

GENETIC BASIS OF PLANT BREEDING (PBS 504)

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LECTURE 1

- Variation: Sources of Variation
- Mutation: Types of Mutation
- Inheritance
- Linkage
- Qualitative Inheritance
- Heterosis
- Genetic interpretation of heterosis

LECTURE 2

- Breeding Methods
- Kinds of Cultivars
 - * Clone
 - * Line
 - * Open Pollinated variety
 - * Hybrids
- Importance of Mode of reproduction
- Steps in Plant Breeding

LECTURE 3

- Methods of improvements for cultivars of kinds
- Breeding methods for sexually propagated crops
- Breeding methods for asexually propagated crops

LECTURE 4

- Selection methods in Plant Breeding based on mode of reproduction
- Methods for breeding self pollinated crops
- Mass selection: Applications, Advantages & Disadvantages
- Pure line Selection
 - * Procedure
 - * Applications
 - * Advantages & Disadvantages

- Bulk Selection method
 - * Procedure
 - * Applications
 - * Advantages & Disadvantages
- Pedigree breeding
 - * Procedure
 - * Applications
 - * Advantages & Disadvantages
- Backcross breeding
 - * Procedure
 - * Requirement for successful backcrossing
 - * Application
 - * Advantages & Disadvantages
 - * Calculations involving Backcrossing

LECTURE 5

- Selection Methods in Cross-Pollinated Crops
 - * Mass selection
 - * Procedure
 - * Applications
 - * Advantages & Disadvantages
- Recurrent selection
 - * Types of recurrent selection
 - * Procedure
 - * Applications
 - * Advantages & Disadvantages
- Hybrid Varieties
 - * Single cross production
 - * Three way cross production
 - * Double cross production
 - * Procedures
- Synthetic Varieties
 - * Procedure
 - * Uses of Synthetic varieties

LECTURE 6

- Breeding methods of a sexually propagated crops
- Cloning

LECTURE 7

- Breeding for disease resistance
- Developing means to evaluate germplasm and breeding lines
- Identification of sources of plant resistance
- Mechanism of resistance
- Mode of inheritance
- Introgression of resistance into a new cultivar

LECTURE 8

- Revision class
- CAT