebanks around the world as it is imperative that germplasm without appropriate information is of no use. The earnest efforts of the crop curators in this regard have been beneficial (Table 1) in identification of duplicates to reduce redundancy in collections in addition to updating of information. This

Table 1. Number of records reviewed and updated for passport information in various crops

Crop	Records reviewed	Records updated	% updated	Duplicates
Wheat	4,500	2,700	60	
Maize	3,200	1,200	37	
Buckwheat	100	90	90	
Paddy	2,204	1,900	86	
Lentil	2,026	860	42	16
Ricebean	983	695	71	81
Pigeon pea	4,384	15	1	91
Chickpea	10,459	3,214	30	979
Cowpea	2,349	24	1	
Horsegram	1,327	868	65	72
Adjukebean	151	38	25	
Cotton	3,052	2,000	65	
Jute and Fibres	3,703	1,590	43	
Sorghum	11,112	145	1.5	333
Groundnut	7,397	4,522	61	350
M and AP	700	127	18	
Bitter Gourd	165	143	86%	4
Okra	1656	28	2%	
Melon	1	1	100%	

information updation is a continuous process and will go on until the data documentation is complete.

According to FAO Report (1996), 37% of the national collections and nearly all the CGIAR genebank, accessions have passport data, but in most cases these refer only to the country of origin. Plant breeders are often forced to develop their own collections because of the lack of information on collections in the genebanks. It is also observed that while some genebanks have their collections fully documented, computerized and even available on the internet (as in the case of Vavilov Institute and the US collections), others have not documented any of their collections. So the documentation of relevant passport data is essential for effective conservation and use.

References

FAO (1996) Report on the State of the World's Genetic Resource for Food and Agriculture, Commission on Genetic Resources for Food and Agriculture. CGRFA-Ex-2/96/2

Table 2. Performa for passport data

SNo	National Identity	Collecting Institute	Collector No.	Donor Institute	Donor/ Other Identity	Crop name	Common Name	Taxonomic Code	Pedigree	Source	Biol. Status	Country of Origin	Location	Latitude	Longitude	Altitude

Source: In=Institute/NRC/ARCs; F=Farmer; M=Market; NGO=Non-Governmental Organisations; OT=Others
 Biological Status: W=Wild; RC=Released Cultivar; LR=Landraces; BL=Breeding Line; M=Mutant; GS=Genetic Stock; OT=Other
 Country of Origin: Please provide ISO Codes