

COMMERCIAL PLANT BREEDING

Question Bank

Course teacher: Dr. K. Ashokkumar, PhD., PDF (Canada)

Unit-I

2 Marks

1. Define reproduction.
2. Define male sterility.
3. Prepare a short note on male gametocide with suitable examples.
4. What is A line?
5. What is R line?
6. What is B line?
7. What is isogenic line?

6 marks

1. Define reproduction. Discuss the main features of sexual reproduction
2. Assess the different lines involved male sterility in seed production of self- and cross-pollinated crops
3. Elucidate factors affecting genetic purity during seed production.

10 marks

1. What is asexual reproduction? Examine the different types of asexual reproduction and list out the apomixis role in plant breeding.
2. Define male sterility. Explain the different types of male sterility with suitable diagrams.
3. Discuss the methods of maintenance of nucleus and breeder seed of pre-released and newly released varieties of in self-pollinated crops.

Unit-II

2 marks

1. What is rouging? Why it is important in the seed production?
2. Why GA₃ application is important for hybrid seed production of rice?
3. Write name of any four rice hybrids.
4. What is supplementary pollination? Why supplementary pollination is essential for hybrid seed production?
5. What is isolation distance? Why isolation distance is essential for varietal/hybrid seed production?
6. What is off type? Why off types need to remove from the seed plot?
7. What is male to female ratio for hybrid seed production in Redgram?

6 marks

1. Prepare a short note on DNA test for hybrid seed purity assessment.
2. Discuss the commercial hybrid seed production technique for Castor
3. Explain the commercial hybrid seed production techniques for red gram/pigeon pea.
4. Describe the seed production technique for tomato
5. Explain the hybrid seed production techniques for Tomato
6. Write the seed production technique for Chilli
7. Relate the seed production technique for Bhendi
8. Write the seed production technique for Onion
9. Write the seed production technique for Cucurbits

10 marks

1. Discuss the Safe guards of maintenance of genetic purity during seed production
2. Explain the commercial hybrid seed production technique for rice
3. Write the commercial hybrid seed production technique for maize
4. Write commercial hybrid seed production techniques for sorghum
5. Assess the commercial hybrid seed production techniques for pearl millet
6. Explain the hybrid seed production technique for sunflower
7. Explain the hybrid seed production techniques for cotton.
8. Assess the quality seed production techniques for vegetable crops (tomato, chilli, onion, onion and bhendi).

Unit-III

2 marks

1. What is anther culture or androgenesis?
2. State the applications of anther culture.
3. What is ovary culture or gynogenesis?
4. Discuss the importance of gynogenesis.
5. What is meristem culture?
6. List out the any four applications of meristem culture.
7. Write the expansion for SSR, RAPD, RFLP, AFLP.
8. Prepare a short note on SSR marker.
9. Prepare a short note on RFLP marker.

6 marks

1. Write shortly on Marker assisted selection.
2. What is ovary culture? Discuss the ovary culture importance and limitations.
3. What is meristem culture? List out the applications of meristem culture.
4. Evaluate the RFLP and RAPD marker.

10 marks

1. Explain DNA markers and their application in crop improvement
2. What is anther culture? Describe procedure, factors influencing, applications and limitations of anther culture.

3. Relate methods involved haploid development in tissue culture and their applications.

Unit-IV

2 marks

1. What is IPR?
2. What is Plant breeder rights (PBRs)?
3. What is research exemption?
4. Write the advantages of PBR.
5. What is DUS test?
6. Differentiate released variety and notified variety

6 marks

1. Prepare a not on Plant breeders right, farmers right, & research exemption
2. Explain the protection of plant varieties and farmers act, 2001 (PPV & FR act, 2001) with registration, criteria and certification.

10 marks

1. What is DUS test? How DUS test doing? Explain the DUS test with criteria, examination, observation, grouping, design and uses.
2. Explain the variety testing, release and notification systems in India.

Unit-V

2 marks

1. What is seed testing?
2. What is grow out test?
3. What is the use of tetrazolium test?
4. List the instruments used for physical purity test of the seed.
5. Define seed vigour test.
6. Write the objectives of the seed testing
7. What is breeder seed?
8. What is foundation seed?
9. What is certified seed?
10. What is nucleus seed?

6 marks

1. Prepare a note on grow out test to evaluate the genetic purity of the seed.
2. Write a short note on seed germination test
3. Explain different types of the seed
4. Differentiate breeder seed, foundation seed and certified seed
5. Describe the genetic principles and techniques of the seed production.

6. Describe the Agronomic principles and techniques of the seed production.

10 marks

1. Discuss the any four seed quality assessment tests for self- and cross-pollinated crops.
2. Explain the principles and techniques of the seed production