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## A PLEA FOR THE CONSERVATION OF GENETIC DIVERSITY OF HIMALAYAN PLANTS\*

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There is generally no controversy on the usefulness of genetic diversity in plants particularly from the point of view of their utilization in evolving genetically improved strains. However, excepting in the case of crop plants, very little seems to have been done in India with regard to survey, collection and conservation of such germplasm of economically important groups of plant of Himalayan region like medicinal and timber plants. In the case of wheat, maize and citrus rich germplasm collections have been built up in our country and some of these are effectively being utilized in breeding work. It is generally known that plants having a wide natural distribution contribute considerable variations and a major part of this variation is genetic. In Himalaya, due to population pressure, there has been over-exploitation and hence denudation of plant wealth. There is, therefore, an urgent need to take up steps for survey, collection and conservation (both *ex situ* and *in situ*) of important genetic resources. In suitable areas, gene banks or germplasm banks for these valuable resources should be established expeditiously to ensure that these resources are not lost to the posterity.

Genetic diversity constitutes one of the most valuable assets of our natural resources. It provides the basic gene-pool from which desirable genes can be drawn and incorporated in the new varieties. Some advanced countries like the U.S.A., U.S.S.R., Australia, U.K. and Canada have already established National programmes to conserve and maintain genetic

resources of crop plants, horticulture species and forest tree species so that these are available conveniently for the plant breeders. The remarkable progress made in recent years with our crop plants owes itself to the collection and identification of a large number of useful genes from various geographic regions of the world. *Norin-10* a strain of wheat from Japan and *Dee gee. woo gen* a strain of rice from Taiwan are classical examples of such collection and utilisation for the improvement of plants.

Availability of genetic diversity is a fundamental pre-requisite for genetic improvement of plants and no plant breeding programme can make any headway in the absence of such diversity. It has been fully realized that many valuable genes such as for resistance to important diseases and insect pests, for drought resistance are usually present in the wild populations and these can be incorporated in the cultivated strains.

Himalaya is well known for its rich and diverse wealth. Though the genetic resources available in the case of important crops and some fruit trees have been surveyed and identified by various national and international institutes, very little has been done in India in respect of medicinal plants, forest trees etc.

With the increasing population pressure and the demands of industry, the exploitation of the Himalayan plants has been intensified. The continuous over-exploitation of these plants has already impoverished the plant wealth of Himalaya. The threat has been further aggravated by indiscriminate felling of

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Himalayan forests for developmental purposes. This may lead to the extinction of rare and valuable plants. So it is high time that a strategy is evolved for concerted effort to conserve the genetic diversity of Himalayan plants. This could be best achieved if national plans are made for survey, collection and conservation both *in situ* and *ex situ* (germplasm banks) of valuable genetic resources of economic plants of Himalaya so that the same may be available to plant breeders and other researchers for evaluation and effective utilization.

Gene banks for Himalayan region can be established under the aegis of National Bureau of Plant Genetic Resources which has been established recently in India. The objectives should be broad based and should not deal with crop plants only and should include all economic plants. There should be at least one gene bank each in the Western, Central and Eastern Himalaya with three sub-stations in each, located in the outer, middle and inner Himalaya to accommodate all types of economic plants growing in their respective regions.

It will not be out of place here to mention that the recommendations which Food and Agriculture Organization of the United Nations/International Biological Programme Conference in 1967 made to promote the availability and conservation of genetic resources because the objectives for the establishment of gene banks, advocated here, are almost same.

1. *Determination of location and nature of genetic resources in the field*: The survey should be as comprehensive as possible though priorities can be fixed depending on the importance of each crop.

2. *The holding of the primitive materials are small and do not represent either species or areas*: Therefore, a corresponding survey of material already in existence should also be made.

3. *Proper utilization of genetic resources*: Mere collection of the material is not enough. The material should be adequately classified and evaluated. This step would involve collaboration at national or even international levels.

4. *Conservation of genetic resources*: This is perhaps the most important task and deserves strong emphasis. This obligation we do not owe to ourselves alone but we are duty bound for the posterity. Some of the species may have to be conserved in their natural habitat.

5. *Documentation*: The role of documentation is being recognised steadily. This should include description of the site, classification, morphological and physiological peculiarities, utilization in breeding work and conservation. The value of collections will be enhanced greatly by documentation in standard internationally recognised form. Voucher herbarium specimens should invariably be preserved whenever documentation of different collections are done.

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