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Course: Plant Propagation and Nursery Management

Lecture No. 07

Topic: Sexual propagation its advantages and disadvantages

"Multiplication of plants is termed as **propagation."**

Plant propagation means multiplication of plants with the aim to achieve increase in number and preserve the essential characteristics of the mother plant.

Plant kingdom includes enormous types of plants. Some of them multiply by seeds while some by vegetative plant parts and some of them use both means for multiplication. It is essentially of two types:

A. Sexual Propagation **B. Asexual Propagation**

A. Sexual Propagation

- Sexual propagation or reproduction refers to multiplication of plants by seeds. Seeds are formed after successful pollination and fertilization by the union of male and female gametes.
- Meiosis division takes place in the course of fusion and the chromosome numbers are reduced to half, which after fertilization becomes normal.
- Sexual plant propagation involves the union of the pollen (male organ) with the egg (female organ) in plants to produce a seed.
- The plants raised through seed are called seedling plants.
- Sexual propagation involves careful management of germination conditions and facilities and knowledge of the requirements of individual kind of seeds.
- When a mature seed is exposed to favorable environment, it germinates and begins its active growth.

➢ **The Success seed propagation depends upon some conditions:**

- Using seed of proper genetic characteristics to produce the cultivar or species, of provenance desired. This can be accomplished by obtaining seed from a reliable source.
- Using good quality seeds which germinate rapidly and vigorously to withstand possible adverse environmental conditions in the seed bed and provide a high percentage of usable seedlings.
- Manipulating the seed dormancy by applying pre-germination treatments or proper timing of planting.
- Providing proper environment for seed germination i.e., supplying sufficient water, proper temperature, adequate oxygen and either light or darkness (depending upon kind of seed) to the seeds and resulting seedlings until they are well established.

- **Advantages of Sexual Propagation:**
  - It is the easiest and least expensive method of plant propagation.
  - Seed propagation is only mean of diversity particularly in the selection of chance seedlings.
  - Seedling plants are long lived, productive and have greater tolerance to adverse soil and climatic conditions and diseases.
  - Seed propagation makes feasible to propagate plants like papaya, phalsa and coconut in which asexual means of propagation is not common.
  - Hybrids can only be developed by sexual means.
  - Sexual propagation offers opportunities of polyembryony (more than one seedling from one seed) (citrus, mango or jamun) and apomixis, which produces true- to - type plants.
  - Seed is the source for production of rootstocks for asexual propagation.
  - The rootstocks on which the fruit varieties are budded or grafted are usually obtained by means of sexual propagation.
  - Seeds, if stored properly can be kept for longer duration /period for future use.

- **Disadvantages of Sexual Plant Propagation:**
  - Seedling plants are not true to type to the mother plants due to heterozygous nature of fruit plants.
  - Seedling plants have long juvenile phase (6-10 years) and hence flowering and fruiting commences very late.
  - Sexually raised plants are generally tall and spreading type and thus are cumbersome for carrying out various management practices like pruning, spraying, harvesting etc.
  - Seeds of many fruits are to be sown immediately after extraction from the fruits as they lose their viability very soon e.g. cashew nut, jamun, jackfruit, citrus, mango and papaya.
  - Seedling plants usually produce fruits of inferior quality.
  - Quality of existing plants cannot be improved by sexual propagation.
  - In case of sexually propagated plants, there is no assurance about genetic purity of the offspring or seedling.

Source:

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2. Singh Jitendra. 2010. Basic Horticulture. Kalyani Publishers, New Delhi.
3. http://ecoursesonline.iasri.res.in/course/view.php?id=133