



**UNIVERSITY OF SWAZILAND**  
**MAIN EXAMINATION PAPER**

**1<sup>ST</sup> SEMESTER 2017/2018**

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

**COURSE CODE:** CP409

**TITLE OF PAPER:** FIELD CROPS

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

**INSTRUCTIONS:** ANSWER QUESTION 1 AND 2 AND ANY OTHER TWO QUESTIONS

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**COURSE CODE: CP409 (F) 2017/2018**

**QUESTION 1**

Identify and discuss the critical growth stages of a maize plant and explain how each stage may be managed to obtain the optimum yield.

**[25 Marks]**

**QUESTION 2**

- Explain the importance of plant density. Use examples to illustrate your answer. (5 marks)
- What are the three important aspects of plant density? (5 marks)
- Discuss the factors that affect optimum plant density to obtain maximum yield. (5 marks)
- List and explain after cultivation practices that help ensure that the optimum plant density is maintained. (5 marks).
- Name and explain the three conditions of utmost importance that must be met in maize production for a good plant population. (5 marks)

**QUESTION 2**

- What is a cropping system? (5 marks)
- Discuss factors to consider in deciding the sequence of crops (principles of crop rotation). (5 marks)
- Describe the different types of crop rotation and explain the merits and demerits of each. (5 marks)
- Describe the different types of intercropping and explain the merits and demerits of each. (5 marks)
- Discuss the advantages and disadvantages of monoculture. (5 marks)

**QUESTION 3**

**[25 Marks]**

- Explain how you would deal with the problem of cob rot in a maize crop. (5 marks)
- Explain the risks of deep planting of maize seeds and describe the recommended practice. (5 marks)
- Describe the tools available to the maize producer under dryland conditions to mitigate the incidence of drought stress during the period of pollination? (5 marks)
- Discuss the ecological requirements for maize production (5 marks)

**QUESTION 4**

**[25 Marks]**

Maize and soya bean were produced as sole crops and together in an intercropping system. In all other ways, management practices were the same. The following yields were obtained.

Crop	Sole Crop Yield (t/ha)	Intercrop Yield (t/ha)
Maize	1.36	1.06
Soya bean	1.23	1.04

Data from IRRI Annual report, 1975.

- a) Calculate the Land Equivalent Ratio (LER). (10 marks)
- b) Interpret this LER in terms of land required to produce the same yield as that obtained from a unit of land sown in intercrop. (15 marks)

**QUESTION 5****[25 Marks]**

- a) Discuss the importance of cereals in Africa including the most important constraint to cultivation of this group of annual crops. (10 marks)
- b) Discuss the importance of grain legumes in Africa including the most important constraint of cultivating this group of crops. (15 marks)

**[25 Marks]**