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## Module-6

# Plant Propagation



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## A. Plant Propagation

First, the kind of propagation needs to be determined: either those based on generative propagation or sexual reproduction (seeds) such as lettuce, curly endive, pepper, eggplants, tomato, beans, etc.; or those vegetative propagated (asexual reproduction) through another part of the plant: potato tubers, sweet potato roots, bulbs in onion and garlic, cuttings in artichoke, stolons in strawberry, “spiders” or roots in asparagus, etc.

- Despite the method of propagation to be used, all the seeds and plant material used should be free of pathogens and weeds, and obtained from safe sources.



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## B. Criteria for Seed Evaluation, Characterization and Multiplication

Good quality seed is the sum of its genetic, physiological, physical and health traits. Concerning genetic quality, the material should be of known origin, already tested in the region, and produced in an isolated environment.

- Choose the best plants on the farm: vigorous growth, high yielding plants, good quality fruits (shape, colour and flavour (when applicable)), best fruit covering, good health, etc.
- The selected plants should be looked after with the utmost care.
- Every plant not corresponding to the chosen type should be eliminated, and isolation distance strictly respected.
- Neighbouring plants having pest or diseases must be eliminated. Fruits must be picked at optimum maturity.
- Once picked, the seeds should be taken out at once.



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## Physical quality comes from physical botanical purity

- Only pure seed of the selected species should be kept, free from foreign seeds. Great care must be taken while picking lettuce, onion, carrots, broccoli, cabbage, cauliflower, to keep out weeds with seeds, because separation later is very difficult.
- It should include the smallest possible amount of inert material (remains of flowers, fruits, etc.).
- It should have good weight and size, without mechanical damage (e.g. wild radish seeds are very sensitive, their seed cuticle being very brittle during the seed cleaning process).



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Health quality should be achieved by working-up a healthy, organic soil, rich in organic matter, nutrients and microorganisms, so that plants grow healthy and without nutrient or physiological imbalances that make them susceptible to pests and diseases. Strict control of unhealthy plants should be established, so as not foster foci of infection and sources of inoculation brought from plant by insect vectors



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# C. Importance and multiplication of Traditional Varieties



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- Traditional seeds are locally available because farmers collect good seeds from their own plots and keep them for the next season.
- Farmers either buy or exchange their seed with other farmers or grow their own seeds. Therefore the cost of seeds is minimal.
- Native seeds are geared to a subsistence economy as the farmers first grow food for his subsistence and/or stock seed for the next season and market only the surplus.
- Native seeds embody indigenous knowledge. A farmer who uses native seeds use his/her traditional knowledge, skills and wisdom to grow them, promoting self-reliance.
- An outstanding feature of native seeds is diversity.
- Native seeds are hardy, as they have, over the years, developed resistance to the pests and diseases.
- Traditional seeds have high level of tolerance to conditions of stress and are adapted to local agro-climatic conditions.



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# D. Seed Conservation





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- Farming communities have always implemented conservation methods known to the formal sector as ex-situ (off-field) and in-situ (in-field) conservation strategies.
- In-situ conservation provides farmers a valuable option for conserving crop biodiversity and helps to sustain evolutionary systems that are responsible for the generation of genetic variability.
- This is especially significant in many parts of the world subject to drought and other stresses, because it is under such environmental extremes that variations useful for stress-resistance breeding are generated.
- In the case of diseases or pests, this allows for continuing host-parasite co-evolution.



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The seed system used in most traditional farming systems is based on the local production of seeds by the farmers themselves. Farmers consistently retain seed as security measure to provide back-up in case of crop failure.

**Community seed bank** represents one strategy for a collective maintenance of genetic diversity in crops/plant species. Low-cost community level seed bank or seed storage facilities can help to preserve climate mitigating characteristics of traditional varieties, while, at the same time, serving as a base material for farmers to select special lines to meet their changing needs.

Likewise, the establishment of species adapted to extreme environments in **field gene banks** at strategic sites can provide a reserve for places where traditional crops may have completely failed.