

DEVI AHILYA VISHWAVIDYALAYA, INDORE (M.P)

Syllabus 2015-2016

M.Sc. Seed Technology

Semester-II (Paper – 1)

SEED PRODUCTION OF CEREALS, PULSES & OIL SEEDS

85+15=100

UNIT I

- 1- Basic principles in seed production and importance of quality seed.
- 2- Floral structure, breeding and pollination mechanism in self-pollinated cereals and millets viz, Wheat, Barley, Paddy and Ragi.

UNIT II

- 1- Floral structure, breeding and pollination mechanism in cross-pollinated cereals and millets viz Maize, Sorghum, Bajra.

UNIT III

- 1- Floral structure, breeding and pollination mechanism; methods and techniques of seed production in pulses viz Pigeon pea, Chick pea, Green gram.

UNIT IV

- 1- Floral structure, breeding and pollination mechanism; methods and techniques of quality seed production in minor oil seeds viz Safflower, Mustard, Linseed, and Sesame.

UNIT V

- 1- Floral structure, breeding and pollination mechanism; methods and techniques of seed production in major oil seeds viz Groundnut, Castor, Sunflower and Soybean.

Practical

Planning of Seed Production, requirements for different classes of seeds in field crops - unit area and rate; Seed production in cross pollinated crops with special reference to land, isolation, planting ratio of male and female lines, synchronization of parental lines and methods to achieve synchrony; supplementary pollination, pollen storage, hand emasculation and pollination in Cotton, detasseling in Corn, identification of rogues and pollen shedders; Pollen collection, storage, viability and stigma receptivity; gametocide application and visits to seed production plots etc.

Suggested Readings

- 1- Kelly AF. 1988. *Seed Production of Agricultural Crops*.
- 2- John Wiley. McDonald MB Jr & Copeland LO. 1997. *Seed Production: Principles and Practices*. Chapman & Hall.
- 3- Sinclair T.R. and F.P. Gardner, 1977. *Principles of Ecology in plant production*, CAB international G.K.
- 4- Rai, M. and S. Mauria, 1995. *Hybrid Research and Development*. Indian Society of Seed Technology, IARI, New Delhi.
- 5- Feistritz, P and A.F. Kelly, 1978. *Improved Seed Production*, FAO, Rome.

- 6- Habbiethwaite, P.D., 1980. Seed Production, butter worths, London-Boston, Sydney Wellington-Durban Toronto.
- 7- Bagga, S.S. and Bagga, S.K. 1998. An introduction in hybrid cultivar development. Narosa Pub. House, New Delhi.
- 8- Agarwal R.L. 1997. *Seed Technology*. 2nd Ed. Oxford & IBH.
- 9- Chhabra A.K. 2006. Practical Manual of Floral Biology of Crop Plants. Dept. of Plant Breeding CCS HAU, Hisar.

Jagdish
 [Signature] [Signature] [Signature] [Signature]

[Signature] 18/1/16
 [Signature] 18.1.16
 [Signature] (Dr. S. Mishra)

[Signature] 8/2/18
 [Signature] 8.2.18
 [Signature] 8-2-18
 [Signature] 8/2/18

DEVI AHILYA VISHWAVIDYALAYA, INDORE (M.P.)

Syllabus 2015-2016

M.Sc. Seed Technology

Semester-II (Paper - 2)

SEED PRODUCTION IN VEGETABLES, FIBER & FODDER CROPS

85+15=100

UNIT I

- 1- Floral structure, breeding and pollination mechanism; methods and techniques of seed Production in fiber producing plants/crops viz Cotton Jute and Sun hemp.

UNIT II

- 1- Floral structure, breeding and pollination viz mechanism; methods and techniques of seed production in major vegetable plants/crops viz Onion, Tomato, Radish and Lady's finger.

UNIT III

- 1- Floral structure, breeding and pollination mechanism; methods and techniques of seed production in spices yielding plants viz Chili, Coriander and fennel.

UNIT IV

- 1- Floral structure, breeding and pollination mechanism; methods and techniques of seed Production in vegetatively propagated crops like Sugarcane, Potato, Turmeric and Ginger.

UNIT V

- 1- Floral structure, breeding and pollination mechanism; methods and techniques of seed production in fodder and fiber crop viz Barseem, Lucerne, Maize and Oats.

Practical

Planning of Seed Production, requirements for different classes of seeds in field crops - unit area and rate; Seed production in cross pollinated crops with special reference to land, isolation, planting ratio of male and female lines, synchronization of parental lines and methods to achieve synchrony; supplementary pollination, pollen storage, hand emasculation and pollination in Cotton, detasseling in Corn, identification of rogues and pollen shedders; pollen collection, storage, viability and stigma receptivity; gametocide application and visits to seed production plots etc.

Suggested Readings

- 1- Kelly AF. 1988. *Seed Production of Agricultural Crops*.
- 2- John Wiley. McDonald MB Jr & Copeland LO. 1997. *Seed Production: Principles and Practices*. Chapman & Hall.
- 3- Sinclair T.R. and F.P. Gardner, 1977. *Principles of Ecology in plant production*. CAB international G.K.
- 4- Rai, M. and S. Mauria, 1995. *Hybrid Research and Development*. Indian Society of Seed Technology, IARI, New Delhi.

13
Soni shu
8.2.18
D. S. Soni

- 5- Feistrizier, P and A.F. Kelly, 1978. Improved Seed Production, FAO, Rome.
- 6- Habbithwaite, P.D., 1980. Seed Production, Butterworths, London-Boston, Sydney Wellington-Durban Toronto.
- 7- Bagga, S.S. and Bagga, S.K. 1998. An introduction in hybrid cultivar development. Narosa Pub. House, New Delhi.
- 8- Agarwal R.L. 1997. *Seed Technology*. 2nd Ed. Oxford & IBH.
- 9- Chhabra A.K. 2006. Practical Manual of Floral Biology of Crop Plants. Dept. of Plant Breeding CCS HAU, Hisar.
- 10- Pandey, B.P. 2000. Economic Botany. S.Chand & Company Ltd. Ramnagar, New Delhi -110055

[Handwritten signature]

[Handwritten signature]
[Handwritten signature]
 18.1.16

[Handwritten signature]
 (Dr. S. Mishra)

[Handwritten signature]
 08/2/18

[Handwritten signature]
 8.2.18

[Handwritten signature]
 8.2.18

[Handwritten signature]

DEVI AHILYA VISHWAVIDYALAYA, INDORE (M.P)

Syllabus 2015-2016
M.Sc. Seed Technology
Semester-II (Paper – 3)
SEED PROCESSING & STORAGE

85+15=100

UNIT I

- 1- Introduction: Principles of seed processing; methods of seed-drying including dehumidification and its impact on seed quality.
- 2- Relative humidity and equilibrium. Required moisture content of seed.
- 3- Thumb rules of seed storage.
- 4- Loss of viability in important agricultural and horticulture crops, viability equations and application of nomogram.

UNIT II

- 1- Seed cleaning equipment and their function , Preparing seed for processing function of scalper, debearder, scarifier, huller, seed cleaner and grader
- 2- Screen cleaners, specific gravity separator, indented cylinder, velvet spiral – disc separator.
- 3- Colour sorter, delinting machines; seed binding.

UNIT III

- 1- Assembly line of processing and storage.
- 2- Receiving, Elevating and conveying equipment.
- 3- Plant design and layout.
- 4- Requirement and economic feasibility of seed processing plant.

UNIT IV

- 1- Seed treatment-methods
- 2- Seed treating formulations and equipments.
- 3- Seed disinfestations, identification of treated seeds.
- 4- Packaging principles and materials, bagging and labeling with proper tagging (Breeder seeds; golden yellow, foundation seeds, white certified seeds blue) advantages of seed treatment.

UNIT V

- 1- Seed storage seed drying and storage; drying methods – importance and factors affecting it, changes it changes during storage.
- 2- Concepts and significance of moisture equilibrium, methods of maintaining safe seed moisture content.
- 3- Methods to minimize the loss of seed vigour and viability.
- 4- Factors influencing storage losses. Storage methods and godown sanitation storage structure. Storage problems of recalcitrant of recalcitrant seeds and their conservation.

S. S. Shrivastava
08.2.18

S. S. Shrivastava
8.2.18

Dr. S. S. Shrivastava

S. S. Shrivastava

Suggested reading-

- 1- Desai, B.B,P.M. Kotecha and.K. Salunkha,1997.Seeds handbook,Published by Mercel Dekker INC,New York.
- 2- Mather, S.B. and K.N. Mortensen, 1977 . Seed health testing in the production of quality seeds ISTA Zurich.
- 3- Neergaard, P. 1977. Seed pathology. Macmillan Press Ltd. London.
- 4- Mehrotra,R.S. and Agrawal, Ashok.2003 (2nd Ed.). Plant Pathology. McGraw Hill Education (India) Private Limited. New Delhi.
- 5- Agrios, G.N.1997.Plant Pathology.Fourth Edition,Academic Press,San Diego,California.
- 6- Dimcock, N. and S.B. Promrose.1994. Introduction to Modern Virology. Blackwell Science,Oxford.
- 7- Singh,R.S.1998.Plant Diseases,Oxford and IBH Publication Co.Pvt.Lt.,New Delhi.

Handwritten signatures and dates:

18.11.16

8.2.18

8.2.18

CDR. S. Mishra

8.2.18

DEVI AHILYA VISHWAVIDYALAYA, INDORE (M.P)

Syllabus 2015-2016 M.Sc. Seed Technology Semester-II (Paper – 4) SEED QUALITY TESTING

85+15=100

UNIT I

- 1- Objective concept and components and their role in seed quality control.
- 2- Instruments devices and tools used in seed testing, ISTA and its role in seed testing
- 3- Seed sampling; definition, objectives, seed lot and its size; types of samples; sampling devices.
- 4- Procedure of Seed sampling; Sampling intensity, methods of preparing composite and submitted samples; sub- sampling techniques, dispatch receipt and registration of submitted samples in the seed testing laboratory.

UNIT II

- 1- Physical Purity, definition objective and procedure, weight of working samples for physical purity analysis, components of purity analysis and their definitions and criteria.
- 2- Pure seed definitions applicable to specific genera and families multiple seed units; general procedure of purity analysis.
- 3- Calculation and reporting of results prescribed seed purity standards.
- 4- Determination of weed seeds and other seeds by number per kilogram; determination of Other Distinguishable Varieties (ODV) determination of test weight and application of heterogeneity test.

UNIT III

- 1- Seed moisture content: importance of equilibrium principles and methods of moisture estimation - types, instruments and devices used.
- 2- Pre-drying and grinding requirements, procedural steps in moisture estimation; calculation and reporting of results.
- 3- Germination: importance; definitions; requirements for germination, instrument and substrata required; principle and methods of seed germination testing; working sample and choice of method.
- 4- General procedure for each type of method; duration of test; seedling evaluation; calculation and reporting of results.
- 5- Dormancy: definition, importance, causal mechanisms, types and methods for breaking dormancy.

UNIT IV

- 1- Viability and Vigour Testing: definition and importance of viability tests; different viability tests; quick viability test (TZ- test), advantages.
- 2- Principle, preparation of seeds and solutions, procedure, evaluation and calculation of test results
- 3- Vigour testing: concept, historical development, definitions, principles and procedures of different methods used for testing vigour.

Shilpa
8.2.18

Shilpa
8.2.18

17

Pravin
8.2.18

Shilpa

UNIT V

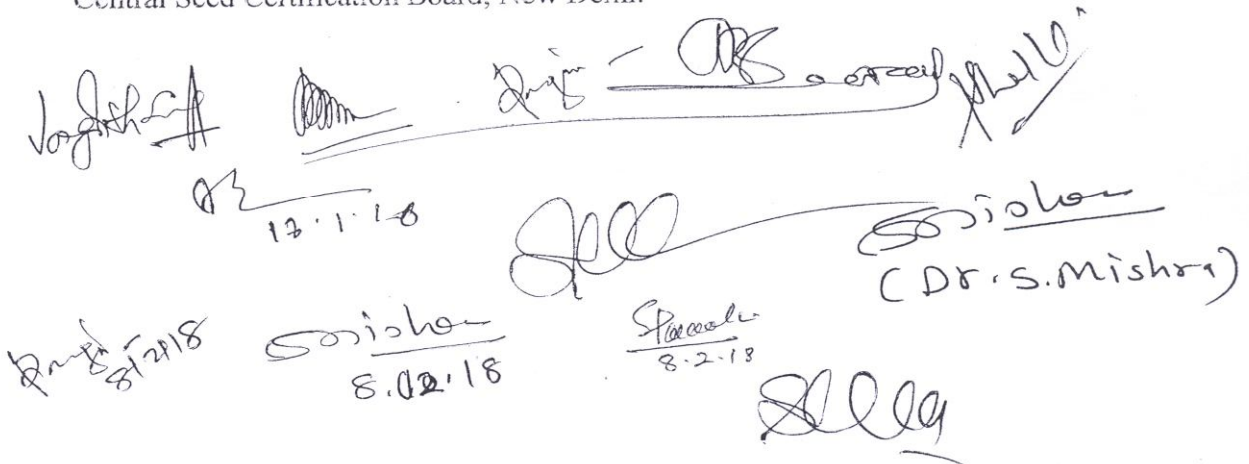
- 1- Genetic purity testing: objective and criteria for genetic purity testing.
- 2- Types of test; laboratory, growth chamber and field testing based on seed, seedling and mature plant morphology; principles and procedures of chemical, biochemical and molecular tests. Roughing; definition stages plants to be rougher.
- 3- Seed health Testing: field and seed standards; designated diseases, objectionable weeds.
- 4- Significance of seed borne disease as seed quality - seed health testing and detection methods for seed borne fungi, bacteria and viruses. Isolation distance.

Practical

Structure of monocot and dicot seeds of important plant species; identification and listing of instruments used in seed testing laboratory; identification of seeds of weeds and crops; physical purity analysis of samples of different crops; estimation of seed moisture content (oven method); seed dormancy breaking methods requirements for

Suggested Readings

- 1- Agrawal PK & Dadlani M. 1992. *Techniques in Seed Science and Technology*. 2nd Ed. South Asian Publ.
- 2- Agarwal RL. 1996. *Seed Technology*. Oxford & IBH. Publishing Co., New Delhi.
- 3- Agrawal PK. (Ed.). 1993. *Handbook of Seed Testing*. Ministry of Agriculture, GOI, New Delhi.
- 4- Anon 1965. Field Inspection Manual and Minimum Seed Certification Standards, NSC Publications, New Delhi
- 5- International Seed Testing Association (ISTA) 1997. Hand book of seedling evaluations, Scientific Publishers, Jodhpur
- 6- Martin, C. and D. Barkley, 1961. Seed identification manual, Oxford and IBH Publishing Co., Calcutta.
- 7- Nema, N.P. 1987. Principles of Seed Certification and Testing. Allied Publishers Pvt. Ltd., New Delhi.
- 8- Tunwar, N.S. and S.V. Singh, 1988. Indian Minimum Seed Certification Standards, Central Seed Certification Board, New Delhi.


A collection of handwritten signatures and dates in black ink. The signatures are written in a cursive style. Some include the name 'Srishekar' and the date '8.2.18'. One signature is clearly 'Srishekar (Dr. S. Mishra)'. There are also some illegible signatures and dates.

DEVI AHILYA VISHWAVIDYALAYA, INDORE (M.P)

Syllabus 2015 -2016

M.Sc. Seed Technology

Semester-II

Practical – I (Based on Paper I-II)

TIME= 4 Hrs

MAX MARKS =50

1- Major Exercise – 1 (Based on Paper I)	- 8
2- Major Exercise – 2 (Based on Paper II)	- 8
3- Minor Exercise – 1 (Based on Paper I)	- 5
4- Minor Exercise – 2 (Based on Paper II)	- 5
5- Spotting (1-5)	- 10
6- Viva	- 04
7- Seasonal / Seed album	- 10
	<hr/>
	- 50
	<hr/>

Practical – II (Based on Paper III-IV)

TIME= 4 Hrs

MAX MARKS =50

1- Major Exercise – 1 (Based on Paper I)	- 8
2- Major Exercise – 2 (Based on Paper II)	- 8
3- Minor Exercise – 1 (Based on Paper I)	- 5
4- Minor Exercise – 2 (Based on Paper II)	- 5
5- Spotting (1-5)	- 10
6- Viva	- 04
7- Seasonal / Seed album	- 10
	<hr/>
	- 50
	<hr/>

18.1.16
Soniher
8.2.18
Dr. S. Mishra
8.2.18
Staccato
8.2.18
Dr. S. Mishra
8.2.18
Soniher
(Dr. S. Mishra)
8.2.18