4th semester

DEPT. OF SEED SCIENCE& TECHNOLOGY, F/AG.

Course Title: Principles of Seed Technology

Course No.: SST 253

Credit: 3(2+1)

THEORY

Definition of Seed and its importance, Seed structure and Development; Role of seed; Type of Seed (Orthodox and Recalcitrant).

Factors affecting deterioration of crop varieties and their control; Maintenance of genetic purity during seed production.

Definition, Characteristics of good quality seed, Classes of seed- Nucleus seed,Breeder Seed, Foundation seed, Registered seed, Certified seed, TL Seeds.

Basic principles of seed production. Foundation and certified seed production of Rice, Maize, Green gram, Black gram, Rapeseed-Mustard, Sorghum, Pea and Tomato.

Seed certification: Objectives,Agencies, Phases of certification, procedure for seed certification, field inspection. Seed Act, Powers and functions of seed inspector, offences and penalties, Seed control order 1983 Duty and powers of seed inspector.

Varietal Identification through Grow Out Test and Electrophoresis, Molecular and Biochemical test.

Genetically modified crops- Definition,

Transgenic Crop contamination in non-GM crops, Organic seed production.

Principles and procedures of Seed drying, processing and their steps, Testing for seed quality parameters, Seed treatment, its importance, method of application and seed packing-types and importance.

Seed storage; general principles, stages and factors affecting seed longevity during storage. Measures for pest and disease control during storage.

Seed marketing: structure and organization, sales generation activities, promotional media. Factors affecting seed marketing, Role of WTO and OECD in seed marketing. Private and public sectors and their production and marketing strategies. Seed Industry- history and its role. Role of NSC,SSC and NSP.

PRACTICAL

Visit to Seed Testing Laboratory, its function, identification of different testing equipment and machineries with their utility; Documentation the nature of different crops and weed seed; Methodology of seed production of Rice, Maize, Lentil, Greengram, Rapeseed-mustard etc.; Procedure of Seed sampling; Seed testing techniques for analysis of seed purity, seed moisture, viability, germination etc.; Assessment of seed and seedling vigour; Field visit for inspection procedure and certification; Visit to seed processing plantand its operation procedure.

5th semester, (Elective)

SEED SCIENCE AND TECHNOLOGY

Course Name & No. – Quality control of Seeds (ECSST- 316)

Credit- 1+2

Course content
THEORY seed quality: Concept, components of seed quality, role of ISTA, CSTL,SSTL, SCA Seed Sampling: Concept and steps of seed sampling, sampling intensity, sampling techniques, precautions, sampling devices, Weight of the different samples Purity of Seed Lot: Types of purity, Definition, components, methods for genetic and physical purity analysis, calculation, seed purity standard, Seed Moisture: Objective, Equilibrium moisture content, methods for moisture determination, calculation. Seed Germination: Definition, Types of germination, requirements for germination test, testing procedure, first count and final count. Viability analysis: Concept on viability, importance, different tests for seed vibility, preparation of solutions and evaluation procedures in TZ test. Seed vigour: Concept, importance, factors, different tests for seed vigour. Seed Health: Concept, Test procedures, Seed Certification: Concept, seed certification agency, seed certification standards, certification steps, power and duties of seed inspector, Seed Treatment: Importance, types, methods, equipments for seed treatment. # Practical Identification of different crop and weed seeds; Identification of different instruments and machineries available in Seed Testing Laboratory; Methods of Seed sampling and sample preparation for analysis of different seed quality;

Determination of physical purity of seed sample; Cultivar purity test through different test; Determination of seed moisture content; Determination of seed viability of different crops; Determination of germination potential of different seeds; Determination of seed vigour through different methods; Study on seed production of different crops; Observation on operation of seed processing plant; Visit to a recommended State seed testing laboratory