



149

UNIVERSITY OF SWAZILAND

SUPPLEMENTARY EXAMINATION PAPER

PROGRAMME: B.Sc. AGRICULTURAL & BIOSYSTEMS ENGINEERING YEAR 4
B.Sc. AGRIC. ECON. & AGBMGT YEAR 4
B.Sc. AGRICULTURAL EDUCATION YEAR 4

COURSE CODE: CP 409

TITLE OF PAPER: FIELD CROPS

TIME ALLOWED: TWO (2) HOURS

INSTRUCTIONS: ANSWER ALL QUESTIONS

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INVIGILATOR

QUESTION 1 A

150

Match the term on the left column (represented by a number) with the correct or related definition/ description of the term on the right column (represented by a letter). For example, 6=F

1.	Ratoon cropping	A	Comparison of rainfall and potential evaporation provides a good picture of potential for crop production
2.	Exploitation competition	B	A second crop is planted after the first crop has reached its reproductive stage of growth but before it is ready for harvest
3.	Interference competition	C	The succeeding crop is planted after the preceding crop has been harvested
4.	Relay cropping	D	Deterioration over time of key attributes required for plant growth or for providing environmental services
5.	Trophic cascade	E	Individuals use the same limiting resource or resources, thus depleting the amount available to others
6.	Soil degradation	F	Guides the exercise of determining which crops should be grown in which area
7.	Agroecological zones	G	Species at one level influence species at other levels
8.	Environmental degradation	H	When a renewable resource's natural replacement rate is exceeded, the available supply begins to shrink
9.	Classification of climate	I	Individuals interfere with the survival, or reproduction of others, or directly prevent their physical establishment in a portion of a habitat

[9 marks]

QUESTION 1 B

Indicate whether the following statements are True or False.

- i. Continuous minimum mechanical soil disturbance including direct seeding and no inversion tillage is termed conservation agriculture.
- ii. Human populations influence diversity in ecosystems by altering/ interfering with atmospheric stability
- iii. Individuals of each species engage in mutualism when the other species is present, this relationship is termed obligate mutualism.
- iv. Production objectives staying within the biophysical carrying capacity of an area means ecological stability.

- v. Exudation and leaching of beneficial metabolites from above ground plant parts by rain, dew, and mist illustrates allelopathy.
- vi. Although plants are a renewable resource, plant diversity is not.
- vii. As an adaptation, root length and volume often equal or exceed top growth in most land plants
- viii. Centers of diversity of crop plants are often not their centers of origin

[16 marks]

[Total 25 marks]

QUESTION 2

It is generally recognized that agrobiodiversity is essential for sustainable agricultural production and food security, as well as environmental conservation. Describe briefly four ways how this is possible using any cash and/or food crops grown in Swaziland as examples.

[25 marks]

QUESTION 3

Describe how crop plants may experience both intraplant and interplant competition

[25 marks]

QUESTION 4

The agroecological region of the Lowveld of Swaziland poses challenges for the production of maize, the main staple cereal crop. Describe the potential for introducing a crop to complement or substitute maize. Name the crop and factors you would you have to consider or establish.

[25 marks]

152