

EXAMINATIONS COUNCIL OF ESWATINI

EGCSE

EXAMINATION REPORT

FOR

AGRICULTURE (6882)

YEAR

2020

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EGCSE AGRICULTURE

Paper 6882/01

Multiple Choice and Simple Response Questions

The 2020 EGCSE (Eswatini General Certificate of Secondary Education) Agriculture examination had four components;

Component 1: Theory (multiple choice and objective (short) questions).

Component 2: Theory (structured and essay questions).

Component 3: Practicals (Practical exercises).

Component 4: Practical (investigatory project work).

Candidates that had registered for the 2020 examination were 6268 in each component. This indicated a slight increase from the previous year's (2019) where there were 6160 registered candidates.

PAPER 1 THEORY (Multiple Choice and Simple Response Questions)

The Agriculture paper 1 comprised of **two** sections;

Section A: Multiple choice worth 20 marks.

Section B: Simple response questions worth 40 marks.

The overall total marks for this component was 60 marks.

General comments:

1. Assessment for the 2020 examination was based on the 2019-2020 Examination syllabus. The style and approach to marking had not been altered, it was the same as in previous examination years.
2. The overall performance of candidates saw the lowest mark/score attained to be 9 and the highest being 53 out of 60. This implied that no candidate could attempt up to 90% of the whole examination questions. The highest mark obtained in the 2020 examination is a point lower than in 2019 which was 54 and the lowest mark was 04 out of 60. It is also worth noting that above 40% of the candidates scored less than 30 out of 60 in the 2020 Paper 1 examination.

3. Section A (multiple choice), was relatively well answered by most candidates. Most candidates scored above 12.

4. Lower marks were scored in Section B. This was an attribute to;
 - Failure to recall terminology in reference to described processes.
 - Writing of incorrect spelling of appropriate terms thus altering meaning in context.
 - The last question (52) being left unanswered by some candidates.

5. Average performance ranged between 18 and 30 marks, leaving many candidates below a C grade level.

Questions that were easily accessible to candidates:

Section A: Question 1, 2, 3, 11, 12 and 16
Question 21, 38 and 39.

Questions that were averagely/fairly accessible to candidates;

Section A: Question 6, 8, 10, 15, 18, 19 and 20

Section B: Question 22, 23, 24, 25, 26, 27,28,29,30, 31, 33,34,35,41, 42, 43, 44, 46, 47, 48,
50, 51 and 52.

Questions that were not easily accessible to candidates;

Section A: Questions 4, 5, 7, 9, 13, 14 and 17.

Section B: Questions 25, 32, 34, 36, 37, 40, 45 and 49

Comments on Specific Questions

Section A:

Question 1

What is the contribution of agriculture to world trade?

Correct response: B (foreign exchange)

Comments: Generally, well answered, though some candidates opted for A (food and clothing) whereas it is raw material for making clothing.

Question 2

WORMEX is used for deworming livestock. The dosage for WORMEX is 1ml per 4kg live weight. How much of this remedy is needed for deworming a 30kg goat?

Correct response: C (7.5 ml)

Comments: A well answered question. Most candidates proved to be familiar with calculations involving mixing ratios of farm chemicals.

Question 3

Which term describes a herbicide application carried out after germination?

Correct response: B (post-emergence)

Comments: A well answered question. Though some candidates opted for B (pre-emergence) which was an incorrect response.

Question 4

How can farmers prevent denitrification occurring in the soil?

Correct response: C (digging the soil frequently)

Comments: A poorly answered question. Incorrectly selected response was practicing intercropping. Candidates could not relate denitrification to poor aeration, and the solution being digging the soil frequently as a means of improving aeration.

Question 5

Which describes a farming situation where outcomes might be disturbed?

Correct response: D (uncertainty)

Comments: A poorly answered question. A misconception exists between the terms risk and uncertainty.

Question 6:

Figure 6.1 shows the soil textural triangle.

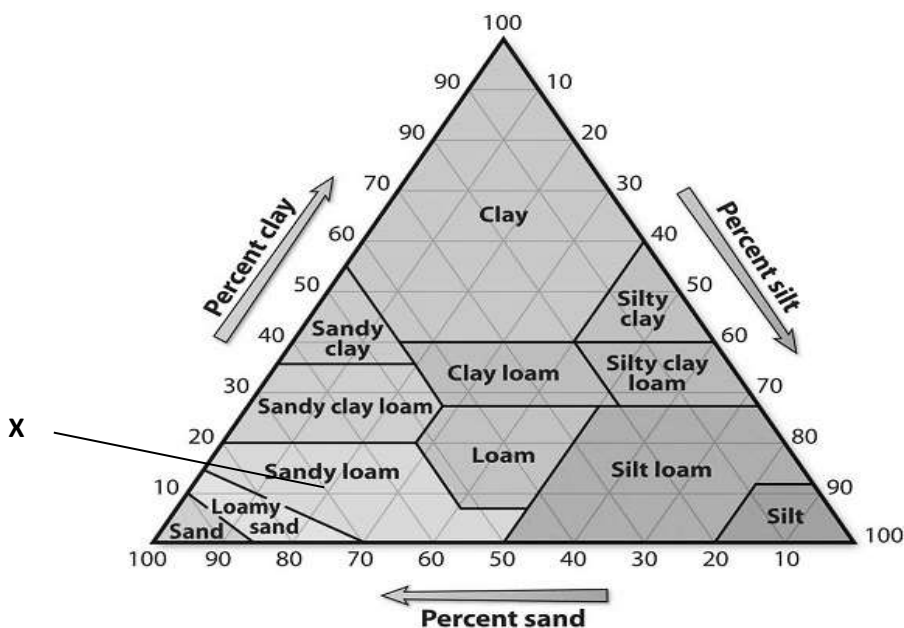


Fig. 6.1

What are the proportions of soil in point X on fig. 6.1?

Correct response: B (60% sand, 40% clay, 10% silt)

Comments: Average performance was noted. Candidates demonstrated knowledge on the use of a textural triangle.

Question 7:

Which enzyme coagulates milk in young animals?

Correct response: C (rennin)

Comments: A poorly answered question by most candidates. Incorrect responses related to B (pepsin) and D (trypsin).

Question 8:

What term describes the period of raising chicks up to four weeks old?

Correct response: B (brooding period)

Comments: Generally average performance was noted. A common incorrect response was commonly C (growing period).

Question 9:

What material can be used to neutralise soil with a pH of 4.8?

Correct response: C (Calcium Carbonate)

Comments: A poorly answered question. Candidates opted for A (Ammonium Sulphate) which is used to acidify the soil.

Question 10:

Which pest destroys the endosperm of grain crops?

Correct response: D (weevil)

Comments: Average performance was noted.

Question 11:

Which part of the leaf structure contains most chlorophyll?

Correct response: C (palisade)

Comments: Well answered question.

Question 12:

Which of the following livestock is a ruminant?

Correct response: B (cow)

Comments: Well answered question.

Question 13:

Which farming system is best suited for a small scale farmer using low inputs?

Correct response: D (permaculture)

Comments: Most candidates wrongly opted for C (organic farming). Permaculture uses low inputs as it models nature. A poorly answered question.

Question 14:

What indicates the deficiency of potassium in crop plants?

Correct response: B (orange brown leaves)

Comments: Poorly answered question. Candidates opted for C (purple stunted leaves) which indicates phosphorus deficiency in plants.

Question 15:

Which term describes the movement of water from a dilute to a more concentrated solution through a semi permeable membrane?

Correct response: D (osmosis)

Comments: Generally, well answered question. Misconceptions related to C (diffusion).

Question 16:

Which system involves growing crops with livestock on the same farm?

Correct response: D (mixed farming)

Comments: Well answered question.

Question 17:

Which breeding system maintains pure breeds in the short term?

Correct response: C (inbreeding)

Comments: Poorly answered question. Incorrect responses related to B (hybridization) and D (selection).

Question 18:

Which plant cells carry water up the stem?

Correct response: D (xylem cells)

Comments: An average performance was noted.

Question 19:

Which ration is given to a lactating cow?

Correct response: D (production ration)

Comments: Average performance was noted, though some candidates were tempted to choose C (maintenance ration).

Question 20:

Which type of soil is easily leached?

Correct response: C (sand)

Comments: An average performance was noted.

SECTION B

Question 21:

What type of weathering results from expansion and contraction of rocks?

Correct response: physical/ mechanical weathering

Comments: A well answered question. Incorrect response referred to chemical weathering.

Question 22:

Which soil constituent provides food for micro-organisms?

Correct response: organic matter

Comments: Average performance in this question. Incorrect responses were topsoil and mineral particles. Some candidates mistakenly related to humus which is the end product in the decomposition of organic matter by microorganisms.

Question 23:

What type of soil structure has suitable aggregates for plant growth?

Correct response: crumb structure

Comments: Average performance was noted, though some candidates were tempted to write loam soil.

Question 24:

Which plant nutrient is supplied by bone meal?

Correct response: phosphorus

Comments: A generally well answered question. Some candidates listed magnesium or potassium.

Question 25:

What is the process by which carbon dioxide enters the plant leaves?

Correct response: diffusion

Comments: A fairly answered question, although some candidates related to the process photosynthesis which utilises carbon dioxide.

Question 26:

How does lack of water affect the rate of photosynthesis?

Correct response: reduced photosynthesis rate

Comments: Average performance was noted. A common incorrect response was wilting.

Question 27:

Why is it essential for rabbits to eat soft pellets?

Correct response: source of vitamin B

Comments: A fairly answered question, though some candidates related to cellulose digestion which was an incorrect response.

Question 28:

What term describes the feed with correct proportions of nutrients for livestock?

Correct response: balanced ration.

Comments: A fairly well answered question. Some candidates gave incorrect responses such as maintenance ration or restricted feeding.

Question 29:

Which mineral is essential for high milk production?

Correct response: calcium

Comments: A generally well answered question. A common incorrect response was 'proteins'.

Question 30:

What type of farm record list details of 'feed conversion ratios'?

Correct response: Production/ performance

Comments: A fairly well answered question. Some candidates wrote feed or daily records as answers, which were incorrect responses.

Question 31:

Fig. 31.1 shows an equipment used in pest control.

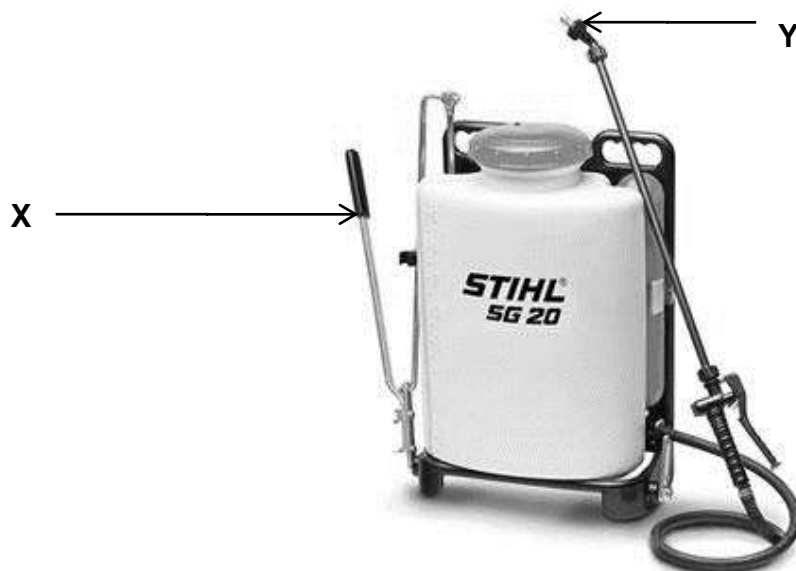


Fig 31.1

(i) Name the part labelled Y.

(ii) What is the function of the part labelled X on the equipment?

Correct response: (i) Nozzle

(ii) for pumping/ builds up pressure

Comments: Average performance was noted. Writing the correct spelling for nozzle was a challenge for most candidates, and instead of writing the function of part X, some candidates simply wrote 'pump'.

Question 32:

Give two soil conditions that could affect nutrient availability to plants.

Correct response: fertility; water content; soil pH.

Comments: A poorly answered question. Incorrect responses included soil erosion, leaching and drainage.

Question 33:

What practice is used to prevent viral diseases in livestock?

Correct response: vaccination

Comments: A fair performance was noted. Common errors were in reference to control practices instead of prevention measures.

Question 34:

Give any one property of concrete building blocks.

Correct response: durable/ durability

Comments: A poorly answered question. Most candidates were giving “strong” as an answer which is incorrect if not qualified.

Question 35:

What term describes the gradual decline of productive land?

Correct response: desertification

Comments: A fairly well answered question. However, some misconceptions related to the causes of desertification such as deforestation.

Question 36:

Name **two** ways by which the soil could be harmed by high stocking rates.

Correct response: soil erosion; compaction

Comments: A poorly answered question. Most responses made reference to effects on livestock or pasture and not on the soil.

Question 37:

State any **two** factors considered when selecting the site for a farm building.

Correct response: Near a water supply; well drained; slightly sloping; easily accessible; near a power source

Comments: A poorly answered question. Incorrect responses were an attribute to unqualified points such as “water, drainage etc.”.

Question 38:

Which part of a flower contains ovules?

Correct response: ovary

Comments: well answered question.

Question 39: What term describes large scale farming for sale and export?

Correct response: Commercial farming

Comments: Well answered question.

Question 40:

Name any **one** notifiable disease for:

(i) poultry

(ii) cattle

Correct response: (i) Newcastle/ Avian flu/ Fowl pox

(ii) Brucellosis/ Foot and Mouth

Comments: poorly answered question. Common errors included writing any disease in poultry/ cattle instead of a notifiable disease. The disease Newcastle was incorrectly written by separating new and castle which gives a different meaning altogether.

Question 41:

Which type of weeds complete their lifecycle in a single year.

Correct response: annual weeds

Comments: A fairly answered question. Incorrect responses related to specific names of weeds.

Question 42:

What type of pathogen causes blight in potatoes?

Correct response: fungi

Comments: A fairly well answered question. Incorrect responses related to bacteria.

Question 43:

Which equipment can be used for castration?

Correct response: Burdizzor/ elastrator R - knife

Comments: A well answered question. Writing the correct spelling for burdizzor was a major challenge for most candidates.

Question 44:

What term describes an organism that causes ecological or economic harm in a new environment where it is not native?

Correct response: invasive/ alien plants

Comments: A well answered question.

Question 45:

Which term describes the difference between farm assets and liabilities?

Correct response: capital/ owners' equity

Comments: A poorly answered question. Incorrect responses included "gross margin and budget".

Question 46:

Which plants process moves carbohydrates in the phloem?

Correct response: translocation

Comments: A fairly well answered question. Incorrect responses related to diffusion and transpiration.

Question 47:

What type of pollination involves the transfer of pollen grains from one flower to another in the same plant.

Correct response: self-pollination

Comments: A fairly well answered question. Candidates that deviated responded by referring to 'agents of pollination'.

Question 48:

Give the general term for material placed on the soil surface to reduce water loss?

Correct response: mulch

Comments: Average performance was noted. Incorrect response related to the process instead of the material.

Question 49:

External parasites cause animal discomfort and loss of condition.

State **two** other effect of external parasites.

Correct response: vectors/transmit diseases; damage hide/ skin

Comments: A fairly well answered question. Errors included writing signs of ill-health in livestock.

Question 50:

Which structure found in the nucleus of cells carries genetic information in the form of genes?

Correct response: Chromosome

Comments: There was average performance in this question. Common incorrect response was DNA.

Question 51:

Which term describes a group of farm equipment which requires greater power to operate.

Correct response: implements

Comments: A fairly well answered question though most candidates related to intermediate technology.

Question 52:

Fig 52.1 shows a type of erosion.



Fig 52.1

- (i) Name the type of erosion shown in Fig 52.1.
- (ii) Suggest two methods of reducing the erosion in Fig 52.1.

Correct response: (i) Gully erosion

(ii) Planting trees in dongas; build barriers,

Comments: Average performance was noted. However, some candidates left this question unanswered, which could indicate that they did not realise there was still a question following.

Comments on overall performance:

1. Time allocated for the paper was adequate. Very few questions were left unanswered.
2. Assessment of the paper seemed to be evenly spread throughout the syllabus sections.
3. Candidates were able to adhere to instructions related to the paper.

Advice to Agriculture Teachers

Contribution and immersive commitment of the teacher is commendable. They are still kindly requested to continue motivating, empowering candidates with the knowledge and skill required of this practically science-oriented subject. In preparation for examination and attainment of much higher scores candidates should:

1. Refer to the syllabus as much as possible in preparation for the examination.
2. Adhere to the use of glossary terms used in the assessment of subject.
3. Read and understand the question clearly before attempting to answer it.

Teachers are still encouraged to

1. Unpack the syllabus assessment as much as possible.
2. Evenly spread their scheme of work with their 5 terms in preparation for the examination and consider weightings of the various papers.
3. Encourage candidates to gain more agricultural knowledge through participation in community activities; media, field days and agricultural shows.
4. And also be more competent in the use of agricultural terms.
5. Encourage candidates to page through the question paper to the last page, this will help avoid leaving some questions unanswered, especially, the last question.

EGCSE AGRICULTURE**Paper 6882/02****Theory**

EGCSE Agriculture Paper 2 consists of two (2) sections, **SECTION A:** - Structured Questions and **SECTION B:** - Essay questions. This paper contributes 40% of the overall mark.

General Comments on Paper 2

The 2020 cohort performed poorly than expected on the paper but were better than the 2019 candidates; with most of them attaining below half mark (40/80). Most candidates in 2020 Agriculture paper 2 examination scored in the range of 30 – 40 marks out of 80; which is higher than the previous years. Though the paper proved to be challenging to the candidates, the cohort had better average scores with the lowest mark in 2020 being 6/80 and the highest being 60/80; compared to 0/80 and 65/80 which was the lowest and highest mark respectively in 2019. The paper was appropriate and relevant to the grade level of the candidates. It also covered all sections of the syllabus from general agriculture to agricultural economics.

The areas of the syllabus which seemed to be challenging were on organic fertilizers, dilution of farm chemicals, disposal of farm chemicals, selective breeding, factors affecting farm productivity, research in agriculture and importance of health records.

Even in 2020, the poor usage of agriculture technical terms remains the main setback to candidates. Further, description of processes or practical procedures in chronological order remains a challenge as learners lost points for disorderly mentioned points.

Parts of the Syllabus That Seemed to be Challenging to Candidates

Question 2 (b) – Organic farming.

Question 3 (b), (e) – Dilution and disposal of farm chemicals.

Question 5 (c) – Selective breeding.

Question 8 (a), (b), (c) – Farm productivity, poverty alleviation and research in agriculture production.

Question 9 (a) – Health records.

(NB: The specific questions are found in full from section B of the report)

All the other parts of the syllabus in the paper seemed to be accessible to the candidates.

B. Comments on Specific Questions

Section A

Answer **all** questions in this section **(60marks)**

Question 1

Fig 1.1 shows a maize seed.

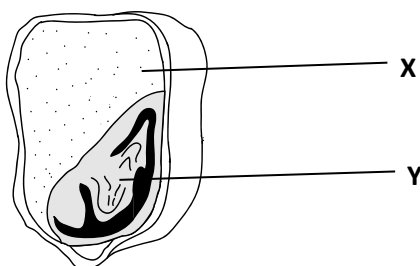


Fig 1.1

(a) (i) What is the name of the part labelled Y? [1]

Correct Responses: radicle

Comments: This part of the question was fairly well answered. The main weakness was that most candidates referred to 'Y' as germ, endosperm, embryo or plumule.

(ii) What is the function of part X? [1]

Correct Response: stores food/ provides food/ nutrients/ energy for growth.

Comments: Most candidates responded well to this part of the question. Only a few candidates said it protects seed/ embryo or manufacture food/nutrients.

(b) (i) Give **one** condition necessary for storing seeds. [1]

Correct Responses: cool - dry condition

Comments: This part of the question had an average performance from candidates. The question proved to be challenging to some candidates as they only wrote a part of the answer like 'cool' or 'dry' instead of 'cool - dry' condition. Other answers which were not accepted were warm conditions and low moisture.

(ii) State any **two** conditions that seeds need for germination. [2]

Correct Responses: water/ adequate moisture;
suitable/ optimum/ favourable temperature/ warmth;
air/ oxygen;
viable seed ... **any two**

Comments: This question was well answered by most candidates. Answers such as cool or warm temperature instead of suitable temperature were not accepted. Other wrong responses included sunlight, fertile soil and well ventilated soils

(c) Explain how high humidity affects vegetable seedlings. [2]

Correct Responses: humid air slows the rate of transpiration; which in turn slows growth rate of seedlings increase fungal diseases/ damping off; which in turns leads to poor growth/ death of seedlings.

1 mark for the idea; 1 mark for explanation

Comments: Average performance. Incorrect answers included decayed/ rotten seeds, declined in the rate of photosynthesis or respiration and poor germination. Though most candidates were able to state correct answers, they failed to give the proper explanation, as a result they obtained only 1 mark instead of 2. Another misconception was that some candidates were talking about a seed instead of talking about a seedling.

(d) Describe the process of respiration in plants. [2]

Correct Responses: oxidation/breakdown of carbohydrates/sugars;
release energy;
 $\text{CH}_2\text{O} + \text{O}_2 \rightarrow \text{energy} + \text{CO}_2 + \text{H}_2\text{O}$

Comments: An average performance was shown by most candidates. A majority of the candidates obtained 1 mark by stating the end – product as ‘energy’ or the process that releases energy. Most candidates were giving the description of respiration as release of energy without including oxygen reacting with carbohydrates. Some candidates described transpiration or photosynthesis instead of respiration. Others failed to mention the oxidation part; they simply said, ‘breaking down of carbohydrates to release energy’ or ‘break down of food’. Some candidates described respiration as ‘gaseous exchange between plants and the animals’.

(e) Suggest **two** reasons for practising minimum tillage. [2]

Correct Responses: ground cover/ unloosened soil conserves moisture;
reduces soil erosion;
reduces costs;
enhance microbial activity ... **any two**

Comments: This question was averagely answered by most candidates. Common wrong answers include: to loosen up the soil; to avoid runoff; conserve water instead of moisture; to avoid disturbing the soil; maintain soil structure; cheaper or less time consuming. [11 marks]

Question 2

Fig 2.1 shows the cost of cabbages produced using different farming systems.

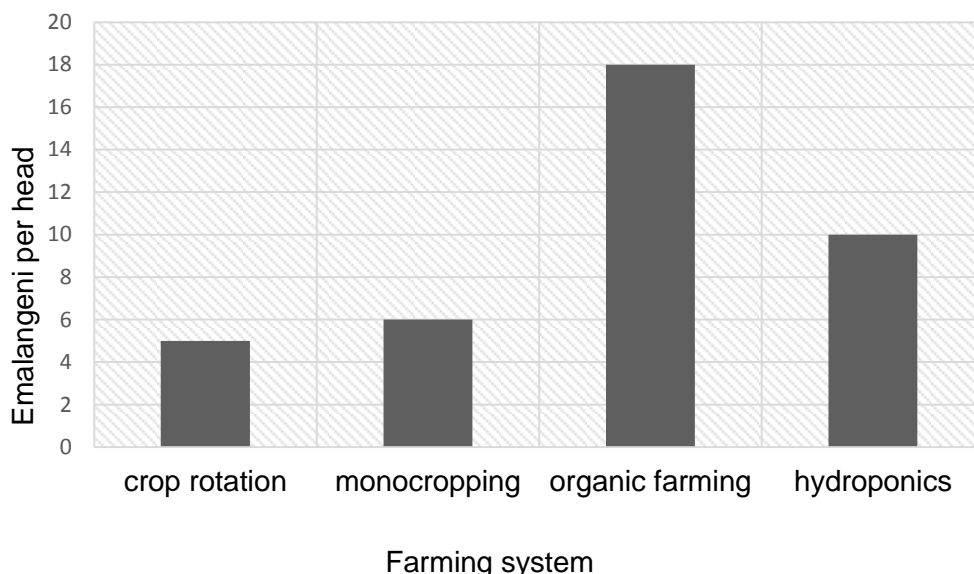


Fig 2.1

(a) (i) What is the cost of a cabbage produced using crop rotation? [1]

Correct Responses: E5/head; 5E/cabbage; 5 Emalangeneni per head

Comments: An average performance was shown by most candidates in this question. Most candidates wrote only E5 instead of E5 heads, as a result they failed to get the mark for this part.

(ii) Which farming system has an average cost of E10 to produce a cabbage? [1]

Correct Responses: hydroponics

Comments: This question was well answered by almost all the candidates who wrote this paper. The majority of the candidates identified correctly the farming system as hydroponics.

(b) Why are organically farmed cabbages the most expensive to produce? [3]

Correct responses: cost of sterilising the soil/ cost of rehabilitation of land/ field hygiene; certification; inspection/ quality control; higher labour costs due to adding organic matter;

control weeds/ pests by cultura/ biological methods

Comments: The question was poorly answered by almost all the candidates who wrote this paper. Those who managed to get a mark out of 3 (1/3) are those fewer candidates who referred to the cost of labour due to bulkiness of organic fertilizers. Most candidates wrote the health benefits of organically produced crops (which are the reasons making it to be expensive). Some candidates described organic farming or organic crops.

(c) Suggest **two** reasons why some farmers may prefer using hydroponics. [2]

Correct Responses: less water wastage;

reduce/ control/ eliminate soil-borne diseases;

water/ nutrients supplied at the same time;

no leaching;

no soil erosion;

high yields;

easy to control nutrients/ no wastage of nutrients;

harvest is clean not soiled;

practiced where there is shortage of land/ poor soils

Comments: Average performance by most candidates was observed on this question. A number of candidates failed to get the 2 marks because they wrote wrong spellings such as 'soil born or bone' disease which were marked as wrong answers, instead of soil borne diseases. Other common wrong answers given included mentioning: no pests and diseases or no farming practices done. A few candidates defined hydroponics as an answer.

(d) Suggest, with a reason, a farming system that would result in more acidic soils. [2]

Correct Responses: monocropping; nutrients/ basic cations used without replacement/ overuse of chemical fertilisers; organic farming; continuous nitrification

R = monoculture

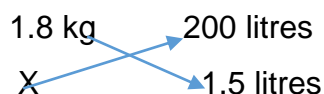
Comments: This part of the question had an average performance from the candidates. Most candidates were able to mention the farming system as mono-cropping or organic but failed to explain how it leads to acid soils. As a result, the majority of

candidates obtained only 1 mark. Some candidates failed to state the correct farming system. Instead they wrote wrong answers such as inorganic farming, crop rotation, intensive farming, hydroponics, commercial farming, and chemicals' application leading to soil acidity. There were also a few candidates who wrote leaching as a farming system or even defined leaching. **[9 marks]**

Question 3

- (a) The application rate of a pesticide is 1.8 kg in 200 litres of water. Calculate how much of this pesticide should be mixed with 15 litres of water. **[2]**

Correct Response: working



answer = 0.0135 kg – **1 mark for working; 1 mark for answer** 4kg

Comments: Most candidates calculated well the amount of pesticide needed to mix with 15 litres of water. Only a few of the candidates failed to calculate the correct answer; others wrote 0.14kg which was not accepted as the correct answer.

- (b) Explain the importance of diluting the correct amount of pesticide. **[2]**

Correct Responses: weak chemical solutions/ less concentration, not all pests are killed/ survivors build resistance; strong chemical solutions/ high concentration, burns/ scorches the crop; correct/ recommended dilution rates kills pests effectively

Comments: This question was poorly answered by most candidates who wrote this paper. Most candidates failed to refer to the chemical concentration as (strong/too concentrated or weak/less concentrated) but instead used general words such as too much, too little and small amount which does not show the understanding of the level of concentration of the chemical. There were fewer candidates who gave answers with some references to over-application of the chemical which leads to the destruction of the soil structure or causing acidity.

(c) Suggest **two** reasons why spraying on a windy day should be avoided. [2]

Correct Responses: prevents soil/ air pollution; no spray drift/ avoids killing untargeted organisms or being blown to the person; prevents chemical wastage

Comments: This question was well answered by all the candidates.

(d) Explain, with a reason, how a farmer would use crop rotation to control pests. [2]

Correct Responses: alternate crops are not attacked by same pests/ crops of the same class should not follow each other;
to break/ disturb life-cycle of pests

Comments: The average performance by most candidates was observed in this question. Most candidates obtained only one mark for writing correctly the part on breaking the life-cycle of pests, but failed to give correct details on how the life-cycle of pests is broken. Common wrong answers include: planting different crops on the same land; planting legumes or grass; planting long rooted followed by shallow rooted; planting or rotating with crops that are enemies or poisonous to pests; rotate different types of crops. Other candidates only defined crop rotation.

(e) Suggest **two** waste disposal practices of farm chemicals that reduce pollution. [2]

Correct Responses: avoid disposing in drainage systems;
avoid disposing in streams;
burn after consultation with SEA;
expired chemicals taken to suppliers/ SEA for disposal.

Comments: Fewer candidates scored only one mark for mention that the waste should not be disposed in water sources. A majority of the candidates did not perform well in this question. Most candidates gave wrong answers such as recycling; burning/burying; keep them away from children; throw them in pit latrine/large rivers. Some candidates were talking about reducing pollution instead of proper waste disposal practices.

[10 Marks]

Question 4

(a) **Table 4.1** below shows animal nutrients, enzymes and end products. Complete the table below.

Table 4.1

Nutrient	Enzyme	End – product
Proteins	Trypsin
Fats	Fatty acids and glycerol

[2]

Correct Responses: peptides/amino acids;
lipase

Comments: This question was fairly well performed by most candidates. However, some candidates gave amylase/lipids for fats instead of lipase; polypeptides/glucose instead of peptides.

(b) Describe the functions of bile in livestock digestion.

[2]

Correct Responses: emulsify fats;
neutralises the acid mixture/ chyme from the stomach;
creates/ provides alkaline conditions for enzyme trypsin for activation of protein-based enzymes (any two)

Comments: An average performance was observed in this question. Most candidates were able to state that bile emulsify fats. Common wrong answers were: bile digest fats; or neutralise food.

(c) Explain the symptoms of iron deficiency in livestock.

[2]

Correct Responses: anaemia;
fatigue/ tiredness/ weak animals;
pale eyelids and moutaches;
unstable walk

Comments: This question was averagely performed. Common wrong answers were: shortage of blood; poor clothing; abnormal walk; pale eyes instead of eyelids; rough coat; loss of appetite; laziness; pale skin; heavy breathing; cannot walk.

(d) Describe the role of microorganisms in ruminant digestion. [2]

Correct Responses: break down cellulose;
 convert plant protein to microbial protein;
 converts non-protein nitrogen (e.g. urea) to microbial protein;
 converts fats/ oils eaten by animal into fatty acids/ glycerol

Comments: The candidates only managed to respond averagely in this question. Most candidates were able to state that the micro-organisms digest/breakdown cellulose and got only 1 mark. Common incorrect answers: traps unwanted materials; destroy toxins or dangerous organisms; ferment food; increase digestion; digest food; they provide protein when the die.

(e) Suggest **two** ways of reducing parasites in pastures. [2]

Correct Responses: rotational grazing;
 burning;
 drainage (any two)

Comments: The performance of the candidates in this question was average. Most candidates gave wrong answers such as: zero-grazing; using natural enemies; dipping and vaccination; picking by hand; crop rotation; using predators; mulching.

[10 Marks]

Question 5

(a) Describe the role of the following hormones in animal reproduction.

(i) Progesterone [1]

Correct responses: prepare uterus for implantation
 stop release of egg during pregnancy
 stops ovulation
 development of udder
 maintains pregnancy

Comments: This question was fairly answered. The most common mistake done by the candidates was to give the function of progesterone for oestrogen or vice versa Progesterone was confused with a male hormone (testosterone) and its functions were misconstrued to be maintaining the thickness of the uterus lining; regulate ovulation; helping in production of sperm.

(ii) Oestrogen [1]

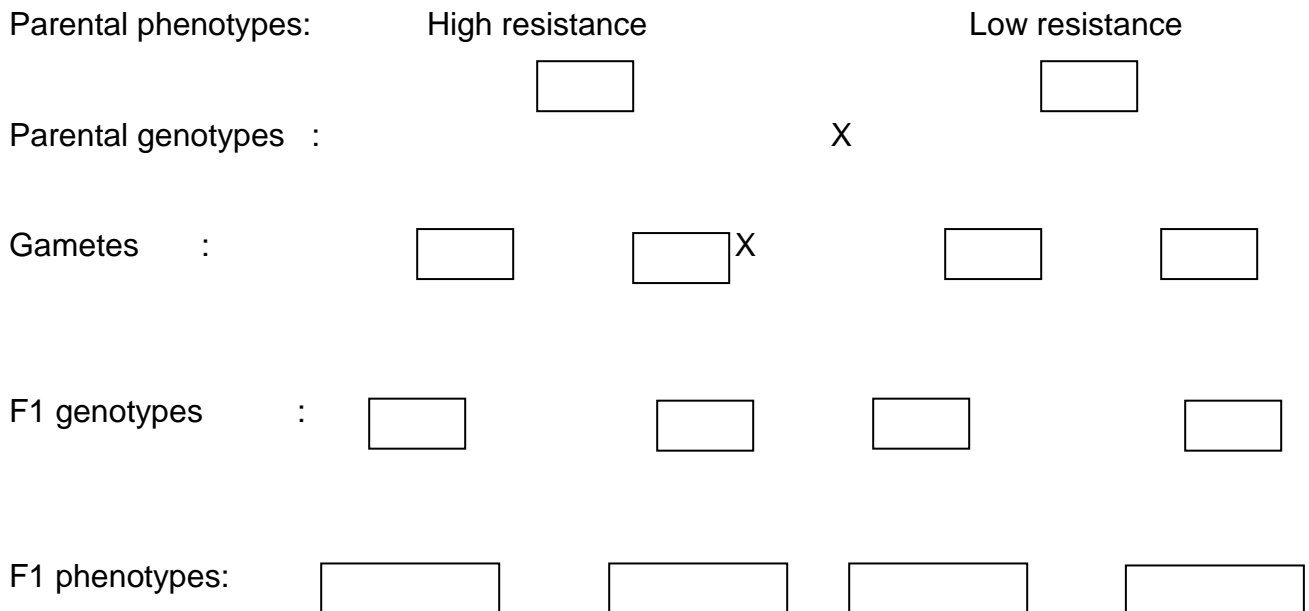
Correct responses: regulates oestrus cycle/ heat period;
 helps oviduct/ uterus to carryout their functions;
 helps in development of female sexual characteristics;
 stimulates ovary to release ova

Comments: This part of the question was also fairly well answered. The function of oestrogen was misconstrued for development of secondary sex characteristics; helping in the production of an egg; stimulating oestrus cycle/heat period; producing ova; releasing the ovules; and production of female sexual organs.

(b) The allele for high resistance to tick-borne diseases (R) is dominant over the allele for low resistance to tick-borne diseases (r).

The **two** homozygous breeds are crossed.

(i) Complete the genetic diagram.



[4]

Correct Responses: 1 mark for parental genotypes: RR rr
1 mark for gametes: R R r r
1 mark for F1 genotypes: Rr Rr Rr Rr
1 mark for F1 Phenotypes: **all high resistance**

Comments: The question was fairly answered by most candidates. Common mistakes were as follows: some candidates missed all the marks in the diagram because they wrote letters like gametes (R) and (r) for the parental genotypes. In this case the principle of an error being carried forward was applied; which means once you miss the first step on parental genotype, then you miss the rest of the points; other candidate missed 3 marks because they failed to write the correct gametes. A very few candidates failed to make proper crossings. Most candidates got 3 marks because they wrote wrong phenotypes, like writing just resistance instead of high resistance for all or writing the F1 Phenotypes like the F1 genotypes. Other candidates missed all the marks because they used other letters instead of the given letters 'R' and 'r'.

(ii) Explain why phenotype is important for selective breeding. [1]

Correct Response: selection is based on observable characteristics/ appearance/ physical features.

Comments: The performance in this part of the question was fair. However, some candidates gave wrong answers such as: to see the resistance; to see the characteristics or stating the phenotypes in the diagram.

(c) Explain how selective breeding can be used to increase the milk yield of the Nguni breed. [3]

Correct Responses: cross-breeding the Nguni cow with a milk breed bull (Friesian/ Jersey);
select cows from offsprings;
repeat crossing with the milk breed bull over many generations

Comments: This question was poorly answered by most candidates who wrote this paper. Most candidates failed to state which breed was the cow and which one was a bull, as a result they missed all the marks. A fraction of the candidates managed to state correctly the first crossing of Nguni cow and a high yielding milk bull but failed to complete the crossings, this helped them to score 1 point out of the 3. **[10 Marks]**

Question 6

Fig. 6.1 shows water collected from the roof.

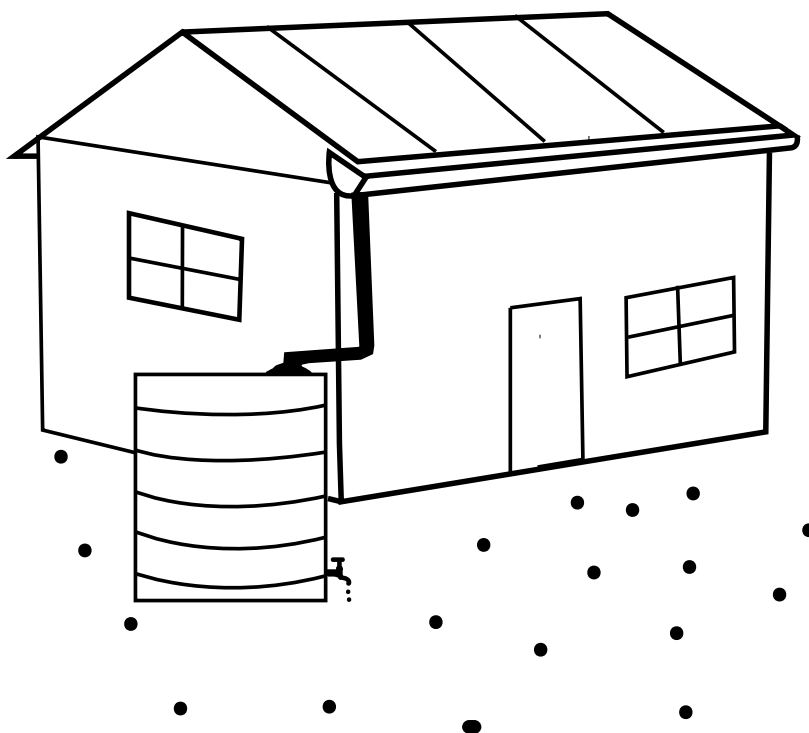


Fig. 6.1

- (a) What could be the danger of using water collected using the method shown in Fig.6.1? [1]

Correct Responses: Contamination/pollution/ roof corrosion/impurities/ acid rain.

Comments: This question was well answered by the majority of the candidates who wrote this paper. Common answers were: dust/dirt; pollution; acid rain. Common wrong answers were: bacteria/pathogen; erosion and the reference was on the water in the tank, yet the question was specific on the collection part not the storage.

- (b) Suggest any **two** disadvantages of using an overhead irrigation system. [2]

Correct Responses: high evaporation rate/ water wastage; uneven water application; cost of equipment; difficulty of setting up equipment over crops; promotes fungal diseases (any two)

Comments: Average performance from most of the candidates has been observed in this part of the question. Common wrong answers were: erosion; acidic; use a lot of water without qualifying the 'lot of water'; high operation costs; encourages leaching; destroy crops; spread waterborne diseases; encourages weed growth; sometimes some advantages were mixed up with the disadvantages; scotching of leaves.

(c) **Table 6.1** shows features of a well-built dam with their functions.

Fill in the blank spaces below;

FEATURES	FUNCTIONS
Wall covered with large stones on the lower side of the dam.	(i).....
(ii).....	to prevent seepage
Over-flow pipe.	(iii).....

[3]

Correct responses: (i) prevents wave erosion

Comments: Average performance was observed in this part of the question. Incorrect responses were prevent erosion; prevent breaking of the dam wall/busting.

(ii) impervious clay soil/ plastic sheeting/ use of concrete

Comments: Average performance was observed in this question. Common incorrect errors were grass/ vegetation; or concrete slab/slap; rip rap; wide base or rocks to prevent seepage.

(iii) prevents flooding/ removes excess water

Comments: Average performance was observed in this question. Common wrong answers were to: collect the water; direct the water; collect rainfall.

(d) (i) Give **one** way of preserving metal posts. [1]

Correct Response: painting/ galvanising

Comments: This question was well answered by most candidates. However, there were few candidates who gave wrong answers such as oiling/ greasing; dipping in water or dipping in creosote.

(ii) Explain the purpose of fence in a farm. [3]

Correct Responses: protects fields from stray livestock/ controls movement/ allows mixed farming;
 facilitates rotational grazing;
 facilitates controlled breeding;
 mark out boundaries/ prevents boundary disputes;
 act as windbreaks (**any three**)

Comments: The performance in this question was average. Most candidates were able to get a score of 2/3. Common wrong answers include: to protect livestock and crops from thieves/predators; provide security; prevent inbreeding; is for crop rotation; a fence is a barrier/ windbreak/boundary; control movements of thieves; divide the farm; control grazing. [10 Marks]

SECTION B: Essay questions

Question 7

(a) Outline the soil preparation procedure for a named field crop. [3]

Correct responses: primary cultivation/ tillage/ digging (hoe, spade, plough);
secondary cultivation/ soil tilth/ levelling (fork, rake, disc, harrow);
adding organic matter/ lime

Comments: An average performance by most candidates were observed in this question. Most candidates scored 2 points out of 3. They only mentioned primary and secondary tillage but failed to state the addition of soil amendments. Some of the candidates who missed all the 3 points because they stated the clearing of land, cultivation, without specifying if it is primary or secondary cultivation; then add inorganic fertilizers or adding of basal dressing fertilizer and opening of planting rows.

(b) Describe the effects of pests and diseases on a crop. [2]

Correct Responses: reduces the yield;
reduces crop quality

Comments: The question was averagely answered by most candidates who wrote the paper. Most candidates were stating how pests and diseases damages crops; or mentioning the types of pests like boring pests, piercing and sucking, biting and chewing pests and stating the damage they cause; feed in the leaves of plants.

(c) Suggest the impacts of climate change on crop production. [5]

Correct responses: high risk of crop failure due to high rise/ decline in temperatures;
change in timing and length of growing season; decline in crop diversity/
production; increased soil erosion/ reduced arable land; drought;
introduction of new pests and diseases/ outbreak of pests and diseases
pests and diseases;

Comments: The performance in this question was fair with most candidates scoring 3/5. The most common error was that most candidates stated the causes of climate

change and not the effects or discussing the effects of temperature. Some candidates failed to relate their answers to crop production.

Question 8

(a) Discuss factors affecting farm productivity. [4]

Correct Responses: **environmental factors** such as climate/ weather changes/ soil conditions;
production factors such as land, labour, capital, available resources/ inputs
technological factors such as use of improved breeds/ varieties/ machinery;
human resource development factors such as technical skills and training;
management factors including fertilising, weeding, controlling pests/ diseases

Comments: The performance by all the candidates in this question was very poor. Incorrect responses given by most candidates were as follows: candidates stating only the environmental factors and/or production factors forgetting the technological human resource and management factors. Only a few candidates highlighted the technological factors. Most candidates scored $\frac{1}{4}$ because, instead of talking about factors affecting farm productivity, they were discussing the factors of production which are land, labour, time and capital. There is also a small fraction of the candidates who discussed temperature, humidity and water as factors affecting farm productivity.

(b) Explain how agriculture can alleviate poverty in Eswatini. [3]

Correct Responses: availability of food;
 production of sufficient food;
 access to food /less hunger;
 good nutrition/ proper diet;
 job creation/ income generation

Comments: Poor performance by all candidates across centres was observed in this question. Only a few candidates were able to score $\frac{1}{3}$ or $\frac{2}{3}$ by mentioning the provision of

job/employment opportunities and production of food. Common wrong answers include: food security; foreign exchange; government subsidies on farm inputs; teaching farmers about growing crops; discussing how technology has improved skills and the use of workshops; development of schemes, water conservation and recycling; use of RDA's to alleviate hunger.

(c) Explain how research can improve production in agriculture [3]

Correct Responses: high yielding varieties/ breeds/ genetically modified organisms; disease resistance/ drought resistance; early maturing/ fast growth; best planting dates; better machinery/ tools/ equipment; better farming methods/ pest and disease control; highly nutritious animal feeds (any three)

Comments: Generally, the question was poorly answered by most candidates across the centres. Very few candidates were able to mention the introduction of technology and new farming systems. Otherwise most candidates stated wrong answers such as the market research to determine demand and supply, instead of research to improve production in agriculture; market research to determine price and what product is available; or talk about the general research to find solutions to existing problems. [10 Marks]

Question 9

(a) Describe the importance of health records when starting a rabbit enterprise. [2]

Correct Responses: diseases resistance/ adaptation; vaccination programme/ disease prevention done.

Comments: The question was poorly done as most candidates were not able to give correct responses. They wrote wrong answers such as to identify such animals; to prevent rabbit diseases; or determine health of rabbits; to calculate all costs when keeping rabbits; to determine the productivity of rabbits; to know about the health of rabbits when burying them; to know the diseases attacking the rabbits. Some candidates referred to the importance of farm records in general. On the other hand; there are those who listed the types of records such as production records, financial records and a diary.

(b) Describe the appearance of droppings in sick animals. [3]

Correct Responses: blood; watery droppings; eggs/ cysts/ larva of parasites

Comments: This question was well answered by most candidates across the Centres. Most candidates were able to score at least 2/3 of the points. However, there are other candidates who gave wrong answers such as: wet droppings/liquid droppings; dry droppings; mucus in the droppings; hard droppings; some candidates did not consider that the question wanted the description of the appearance. As a result they gave answers such as bad smell/smelly droppings.

(c) Suggest ways in which diseases can be prevented in animal houses [5]

Correct responses: clean and disinfect house and equipment;

place wooden board in cages;

provide a footbath;

change litter weekly;

provide fresh clean water;

ensure feed bins are rat proof;

isolate sick birds;

vaccination;

not mixing chickens of different ages/ breeds;

limiting visitors

Comments: This question proved accessible and was well performed by almost all the candidates who wrote this paper. Most candidates were able to score 5/5 or at least 4/5. However, there were wrong answers written by few candidates such as: well ventilated animal house; cleaning the house only or disinfecting without mentioning the part on cleaning first; just forking the litter without stating anything on changing it; provide clean water failing to mention the provision of fresh clean water; provide concrete floors; vaccinating the house; quarantine instead of isolating sick animals.

[10 marks]

Comments on the question paper

- A majority of candidates attempted all the questions as per the instructions.
- Very few candidates would not attempt some questions at all, e.g. procedure for selective breeding in question 5 (c).
- The allocated time of 1 hour 30 minutes was adequate for writing this paper. Candidates had no challenges of time management.
- There was no common misinterpretation of the rubric.
- The 2020 candidates performed better than the candidates of the past three years (2017, 2018, and 2019).

Advice to Agriculture Teachers

- The assessment covers all sections of the syllabus, from the first unit (general agriculture) up to the last unit (agricultural economics). All questions were fairly attempted by the candidates
- Emphasis should be made on description of experimental procedures and processes in chronological order.
- Candidates should be taught and tested on all levels i.e. in reference to the command words used in the syllabus.
- Further emphasis should be made on the appropriate usage of technical terms used in agriculture when explaining concepts. In most cases, where technical terms are not used appropriately, candidates' responses become unacceptable.
- The performance of candidates in most sections has improved compared to previous years. Further focus is necessary to ensure all sections of the assessment syllabus are sufficiently taught.
- A further need to relate practical work to theoretical facts remains key for understanding of some concepts.
- Teachers should make use of Examination Reports from the previous years as they teach their candidates.

EGCSE AGRICULTURE

Paper 6882/03

Practical Activities

Practical Activities

This paper tests the practical skills, which is objective C of the syllabus. All the Centres were able to submit their work at the Examination Council of Eswatini (ECESWA). A majority of the Centres submitted on time and a few submitted just after the deadline set by ECESWA. All Centres are encouraged to submit their work within the stipulated time.

Registers

Almost all of the Centres submitted their registers. However, this year there had been a decline on the filling of the registers. In some registers there were no page totals, dates, invigilator's name and signature. In some Centres the registers showed only the sampled students in the column for scripts submission. All students who had submitted their practical work must be indicated in the registers. Teachers are once again reminded to complete the registers, sign them, show date of completion, as well of the name of the teacher responsible.

Teacher's File

There was an improvement on the submission of the teacher's file by the Centres. However, in some Centres the teacher's file had the following challenges:

- Only practical were submitted without the marking guides
- Some files had marking guides without the practicals
- Some Centres had candidates' pictures and students' cards in the teacher's file

The teacher's file should consist of the following:

- Practical exercises undertaken and their marking guides

Sampling

This year some centres had incorrect sampling. Teachers are expected to sample a wide range of scores; top students, average students and low students. They are to indicate with asterisks (*) the sampled candidates on the summary sheet **not on the register**. Parking of the files should be according to the scores of the candidates, with the top students at the top and low students at the bottom. Centres are expected to sample the following number of candidates as indicated in the syllabus:

Below 10: all candidates

11 – 50: 10 candidates

51 -100: 15 candidates

Above 100: 20 candidates

Summary Sheet

In the summary sheets the following challenges were noted:

- Some centres had decimals
- Some centres had totals which were not correlating with the marks awarded (incorrect adding)
- Few centres had no Centre details, that is Centre name or Centre number
- Candidates who had no marks or indication of being absent
- In some centres the first or last student on the page would be omitted
- Total mark indicated without it being broken down according to the categories e.g Responsibility, Initiative etc
- No teacher's details (name or contact number)
- No principal stamp or signature
- Loose sheet
- Some centres it was difficult to read the numbers, as some teachers would write on top of another number or the numbers were not clearly written especially number 3 and 5
- Centres are encouraged to indicate in the summary sheet if a student is absent or missing. They should thoroughly check if the marks are completed and totals are correct. They are also encouraged to staple the summary sheets if they are more than one. No decimals should appear on the summary sheet. All summary sheets should have the principal's signature and the school stamp.

Student Card

All centres submitted sampled students' cards, though in some centres brought all the candidates' cards. In some centres the students' cards were not placed in the candidate individual card. Some were found in the teacher's file others were loose. Teachers are reminded to place cards in individual candidate file and they should be on top of the work done. The listed practical under taken should be arranged according to the listing on the candidate card and well secured.

This year some centres had jumbled work, practical listed in the student card did not appear in the order they were written in the candidate's card. Marks awarded in the actual practical were different from the marks written the candidate's card. In some centres marks only appeared on the candidate card and did not appear on the actual practical undertaken.

Only practicals listed on the candidate's card should be inside the individual candidate file. Teachers are also encouraged to do accurate calculations on the individual candidate's card. They should follow the formula stipulated on the syllabus.

Practical Tasks

Even this year there was a regression in the choice of practical tasks, very few centres had Economics and Farm Structures. In some centres there were Junior Certificate (JC) practical's e.g. Fruit trees.

Practical Topics

Topics which are **double barrel** are discouraged e.g. Soil Sampling and Testing. This year some centres developed topics which they had difficulty to come up with relevant descriptors.

Criteria

This area showed some jumbling as well, in some centres certain criteria were missing. In some centres the ink was very feint and it was difficult to read. Centres are encouraged to use Times New Romans, font 12 and line spacing 1.5.

Descriptors

Some Centres need to improve in this area. In some centres they had the same descriptors for all the practicals, hence their quality of work was declining. There are Centres that still designed descriptors that were general and not specific to their practicals. Words like systematically, methodologically, skilfully etc, continued to show, yet they are not specific and cannot be measured. There is still a variation in the number of descriptors within a practical and sometimes within a category. It is important that centres maintain the same number of descriptors in the different levels as the same skill is being measured at different levels, i.e no assistance, minimal assistance or more assistance. Bias descriptors still appeared in some Centres, teachers are encouraged to refrain from such.

Scaling

It was encouraging to note that most Centres used the correct scaling. Very few Centres still used wrong scaling, it was also noted that within the same Centre they were practicals that had correct scaling whilst other practicals had the incorrect scaling

The correct scaling is as follows:

- 5/4
- 3/2
- 1/0

Teacher's Comments

Teacher's comments were of lower quality this year. In some Centres comments provided were general e.g good, fair or excellent. In some Centres they were only given in one descriptor which did not give a clear justification for the marks awarded. Teachers are encouraged to make comments based on the activities performed in that specific category. Teachers are encouraged to make comments as they serve as a justification for the mark awarded.

Evidence

This year showed an improvement on the evidence given by Centres, however the quality of the evidence given was low. In some Centres they submitted diaries which were sketchy, some of the diaries were unmarked. In some cases, the diaries attached were not relevant to the practical at hand.

Most centres had relevant pictures, although similar pictures were used for the different candidates' files. Some centres had no pictures at all. Evidence in the form of pictures, diaries and specimen are encouraged.

Written Task

It was also encouraging that even this year most Centres submitted written tasks. Though some of the written work is still of low quality, as it only contained recall questions. Centres are still encouraged to have the three domains when constructing these questions. The questions constructed should also be relevant to the practical and be within the syllabus. Teachers are encouraged to mark and grade the written work as they are considered during moderation.

General comments

The number of absent candidates were high even this year. This is worrying as it is expected that course work should begin in the first year in Form 4. Teachers are encouraged to spread the practical within the two-year period to avoid such occurrences. Teachers are expected to submit the little work done by the candidate especially during the first year.

Cover letter

All absent candidates and summary sheets with zeros should be accompanied by a covering letter. This letter should be checked and signed by the principal.

Packaging

Very few Centres still fail to use simple folders and strings for their packaging. In some Centres they submitted loose material in the file. The files should have the string to avoid candidates' work being misplaced or missed up during handling and moderation.

All Centres are expected to submit their work in simple files fasten with stings, Centres are discouraged to bind their work as this make it difficult to work with these file.

Recommendations

Teachers who had joined the profession are encouraged to consult the inspectorate, neighbouring schools, attend cluster meetings and workshops. It is also recommended that teachers continue to share ideas and work together within the department and with other

schools to minimise variation in the standard of work submitted by the different Centres. New Centres are encouraged to consult area inspectorate to acquire ideas on practicals and projects. Teachers are still encouraged to respond promptly when called to make corrections in their course work.

EGCSE AGRICULTURE

Paper 6882/04

Project Work

General Comments

This paper tests students on practical skills, which is objective C in the syllabus. Most Centres were able to meet the deadline for submission of this paper. Centres submitted their work at the Examinations Council of Eswatini as expected. There was a major drop in the quality of the work presented in this paper compared to last year, 2019.

Appropriateness of the projects chosen

Most of the topics chosen were relevant and specific; however, very few topics were irrelevant. This year, there was a major drop in the quality of the topics chosen. Most Centres presented projects that were concentrated on vegetables/ crops and livestock and there was no spread/ distribution of topics across the syllabus.

Teacher's supervision

Even this year, there was a major drop in teacher supervision, which was worse than the previous year (2019). The performance of the candidates this year showed a drastic decline which clearly indicates that candidates were not well guided. Teachers are encouraged to supervise the candidates throughout the project (both practical and write – up aspect of the project).

Selection of questions (Hypothesis)

The hypothesis must show the null and alternative hypothesis. Teachers are advised to assist candidates in writing a hypothesis with two levels which are brief and specific. Even this, year, a majority of the Centres had hypothesis which was one sided. A majority of the centres this year wrote the hypothesis as paragraphs, others wrote hypothesis for each objective, while others showed the hypothesis with 3 levels. Teachers are advised to write two hypothesis (null and alternative) only for the whole project.

Objectives of the study

Few Centres still presented objectives which were not measurable. Some Centres presented the same objective measuring one variable three times. Teachers are advised to compare variables being investigated, especially with experimental projects.

Plan and Principles

This year, there was a drastic drop in the presentation of the project plan. Most Centres still present a scanty plan. The plan should be detailed, showing research design, materials used and their uses, procedures (showing dates when work was done), layout, randomization, replication, population and sampling, data collection, data analysis, data presentation.

Most Centres presented a procedure which was shallow and without dates when work was done, materials without uses. Some Centres presented a plan with the procedure but without data collection, data analysis and data presentation. Some Centres were confusing data presentation with results and findings.

Handling of evidence

This year, this section was poorly presented. Most Centres presented a shallow data. Tables and graphs were not labelled and without brief interpretations. Very few Centres presented the data with tables which were interpreted, graphs labelled, with proper scaling and drawn in graph papers. Tables have to be labelled and interpreted, graphs drawn on graph papers. The key is always necessary. There was very little variation in data presentation i.e. tables, pie charts, bar charts, histograms used for different objectives. Most Centres, this year did not present data for all objectives. A few others did not have data at all. Some Centres presented unrealistic data in this section.

Teachers are encouraged to ensure that learners actually do the investigatory practical and assist them in collecting actual data.

Ability to make deductions

Deduction of results is continuing to be a huge challenge. It was very brief in the majority of the projects yet it is the core of the project which should give a clear picture and understanding of the whole project. Candidates are expected to justify their results and findings giving reasons of the differences and support them with literature.

The deduction should cover each of the objectives under study.

Summary, Conclusion and Recommendations

A majority of the centres had a summary based on the whole project, conclusion and recommendations.

Summary: Some Centres did not include findings in the summary

Conclusion: A few Centres were able to relate their findings with the hypothesis, however, most Centres were not able to do so.

Recommendations: There was a slight drop in the presentation of recommendations this year by most Centres. Candidates are expected to recommend based on the findings of the study; not on problems encountered during the study.

Limitations

Limitations are problems encountered during the study. This section continued to be a challenge even this year. Limitations were listed without assessing and suggesting possible solutions to them. Some Centres were writing this section in future tense while some omitted this section completely, resulting in candidates being given zero. Centres are encouraged to ensure that candidates identify, assess and suggest improvements to all limitations of their projects.

Presentation and originality

Few Centres had all the components of the project. A lot of Centres presented work which was not original. Some projects were beyond the scope of the learners. Some presented scanty work. Teachers must refrain from using complicated statistical packages e.g. SPSS, which are

far beyond the level of the learners. Candidates must use averages, totals, percentages etc. The project must include all components of an investigatory project.

References

This section should be written based on the scientific principles to maintain standards. A majority of the Centres had a poorly presented list of references. Most Centres were unable to properly present the references. References should be in line with the literature cited in the candidate's project work.

General Comments

Some centres submitted their projects late. The standard of projects has greatly dropped. Centres were submitting loose projects without files. Some projects were incomplete with one or two chapters. Some Centres did not submit evidences in the form of diaries and pictures. Absent students should be accompanied by a covering letter and candidate's work must be recorded up to the period when he/she left school. Proper sampling should be done across the mark range. Proper calculations of marks should be done. Sampled candidates should be indicated with an asterisk in the summary sheet.