AMH21 BREEDING OF VEGETABLE, TUBER AND SPICE CROPS

UNIT-1 THEORY

1.1 Vegetable Breeding- History and importance of vegetables, tubers and spices production, distribution, domestication and adaptation of commercially important vegetables,

1.2 Tubers and spices, variability for economic traits, breeding strategies, clonal selection, mutation, mutagenesis and its application in crop improvement-ploidy manipulations-in vitro breeding tools (important vegetables, tubers and spices crops).

1.3 Centres of origin, plant biodiversity and its conservation.

1.4 Models of reproduction, pollination systems and genetics of important vegetable, tuber and spice crops.

1.5 Self-incompatibility and male sterility, its classification and application in vegetable crop improvement.

1.6 Principles of breeding self-pollinated crops, pure line selection, mass selection, heterosis breeding, hybridization, pedigree method, mass pedigree method, bulk method, modified bulk method, single seed descent method and back cross method.

1.7 Polyploidy breeding.

1.8 Mutation breeding.

1.9 Principles of breeding cross pollinated crops, mass selection, recurrent selection, heterosis breeding, synthetics and composits.

1.10 Application of biotechnology in crop improvement.

1.11 Crops: Solanaceous vegetables, cole crops, cucurbits, bulb crops, root crops, leafy vegetables, okra, leguminous crops, Seed Spices.

UNIT-2 PRACTICAL

2.1 Floral biology and pollination mechanism in self and cross pollinated vegetables, tuber crops and spices.

2.2 Working out phenotypic and genotypic heritability, genetic advance. GCA, SCA, combining ability, heterosis, heterobeltosis, standard heterosis,

2.3 GxE interactions (stability analysis) Preparation and uses of chemical and physical mutagens. Polyploidy breeding and chromosomal studies.

2.4 Techniques of F1 hybrid seed production.

2.5 Maintenance of breeding records.

Reference Books:

1. Hari Hara Ram, 2013.Vegetable Breeding: Principle and Practices. Kalyani Publishers. Ludhiana.
2. Vishnu Swaroop, 2014. Vegetable Science &Technology in India. Kalyani Publishers. Ludhiana.
3. Kallo.G, 1998. Vegetable Breeding (Vol.I to IV). CRC Press. Florida. 1988.