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**GPB-221**

**Principles of Seed Technology**

**Credit hours: 3(1+2)**

### **Theory**

Seed and seed technology: introduction, definition and importance. Deterioration causes of crop varieties and their control; Maintenance of genetic purity during seed production, seed quality; Definition, Characters of good quality seed, different classes of seed. Foundation and certified seed production of important cereals, pulses, oilseeds, fodder and vegetables.

**Cereals:** Wheat, rice, maize, sorghum and bajra

**Pulses:** Moth bean, mung, cowpea, pigeonpea, urd, gram, field pea

**Oilseeds:** Soybean, rapeseed and mustard, groundnut, sesame

**Fodder:** Berseem, lucerne and oats

**Vegetables:** Potato, cauliflower, tomato and chilli

**Seed spices and medicinal plants:** Cumin, coriander, fennel, fenugreek, isabgol

Seed certification, phases of certification, procedure for seed certification, field inspection. Seed Act and Seed Act enforcement. Duty and powers of seed inspector, offences and penalties. Seeds Control Order 1983.

Varietal Identification through Grow Out Test and Electrophoresis, Molecular and Biochemical test. Seed drying, processing and their steps, seed testing for quality assessment, seed treatment, its importance, method of application and seed packing. 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. **Practical**

Seed production in major cereals: Wheat, Rice, Maize, Sorghum and Bajra. Seed production in major pulses: Urd, Mung, Cowpea, Pigeonpea, Lentil, Gram, Fieldpea. Seed production in major oilseeds: Soybean, Rapeseed and Mustard, Groundnut. Seed production in vegetable crops & Seed spices.

Seed sampling and testing: Physical purity, germination, viability, etc. Seed and seedling vigour test. Genetic purity test: Grow out test and electrophoresis. Seed certification: Procedure, Field inspection, Preparation of field inspection report. Visit to seed production farms, seed testing laboratories and seed processing plant.

**Lecture Schedule: Theory**

<b>S.N.</b>	<b>Topic</b>	<b>No. of lectures</b>
1	Seed and seed technology: introduction, definition and importance	1
2	Deterioration causes of crop varieties and their control; Maintenance of genetic purity during seed production	1
3	Seed quality; Definition, Characters of good quality seed, different classes of seed	1
4	Foundation and certified seed production of important cereals & fodder	1
5	Foundation and certified seed production of important pulses	1
6	Foundation and certified seed production of important oilseeds	1
7	Foundation and certified seed production of important vegetables	1
8	Foundation and certified seed production of important seed spices	1
9	Seed certification, phases of certification, procedure for seed certification, field inspection	1
10	Seed Act and Seed Act enforcement. Duty and powers of seed inspector, offences and penalties. Seeds Control Order 1983	1
11	Varietal Identification through Grow Out Test and Electrophoresis, Molecular and Biochemical test	1
12	Detection of genetically modified crops, Transgene contamination in non-GM crops	1
13	GM crops and organic seed production	1
14	Seed drying, processing and their steps, seed testing for quality assessment, seed treatment, its importance, method of application and seed packing	1
15	Seed storage; general principles, stages and factors affecting seed longevity during storage. Measures for pest and disease control during storage	1
16	Seed marketing: structure and organization, sales generation activities, promotional media. Factors affecting seed marketing, Role of WTO and OECD in seed marketing	1

#### **Lecture Schedule: Practical**

<b>S.N.</b>	<b>Topic</b>	<b>No. of lectures</b>
1	Seed production in wheat including seed standards	1
2	Seed production in rice including seed standards	1
3	Seed production in Maize including seed standards	1
4	Seed production in Sorghum including seed standards	1
5	Seed production in Bajra including seed standards	1
6	Seed production in Urd, Mung and Cowpea including seed standards	1
7	Seed production in Pigeonpea including seed standards	1
8	Seed production in Lentil including seed standards	1
9	Seed production in Gram including seed standards	1

10	Seed production in Field pea including seed standards	1
11	Seed production in Soybean including seed standards	1
12	Seed production in Rapeseed and Mustard including seed standards	1
13	Seed production in Groundnut and Sesame including seed standards	1
14	Seed production in vegetable crops (Potato, cauliflower, tomato and chilli) including seed standards	1
15	Seed production in Seed spices (fenugreek, fennel, cumin & coriander) including seed standards	1
16	Seed sampling methods	1
17	Physical purity test	1
18	Germination test	
19	Viability test	1
20	Seed and seedling vigour test	1
21	Genetic purity test: Grow out test	1
22	Electrophoresis	1
23	Seed certification: Procedure	1
24	Field inspection and Preparation of field inspection report	2
25	Visit to seed production farms	3
26	Visit to seed testing laboratories	2
27	Visit to seed processing plant	2

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3. Subir Sen and Nabinanda Ghosh.1999. *Seed Science and Technology*. Kalyani Publishers. New Delhi.
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9. Singh, B.D. 2005. *Plant Breeding*. Kalyani Publishing House, New Delhi.
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