

OBAFEMI AWOLOWO UNIVERSITY, ILE-IFE, NIGERIA
B. AGRIC. (PLANT SCIENCE)
FACULTY OF AGRICULTURE
RAIN SEMESTER EXAMINATION 1988/89
PSC 512 - PLANT BREEDING METHODS

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AUGUST 1989

TIME ALLOWED: 3 HOURS

Answer Questions 1, 2 and Any other TWO for A Total of FOUR.

1. Provide brief answers to the following:

- (a) How would you scientifically identify the source populations to use for inbred line extraction? (5 marks)
- (b) How and why does the breeder keep detailed record in the pedigree selection method of line development? (5 marks)
- (c) What are the different types of progenies (families) that can be used as selection units in recurrent selection? (5 marks).

Describe how any TWO of these progenies can be produced in maize (5 marks).

- (d) Enumerate the different methods for making it possible to cross pollinate two inbred lines A & B where inbred A flowers earlier than B under normal circumstances. (5 marks)

2a. At what generation of inbreeding in an open-pollined variety of maize would you carry out selection.

- (i) within lines and (ii) among lines?

Briefly describe how you would carry out the selection in each case (15 marks)

b. Briefly discuss how you would

- (i) Test for general combining ability and specific combining ability for selfed lines in maize (5 marks)
- (ii) Develop a synthetic variety from six inbred lines of maize (5 marks).

3. Compare and contrast the bulk population and single seed descent methods of plant breeding. (10 marks)

Describe in detail how you would use one of these methods to develop an improved variety of a named self-pollinated crop. (15 marks)

4a) What are the goals of plant breeding? (8 points)

- b) How does the plant breeder interact with other specialists, the 'consumers' or manipulate the crop or crop environment to achieve these goals (Use pertinent examples) (12 points)
- c) Give two reasons why the role of a plant breeder in achieving these goals is a continuous one (5 points).

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5. Distinguish between the following pair of terms, bringing out their significance in plant breeding.

- (a) Vertical Vs Horizontal resistance
- (b) Yield Plateau Vs Inbreeding depression.
- (c) Autopolyploids Vs Allopolyploids
- (d) Single cross hybrids Vs Clones.

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(25 marks)

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