

**UNIVERSITY OF SWAZILAND****RESIT/SUPPLEMENTARY 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:** CPR409

**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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THE CHIEF INVIGILATOR**

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

**QUESTION 1 - COMPULSORY**

- Discuss the nutritional requirements of maize. (10 marks)
- Fig.1, below shows responses of maize grown in a low fertility soil to the fertilization.

What deductions can be made from the response curves in respect to:

- dryland conditions with low fertility, (5 marks)
- band placement of fertilizer, (5 marks)
- broadcasting of fertilizer, (5 marks)

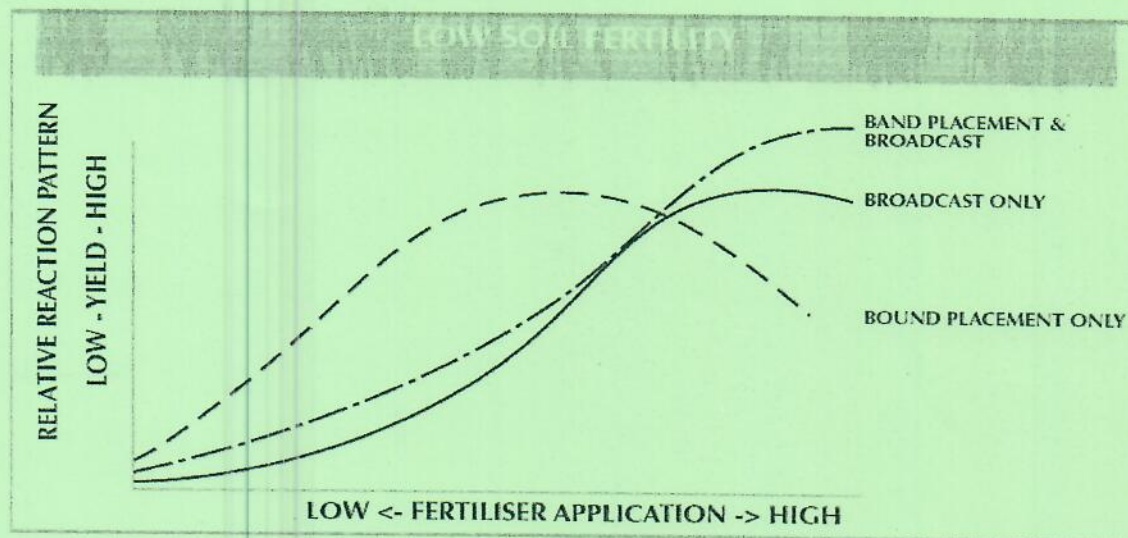


Fig. 1 – Response to fertilization in low fertility soil.

[25 Marks]

**QUESTION 2 - COMPULSORY**

- Identify and discuss the critical growth stages of the sorghum plant and explain how these stages may be managed to obtain the optimum yield. (10 marks)
- Describe the effects of two major pests of both sorghum and maize and how they may be controlled. (5 marks)
- Discuss the sustainability and benefits of rotating sorghum with cotton. (5 marks)
- Explain the benefits of investing in sorghum production. (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)



- d) Describe the different types of intercropping and explain the merits and demerits of each. (5 marks)
- e) Discuss the advantages and disadvantages of monoculture. (5 marks)

[25 Marks]

### **QUESTION 3**

Canopy structure could influence yield other than by canopy photosynthesis in maize. Discuss this statement. (10 marks)

List at least five characteristics of a maize plant that need improvement to increase its yield potential. (10 marks)

[25 Marks]

### **QUESTION 4**

- c) Explain the importance of plant density. Use examples to illustrate your answer. (6 marks)
- d) What are the three important aspects of plant density? (6 marks)
- e) Discuss the factors that affect optimum plant density and maximum yield. (6 marks)
- f) List and explain after cultivation practices that help ensure that the optimum plant density is maintained. (7 marks)

[25 Marks]

### **QUESTION 5**

Discuss the agronomic aspects of soyabean (*Glycine max* (L.) Merr) production in Southern Africa, that is,

- a) Tillage (6 marks)
- b) Time of planting (6 marks)
- c) Plant population on yield (6 marks)
- d) Fertilizer response, water requirement and management (7 marks)

[25 Marks]