

IAS Mains Agriculture 1991

Paper-II

Section A

1. Answer any three of the following in about 200 words each:

- a. Define the different categories of seed recognized by the Seed Certification Agency. Describe how the purity of seed is maintained both at production level and afterwards. What are the steps involved in the seed certification process?
- b. Describe how introduction of new plant type in rice and wheat has contributed to Indian agriculture during the last twenty-five years. Should plant introduction be institutionalized or left to individual enterprise? Give specific reasons and examples in support of your view.
- c. State the procedure usually followed for the production of hybrid seed of Jowar in large quantities. Both Cotton and Jawar are often cross-pollinated crops. Yet the breeding methodology differ in each case. How and why?
- d. Write a short note on the National Seed Corporation in India bringing out its objective and activities. State the relation of National Seed Corporation and the State. Seed Corporation and various related agencies.

2. Answer the following questions

- a. Distinguish between sex-linked, sex-limited and sex-influenced characters. Give suitable examples.
- b. What are the causes for male sterility? Briefly discuss. The importance of male-sterility in the improvement of crop plants.
- c. Where did maize originate? Why is it considered as a very efficient crop? How is hybrid maize produced?
- d. What is the genetic code? What is its significance?

3. Distinguish between the following:

- a. Active absorption and Passive absorption
- b. Cytochrome and Chlorophyll
- c. Constitutive and Inducible enzymes
- d. Genotype and Phenotype
- e. Biparental cross and Back cross

4. Answer the following questions

- a. Why is Hatch-Slack pathway of photosynthesis considered efficient? Describe the pathway.
- b. Explain the causes for the lack of photorespiration in C₄ plants. Critically calculate the various attempts to regulate photorespiration in C₃ plants.
- c. What is special dominance? Of what practical value is the knowledge of apical

d. What are the similarities and dissimilarities between auxins and gibberellins?

Section B

5. Answer any three of the following in about 200 words each:

- a. What are mycoplasma? How do they differ from bacteria and viruses? How are they identified in plant tissues? Name a plant disease attributed to be caused by mycoplasma.
- b. Why are the post-harvest diseases important? Explain with reference to suitable examples. What factors influence the occurrence of such diseases, and how are they controlled?
- c. Name one disease each caused by a
 - i. Virus
 - ii. bacterium
 - iii. fungus
 - iv. physiological deficiency. Describe the symptoms caused by each in a selected crop. Explain the nature and extent of the damage caused by the disease and control measures in each case.
- d. Genetics and breeding for resistance to bacterial leaf blight and brown plant hopper in rice.

Discuss.

6. Answer the following questions

- a. What do you understand by biological control of pests? Illustrate your answer with suitable examples from India and abroad.
- b. Describe the preventive measures for the control of stored grain pests in India. Discuss in detail the storage pests of wheat in our country.
- c. State the important pests of the following crops and give their control measures:
 - i. Cotton
 - ii. Groundnut
 - iii. Gram
 - iv. Mango

7. Answer the following questions

- a. Where did mango originate? Name three important problems of mango cultivation in India. What are remedial measures?
- b. Give a critical resume of the current states of our knowledge on growth regulators in the production, harvesting and preservation of horticultural crops.
- c. Give the varieties recommended, package of practices including plant production measures and the average yield per hectare for

ii. Tomato.

d. What are the major problems of production of seed potato in India? How are the problems tackled? Give details.

8. Answer the following questions

- a. Analyse the main causes of low productivity in Indian Agriculture. Examine the role of new technology in improving agricultural productivity.
- b. What has been the impact of Green Revolution in India on dietary habits and food consumption trends in our country?
- c. What are modern agricultural inputs and to what extent improvement in them helps improve agricultural productivity in India?
- d. Discuss the agricultural price policy of the Government of India. Would you suggest any changes in it in view of the debate on the terms of trade between the agriculture and the industries?