BIOLOGY

BOOKS - NEW JYOTHI BIOLOGY (TAMIL ENGLISH)

STRATEGIES FOR ENHANCEMENT IN FOOD PRODUCTION

Solutions To Ncert Excercises

1. Explain in brief the role of animal husbandry in human welfare.

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2. If your family owned a dairy farm, what measures would you undertake to improve the quality and quantity of milk production?

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3. What is meant by the term "breed"? What are objectives of animal breeding?

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4. Name the method employed in animal breeding. According to you which of the methods is best?why?

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5. What is apiculture? How is it important in our lives?

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6. Discuss the role of fishery in enhancement of food production.

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7. Briefly describe various steps involved in plant breeding.

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8. Explain what is mean by biofortification.

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9. Which part of the plant is the best suited for making virus-free plant and why?

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10. What is the major advantage of producing plants by micropropagation?

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11. Find out what the various components of the medium used for propagation of an explant in vitro are?

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12. Name any five hybirds varieties of crop plants which have been developed in India.

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New Evaluation Type Questions

1. Name the wheat varieties which were introduced all over the wheat growing belt of India and wore high yielding and disease resistant

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2. Name the better yielding semidwarf varieties of wheat developed in India

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3. Name the two sugar cane varieties which were successfully cronsed to produce high yielding sugar cane varieties

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4. Some important plant decease are given. Find out the causative organism.

a.Brown rust of wheat

b.Tobacco mosaic

c.Black rot of crucifers

d.Red rot of sugar cane

e.Turnip mosaic

f.Late blight of potato

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5. Name some crop varieties bred by hybridisation and selection, for disease resistance to fungi, bacteria and viral diseases.

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6. Give the name of a crop manipulated by mutation and the character induced in it.

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7. a.Through which method do genes for disease resistance is transferred from a related crop to a cultivated variety?

b.Give example for a vegetable crop which was transferred by this method.

c.Give the name of new variety

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8. Give examples for plants developed for resistance of insect pests.

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9. A group of animals related by descent and similar in most characters are said to belong to a breed. Many breeds are produced by inbreeding and outbreeding, Briefly explain the two terms

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10. Inbreeding is necessary to produce pure line generation, Give other merits and

demerits of inbreeding.

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11. Outbreeding is the breeding of unrelated animals usually done by outcrossing, cross breeding and interspecific hybridisation

a. Differentiate these three methods with brief descriptions.

b. Give examples for the last two methods.

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12. Cogtrolled breeding experiments in animals are carried out by artificial insemination

a. How is this done?

b. Explain the merits of this method.

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13. MOET technology is used to produce successful hybrids during breeding programines for cattle.

a. Give the full form of MOET.

b. Explain the process.

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14. Apiculture is good for agricultural crops. Justify.

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15. Different steps of plant breeding are given. Arrange them in order.

a. Selection and testing of superior recombinants b.Collection of variability

c. Testing release and commercialization of new cultivars.

d. Evaluation and selection of parents.

e. Cross hybridization among selected parents.

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16. Sharbati sonora' is a high yielding variety of wheat produced by treating sonora 64 Gamma rays.

a. How can we make a new variety by treating it with gamma rays?

b. Name this method of plant breeding.

.c. Give names of other substances that can be used for this type of

c. What are they generally called?

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17. Suppose you have a crop plant with high protein quality, but prone to diseases. If you want to bring the high protein quality and

disease resistance in one plant, what type of plant breeding method do you follow? Why?

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18. What is meant by single cell protein? Give example.

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19. Explants, totipotency, micropropagation and somaclones are terms related to a

modern plant breeding method. Name the method and explain the terms.

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20. Explain the term biofortification. Mention its objectives and give examples.

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21. Single cell proteins are microbes grown on a large scale to produce proteins. Give the

merits of growing SCP.

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22. Rahul had some good variety of tobacco plants, which were infected by virus. He wants to produce new disease free plants from the old plants. As a student of biology, can you give advice to Rahul for producing virus free plants?

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23. If you have to produce a new plant with characters of two separate parents which are unrelated (like potato and tomato)

a. which breeding method do you undertake?

b. Explain the process.

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Questions From Edumate

1. While cultivating tomato plants, a farmer noticed some yellow or white spots on plant

parts like leaves, flowers, fruits etc. He applied some pesticides. But he was not able to control the disease.

a. Identify the pathogen and disease.

b. Suggest any two measures to control the disease.

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2. Main steps related to variety development are given below. But one step is missing.

a. Identify the missing step.

b. What is the significance of the step in variety development?

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3. Some of the most important symptoms of diseases caused by virus, fungi and nematodes are given below. write the symptoms according to the pathogen in the table given below.

Virus	*Fungi*	*Nematodes*

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4. Sandhya is working in a tissue culture lab. Witle doing tissue culture she forgot to prepare subcultures.

a. What will happen to the culture?

b. Justify your answer.

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Questions From Previous Hse

1. "A good germ plasm collection is essential for the successful breeding programme of crop". This is a message given by an agricultural officer to the farmers of a village.

a. What do you mean by germ plasm?

b. What is the significance of a germ plasm in a successful breeding programme?

c. Cite any three types of plant materials included in the germ plasm.

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2. Some common symptoms, nature of pathogen and method of dissemination of certain plant diseases are tabled below. Arrange them in most appropriate manner.

Sl. No.	Pathogen	Symptoms	Method of dissemination
i.	Virus	Development of pustules	By wind
ii.	Bacteria	Root wilting of plant	Through soil by vectors
iii.	Nematode	Mosaic on leaves	By insects

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3. Observe the following A and B.

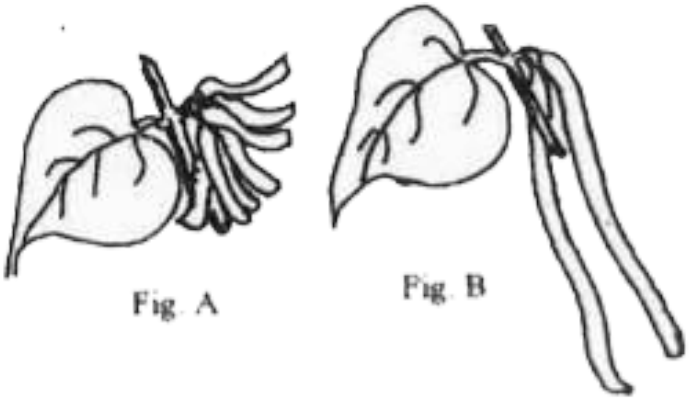

Fig. A

Fig. B

a. List out the desirable characters in the plants given in figures A and B.

b. Suggest a possible technique to integrate these characters in a new variety.

c. Explain the process involved in the technique you suggested.

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4. Choose the correct term from the bracket:

a. Use of animals as experimental materials is discouraged (Biopiracy / Bioethics / Biopatent)

b. Single cell protein or SCP (Azolla / Spirulina / Brassica)

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5. a. The following are the important steps in plant breeding for developing a new plant variety. List them in the correct order:

i. Seed multiplication

ii. Release of a variety

iii. Distribution

iv. Evaluation

v. Creation of genetic variation

vi. Selection

b. In spite of the proper application of fertilizers, irrigation and pest and disease control the yield, quality and disease and pest resistance of a self pollinated crop variety is decreasing generation after generation. Suggest a possible reason for this experience.

Hint: The farmer is using seed collected from his own field for raising successive crops.

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6. Johny, a Plus Two student is from a tribal colony with lower level of vitamins, minerals and protein deficiency. He wishes to be a plant breeder to help the public by producing new crops with high levels of vitamins, minerals, protein etc. Identify the phenomenon.

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7. In mid 1960-s, as a result of various plant breeding techniques, there was a drastic increase in food production in our country. This phase is often referred as ..... .

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8. Tissue culture is a fast and efficient system for crop improvement. Scientists in a research institution wants to produce a hybrid of

potato and tomato. Is it possible to make such a hybrid? If possible, explain how.

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Previous Entrance Exam Corner

1. The concept of "centre of origin of cultivated plants was proposed by

A. Norman E. Borlaug

B. M. S. Swaminathan

C. Edward Jenner

D. Nikolai Vavilov

Answer: D

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2. Androgenic haploid plants were produced by anther culture first time by

A. C. Auerbatch and L.J.Stadler

B. Sipra Guha and S.C. Maheswari

C. W. Bateson

D. C.A.Ninan

Answer: B

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3. Biofertilizers give better yield when added along with

A. phosphate

B. calcium

C.

D. urea

Answer: A

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4. Mycorrhizae are symbiotic association between

A. fungi and fungi

B. fungi and plant roots

C. root and bacteria

D. bacteria and fungi

Answer: B

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5. The technique that was employed to produce haploids of Datura was

A. meristem culture

B. anther culture

C. embryo culture

D. protoplast culture

Answer: B

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6. The plant triticale is a/an

A. Allopolyploid

B. Autopolyploid

C. Diploid

D. Haploid

Answer: A

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7. A transplant between individuals of the same species, but with different MHC/HLA alleles is

A. autograft

B. isograft

C. xenograft

D. allograft

Answer: D

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8. Red rot of sugarcane and white rust of radish are respectively caused by

A. Albugo candida and Cercospora

B. Colletotrichum and Fusarium

C. Pythium and Phytophthora

D. Colletotrichum and Albugo candida

Answer: D

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9. The plant triticale is a/an

A. Allopolyploid

B. Autopolyploid

C. Haploid

D. Tetraploid

Answer: A

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10. Which one of the following pathogen causes canker disease?

A. Meloidogyne incognita

B. anguina tritici

C. Xanthomonas citri

D. Pseudomonas rubilineans

Answer: C

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11. Which one of the following pathogen causes canker disease?

A. Meloidogyne incognita

B. anguina tritici

C. Xanthomonas citri

D. Pseudomonas rubilineans

Answer: C

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12. In the table given below, some of the crop plants, their diseases and the pathogens are given. Match these three columns and identify the correct choice.

CROP	DISEASE	PATHOGEN
a. Pigeon pea	I. Root knot	1. Pseudomonas
b. Brinjal	II. Earcockle	2. Fusarium
c. Sugarcane	III. Wilt	3. Anguina
d. Wheat	IV. Red stripe	4. Meloidogyne

A. A-III-2, B-I-4, C-IV-1 D-II-3

B. A-I-2, B-III-4, C-II-3, D-IV-1

C. A-IV-3, B-I-2, C-III-1 D-II-4

D. A-II-1, B-IV-3 C-I-2, D-III-4

Answer: A

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13. The fungus used for the commercial production of SCP is

A. Pentadiplandra brazzeana

B. Fusarium graminearum

C. Brassica napus

D. Bacillus thuringiensis

Answer: B

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14. Shakti, Rattan and Protina are three important lysine rich varieties of

A. rice

B. pulses

C. wheat

D. maize

Answer: D

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Cbse Corner

1. Why does a beekeeper keep beehives in crop fields during the flowering periods?

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Continous Evalution

1. Collect the diseased parts of crop plants from your locality. Identify the disease and prepare a herarium.

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2. Visit a poultry farm. Make a brief note about the various activities going on in the farm.

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