

## 16.0 AGRICULTURE (443)

The year 2010 K.C.S.E Agriculture Examination consisted of three papers, **Paper 1**, **Paper 2** and **Paper 3**. The three papers tested the candidates' competence in understanding the agricultural principles, concepts and practices as stipulated in the syllabus. A wide range of knowledge and skills was tested in order to bring out the different abilities of the candidates. The format of the three papers is as follows:

- **Paper 1 (443/1):** This is a theory paper that covers **General Agriculture, Crop Production, Agriculture Economics and Soil and Water Conservation**. It has three sections, **A, B and C**, which are marked out of 30, 20 and 40 marks respectively.
- **Paper 2 (443/2):** It is also a theory paper but covers **Livestock Production, Farm Power, Farm Machinery, Farm Structures and Farm Tools and Equipment**. It has three sections, **A, B and C**, which are also marked out of 30, 20 and 40 marks respectively.
- **Paper 3 (443/3):** This is a project paper with two project questions, **Project A and B**. In 2010, Project A required candidates to **rear chicken** while B was on production of **tomato/maize/sorghum/millet**. Candidates selected and carried out only one of the two projects. The paper is scored out of 100 marks.

### 16.1 CANDIDATES' OVERALL PERFORMANCE

The table below shows the general performance of candidates in the year 2010 KCSE Agriculture Examination. Performance in the previous four years has been included for comparison.

*Table 21: Candidates overall performance in Agriculture for the last four years*

Year	Paper	Candidature	Maximum Score	Mean Score	Standard Deviation
2010	1		90	24.82	11.58
	2		90	36.07	15.07
	<b>Overall</b>	<b>140,237</b>	<b>180</b>	<b>67.96</b>	<b>27.12</b>
2009	1		90	33.54	15.10
	2		90	34.91	13.49
	<b>Overall</b>	<b>137,217</b>	<b>180</b>	<b>77.67</b>	<b>29.12</b>
2008	1		90	32.32	15.11
	2		90	25.59	11.64
	<b>Overall</b>	<b>134,039</b>	<b>180</b>	<b>67.1</b>	<b>27.32</b>
2007	1		90	26.94	12.04
	2		90	53.98	16.89
	<b>Overall</b>	<b>121,193</b>	<b>180</b>	<b>87.34</b>	<b>28.00</b>

The following observations can be made from the summary in the table:

- 16.1.1 Candidates' performance in Agriculture dropped. This is shown by the drop in the general mean scores for the two papers. **Paper 1 (443/1)** mean score dropped from **33.54** in the year 2009 to **24.82** in the year 2010. However the mean score for **Paper 2 (443/2)** improved from **34.91** in the year 2009 to **36.07** in the year 2010.
- 16.1.2 The candidates' overall performance significantly went down as shown by the subject mean score, which dropped from **77.67** in the year 2009 to **67.98** in the year 2010.
- 16.1.3 The overall standard deviation for the two papers dropped from **29.12** in the year **2009** to **27.12** in the year **2010**. However the value of the standard deviation indicates that the two papers were able to discriminate candidates of different abilities.

16.1.4 The candidature increased from 137,217 in the year 2009 to 140,237 in the year 2010. A similar trend was also observed in the years 2009, 2008, 2007 and 2006. This is a likely indication of increasing popularity of the subject in schools.

### **Analysis of Poorly Performed Questions**

The following is the analysis of the items that were poorly performed by candidates in the year 2010 KCSE Agriculture examination. This report highlights these questions and gives the expected responses. It also offers advice to teachers on the possible methodologies to emphasise during instruction.

## **16.2 PAPER 1 (443/1)**

### **Question 3**

Give the meaning of the following terms:

- a) phosphorus fixation in loss of soil fertility

The item was developed from the content on soil fertility. It required candidates to give the meaning of fixation as a method through which soil loses fertility (phosphorus).

#### **Weaknesses**

Most candidates were unable to give the meaning of fixation as a method through which soil loses fertility.

#### **Expected responses**

Phosphorus availability to plants is lost when phosphorus ions in the soil combine with other elements to form compounds that cannot be absorbed by plants.

#### **Advice to teachers**

During instruction, teachers should emphasize and ensure that learners understand the technical terms used in agriculture.

### **Question 5**

Explain the relationship between scarcity and choice as used in agricultural economics.

The question was derived from the topic, **Agricultural Economics I (Basic Concepts and Farm Records)**. Candidates were expected to explain how scarcity relates to choice

#### **Weaknesses**

Most candidates were unable to explain how scarcity relates to choice.

#### **Expected response**

Scarcity is where production resources are limited in supply relative to demand; therefore a choice has to be made on which enterprise(s) to allocate the limited resources.

#### **Advice to teachers**

During instruction, teachers should emphasize and ensure that learners understand the technical terms and concepts used in agriculture.

### **Question 21**

On 1st January 2009, Kaburu Farm started farm operations with Ksh 30,000 cash. During the month, the farm made the following transactions. Study the transactions and prepare a cash analysis for Kaburu Farm for the month of January.

Date	Transaction	Amount (Ksh)
05/01/09	Livestock sales	80,000
08/01/09	Crop sales	50,000
15/01/09	Bought seed for planting	7,500
20/01/09	Paid K.F.A. for fertilizer	16,400
25/01/09	Bought livestock feeds	50,000
30/01/09	Paid wages for planting & weeding	56,000
31/01/09	Received cash from K.C.C. for milk delivery	120,000
31/01/09	Paid transport charges for milk delivery	9,000

### Weaknesses

Most candidates were unable to answer the question correctly.

### Expected response

Kaburu Farm Cash Analysis for January 2009

Receipts (Sales And Receipts)						Expenditure (Purchases And Expenses)				
Date	Description	Total Ksh.	Cash Ksh.	Livestock Ksh.	Crop Ksh.	Date	Description	Total Ksh.	Crops Ksh.	Livestock Ksh.
01/1/09	Cash in hand.	30,000	30,000			15/1/09	Seeds for planting	7,500	7,500	
05/1/09	Livestock sales	80,000		80,000		20/1/09	Paid KFA for fertilizer	16,400	16,400	
08/1/09	Crop sales	50,000			50,000	25/1/09	Bought livestock feeds	50,000		50,000
31/1/09	milk delivery to KCC	120,000		120,000		30/1/09	Paint wages for planting and weeding	56,000	56,000	
						31/1/09	Transport charges for milk delivery	9,000		9,000
							Closing balance/cash at hand	141,100		
	<b>TOTAL</b>	<b>280,000</b>	<b>30,000</b>	<b>200,000</b>	<b>50,000</b>			<b>280,000</b>	<b>79,900</b>	<b>59,000</b>
		<b>280,000</b>						<b>280,000</b>		

### Advice to teachers

Teachers should teach the entire syllabus. This area was tested for the first time and therefore most candidates and teachers did not expect it and may not have prepared for it.

### 16.3 PAPER 2 (443/2)

No poorly performed items were reported in this paper.

### 16.4 PAPER 3 (443/3 –PROJECT)

This is the agriculture project paper administered to provide an opportunity for the candidates to show and put into practice, the psychomotor skills acquired during the four years period in secondary school.

Candidates are tested in practical skills in the growing of a selected crop from land preparation to harvesting, rearing selected livestock to maturity or constructing a farm structure such as beehive, feed trough, rabbit hutch, compost pit/heap, among others.

The instructions are taken to schools, which then provide the required inputs for candidates to carry out the project work independently. The project takes eight months, from February to September of the given year.

In the year 2010, candidates chose between chicken rearing and production of tomato/maize/sorghum/millet. The agriculture teacher's duty was to objectively assess and evaluate each candidate's work at all the stages of project implementation.

## **16.5 GENERAL ADVICE TO TEACHERS**

- 16.5.1 The whole syllabus should be effectively covered during instruction because examination items will be sampled from the entire syllabus.
- 16.5.2 The teacher/school should acquire the relevant reference materials and assist candidates to obtain and use the recommended textbooks.
- 16.5.3 The use of textbooks by teachers should always be guided by the syllabus. The specific objectives stipulated in the syllabus should be correctly interpreted to ensure the topics in question are taught adequately and effectively.
- 16.5.4 A variety of teaching methods and resources should be utilised by teachers to ensure that the content is effectively delivered during instruction. Resource persons/guest speakers and field visits should be arranged and used in areas where the teacher and the school lack the resources to teach the topic/lesson effectively.
- 16.5.5 All the suggested practical activities in the syllabus should be carried out to prepare candidates adequately for questions that require application of psychomotor skills acquired during instruction.