



**2<sup>ND</sup> SEMESTER 2015/2016**

**UNIVERSITY OF SWAZILAND**

**FINAL EXAMINATION**

**PROGRAMMES: BACHELOR OF SCIENCE IN AGRONOMY YEAR FOUR (4)**

**COURSE CODE: CP 407**

**TITLE OF PAPER: SUGARCANE PRODUCTION**

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

**INSTRUCTIONS: ANSWER QUESTIONS 1 & 2 AND ANY OTHER TWO QUESTIONS.**

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**QUESTION 1 - COMPULSORY**

In sugarcane breeding, preliminary evaluation of germplasm is carried out for desirable agronomic characteristics before it is included in the breeding program.

List and discuss the economic importance of each one of these agronomic characteristics.

**[20 Marks]**

**QUESTION 2 - COMPULSORY**

What are the advantages and disadvantages of each of the following irrigation systems in sugarcane?

- a) Dragline sprinkler (6 marks)
- b) Solid set sprinkler (6 marks)
- c) Furrow irrigation (6 marks)
- d) Centre pivot (6 marks)
- e) Drip Irrigation (surface and subsurface) (6 marks)

**[30 Marks]**

**QUESTION 3**

Sugarcane needs to be conditioned by withholding irrigation and ripening.

- a) Name the two groups of chemical ripeners and give a brief explanation of what they are and how they work. (15 marks)
- b) Give a brief outline on the methods of ripener application. (10 marks)

**[25 Marks]**

**QUESTION 4**

A Farmer's Association growing sugarcane on good, well drained (R set soils); some 20 kilometers from the nearest sugar factory, has to choose a variety to plant on 150 hectares.

Based on yield benefits, agronomic advantages and disadvantages of varieties approved for commercial production in Swaziland, recommend a variety or group of varieties from a choice may be made for planting by the Association for harvesting early in the season and to give reasons for your recommendation.

**[25 Marks]**



**QUESTION 5**

- a) What are the main reasons for adopting a planned system of seedcane production? (5 marks)
- b) Discuss the structure of the seedcane scheme followed by the Swaziland sugar industry. (10 marks)
- c) A Farmer's Association in Northern Swaziland is planning to plant a nursery, under irrigation and cut at the age of 12 months. They can only afford a 20% annual replant programme.

**Assume:**

- The Association has 100 ha of quota land.
- A seedcane yield of 90 tons/ha/annum.
- A planting rate in commercial fields of 8 tons/ha (approximately 'double stick' at a row spacing of 1,4 m).

Calculate the tonnage of seedcane that will be required annually and the area of nursery from which this will be cut. (5 marks)

- d) Assuming that the seedcane in c) above will be required for replanting the farm in August 2018, indicate actions that will have to be taken and their timing to ensure that good quality seedcane will be available. (5 marks)

**[25 Marks]**