



**1<sup>st</sup> SEMESTER 2012/2013**

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**UNIVERSITY OF SWAZILAND**

**FINAL EXAMINATION PAPER**

**PROGRAMMES: BACHELOR OF SCIENCE IN AGRICULTURAL  
ECONOMICS & AGRIBUSINESS MANAGEMENT YEAR  
FOUR (4)**

**BACHELOR OF SCIENCE IN AGRICULTURAL AND  
BIOSYSTEMS ENGINEERING YEAR FOUR (4)**

**BACHELOR OF SCIENCE IN AGRICULTURAL  
EDUCATION YEAR FOUR (4)**

**COURSE CODE: CP 409**

**TITLE OF PAPER: FIELD CROPS**

**TIME ALLOWED: TWO (2) HOURS**

**INSTRUCTIONS: ANSWER ANY FOUR QUESTIONS**

**DO NOT OPEN THIS PAPER UNTIL PERMISSION HAS BEEN GRANTED BY  
THE CHIEF INVIGILATOR**

**QUESTION 1**

- a) Maize plants have three types of roots. Name the different roots and discuss their importance in the growth of a maize plant. (12 marks)
- b) Briefly describe the three stages of grain filling in maize up until it reaches physiological maturity. (8 marks)
- c) Discuss the importance of controlling witchweed in maize and describe its feeding method. (5 marks)

**[25 MARKS]**

**QUESTIONS 2**

- a) What is the essential difference between “upland” and “lowland” rice production systems? (5 marks)
- b) Discuss the effect of flooding inland preparation for lowland rice production on physical and chemical properties of soils. (10 marks)
- c) Lowland rice production system is considered to be labour intensive and yet it is the most popular. Discuss this apparent contradiction. (10 marks)

**[25 MARKS]**

**QUESTION 3**

- a) Discuss at least six (6) major attributes of the sorghum plant that makes it tolerate drought better than other grain crops. (10 marks)
- b) Sorghum yield in Swaziland is relatively lower than that of maize despite the fact that it is more drought tolerant than maize. Discuss at least three agronomic aspects of research that needs to be investigated to improve the total yield of sorghum crop. (10 marks)
- c) Name and discuss control methods that may be used against at least three crop pests that attack sorghum at the seed and seedling stage. (5 marks)

**[25 MARKS]**

**QUESTION 4**

- a) Discuss what you understand by “the land equivalent ratio (LER)” and explain how it is calculated. Give an interpretation of when the  $LER = 1$ ,  $LER > 1$ , and  $LER < 1$ . (10Marks)
- b) In a system that intercrops maize with a legume, discuss all the benefits that accrue for a smallholder farmer. (15 marks)

**[25 MARKS]**

**QUESTION 5**

- a) Name and discuss any two types of groundnuts based on their growth habit and choose one type that you would recommend for a smallholder farmer who wishes to produce “peanut butter” and explain why you chose that type. (15 marks)
- b) Give at least five (5) reasons why recent studies indicate fluctuations and downward trend in the production of groundnuts in Africa. (10 marks)

**[25 MARKS]**