



1ST SEM. 2004/2005

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UNIVERSITY OF SWAZILAND

FINAL EXAMINATION PAPER

PROGRAMME: DIPLOMA IN AGRICULTURE YEAR 2 AND
DIPLOMA IN AGRICULTURAL EDUCATION
YEAR 3

COURSE CODE: CP 202

TITLE OF PAPER: SOIL FERTILITY

TIME ALLOWED: TWO (2) HOURS

INSTRUCTIONS: ANSWER QUESTION ONE (1), WHICH IS A
COMPULSORY QUESTION, AND ANY OTHER
TWO (2) QUESTIONS OF YOUR CHOICE

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BY THE CHIEF INVIGILATOR**

QUESTION 1: (COMPULSORY)

- (a) Discuss the role of kraal manure in crop production and indicate any negative effects this material may have in the soil. [20]
- (b) A maize fertilizer recommendation in the highveld of Swaziland indicated the following:

$$\begin{array}{l} \text{N} - 40\text{kg ha}^{-1} \\ \text{P} - 45\text{kg ha}^{-1} \\ \text{K} - 40\text{kg ha}^{-1} \end{array}$$

- i) Calculate the amount of the compound fertilizer, 2:3:2(38) that is required to supply all the P required by the maize plants. [10]
- ii) How much N and K would the quantity of the compound fertilizer obtained in (i) above supply? [5]
- iii) What are the disadvantages of using compound fertilizer in supplying nutrients as indicated above? [5]
- [40]

QUESTION 2

Discuss the acid-infertility of soils and highlight strategies you would recommend to improve plant growth in acid soils. [30]

QUESTION 3

Discuss the mechanisms which are responsible for the transport of nutrients to the vicinity of plant roots and highlight the significance of each mechanism for:

- i) mobile nutrients [15]
- ii) immobile nutrients [15]

[30]

QUESTION 4

- (a) Discuss the major soil fertility problems of soils in your named country which are the most limiting factors in crop production [20]
- (b) What remedial action would you recommend to address these problems? [10]

[30]