



SUPP 2011/2012

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**UNIVERSITY OF SWAZILAND
SUPPLEMENTARY EXAMINATION PAPER**

**PROGRAMME: B.Sc. IN AGRONOMY YEAR 3
 B.Sc. IN HORTICULTURE YEAR 3.**

COURSE CODE: CP 301

TITLE OF PAPER: CROP BREEDING

TIME ALLOWED: TWO (2) HOURS

INSTRUCTIONS: ANSWER ANY FOUR (4) QUESTIONS.

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CHIEF INVIGILATOR**

QUESTION 1

Write short notes on the following plant breeding terms:

- a) *Ex situ* conservation of plant genetic resources (5 MARKS)
 - b) Heteromorphic self incompatibility (5 MARKS)
 - c) Quantitative traits (5 MARKS)
 - d) Recurrent parent (5 MARKS)
 - e) Heterosis (5 MARKS)
- [25 MARKS]

QUESTION 2

- a) Discuss why plant breeding is regarded as both an art and a science. (5 MARKS)
 - b) Give any five (5) plant breeding goals with relevant examples. (20 MARKS)
- [25 MARKS]

QUESTION 3

- a) Differentiate between crop introduction and crop domestication. (10 MARKS)
 - b) With relevant examples, highlight the main advantages and disadvantages of crop introduction. (15 MARKS)
- [25 MARKS]

QUESTION 4

The data below was obtained by UNISWA crop breeding students in a tomato breeding practical at Luyengo campus.

Quantitative traits	Population mean	Phenotypic variance (V_P)	Environmental variance (V_E)
Plant height (cm)	65.53	196.91	160.03
Number of fruits per plant	8.21	849.06	71.07
Fruit yield (kg/ha)	337.04	3.44	1.68

Calculate on each quantitative trait;

- a) The genetic advance at 10% selection intensity. (19 MARKS)
 - b) Progeny population means after selection for reduced plant height, increased number of fruits per plant and fruit yield. (6 MARKS)
- [25 MARKS]

QUESTION 5

Discuss how inbred lines are developed and used in the development of hybrid varieties. Your answer must be supported by the types of hybrids that can be developed and their parental composition. **(25 MARKS)**