



**UNIVERSITY OF SWAZILAND  
MAIN EXAMINATION PAPER**

**PROGRAMMES:** BSc. Agric. Econ 2, BSc Agric. Econ 3 (Diploma Holders)

**COURSE CODE:** ABE 208

**TITLE OF PAPER:** POST-HARVEST TECHNOLOGY

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

**SPECIAL MATERIAL REQUIRED:** PSYCHROMETRIC CHART

**INSTRUCTIONS:** ANSWER QUESTION ONE AND ANY TWO OTHER  
QUESTIONS

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THE CHIEF INVIGILATOR**

**QUESTION 1**

a. A bin full of maize grain is to be dried with air at a dry bulb temperature of 50°C and an airflow rate of 33m<sup>3</sup>/min. If the ambient air conditions are 30°C (D.B) and 22°C (W.B), and if the outgoing air is fully saturated, determine;

(i) The amount of heat required per hour to heat the air. [10 marks]

(ii) The amount of water removed per hour from the grain. [10 marks]

b. Describe traditional methods of storing grain in rural Swaziland. [10 marks]

c. Explain three different methods to determine the moisture content of food products. [10 marks]

**QUESTION 2**

a. Name five insects and/or pests that attack stored grain and suggest methods of controlling them. [15 marks]

b. Explain the interaction of air, moisture, and products in relations to solar drying. [15 marks]

**QUESTION 3**

a. Discuss the desired characteristics of fumigants used for preventing grain losses. [10 marks]

b. A maize crib measuring 5 m long, 3.5 m wide, and 2.5 m high is to be used for maize-cob storage. If an average cob is 28 cm long and 6 cm in diameter, estimate the number of cobs which can be stored in the crib. Assume 25% volume of the crib is occupied by the air when full. [10 marks]

c. The government of Swaziland intends to build some warehouses and storehouses for maize grain. Advise them on the location and orientation of such buildings. [10 marks]

**QUESTION 4**

a. There has been a debate in most developing countries regarding the importance of post-harvest technology. What would be your contribution to this debate? [10 marks]

b. How can losses be prevented at harvesting? [10 marks]

c. Enumerate the functional components of a combine harvester, and discuss the major sources of losses in a combine harvester. [10 marks]