C A R I B B E A N E X A M I N A T I O N S C O U N C I L

REPORT ON CANDIDATES' WORK IN THE SECONDARY EDUCATION CERTIFICATE EXAMINATION

MAY/JUNE 2006

AGRICULTURAL SCIENCE (DOUBLE AWARD)

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GENERAL PROFICIENCY EXAMINATION

JUNE 2006

This is a report on the Agricultural Science General Proficiency (Double Award) examination conducted by the Caribbean Examinations Council in May/June 2006.

The examination is intended to assess and evaluate the extent to which the syllabus objectives of the programme have been achieved.

Candidate performance is examined through four written papers, and a practical School-Based Assessment exercise conducted by the teachers themselves on the school farm, and moderated by CXC moderators. This last component carries 25% of the total marks.

SPECIFIC COMMENTS

PAPER 01 – Multiple Choice

The 60 Multiple Choice items, worth 60 marks, covered General and Specific objectives distributed over the four profiles of the syllabus.

The marks ranged from 0 – 54. There was no significant difference in the performance between Crops and Soils (56.06%), Animal Science (54.20%), and Agricultural Economics Profiles (55.20%), but candidates' performance in Agricultural Mechanization (38.12%) continues to be weak.

PAPER 02 – Structured Questions

This paper consisted of 15 questions with a maximum of 6 marks each.

There were many 'no responses', especially in the latter questions. The main reason for this could not be determined, but it is suspected that it may stem either from incomplete syllabus coverage, inadequate syllabus coverage or poor examination techniques. In many cases candidates took an everyday approach rather than a scientific approach to answering questions.

Comments on individual questions follow.

Question 1

This question sought to test candidates' knowledge of the use of pesticides and proper disposal of unused pesticide.

There appeared to be a general understanding of the concepts as most candidates were able to score marks in each section of the question. The greatest difficulty was experienced in Part (b), which focused on safe disposal of excess pesticide after a spraying operation.

Many candidates recognized that the possible reasons for the farmer ending up with an excess of pesticides after the operation were that (i) he had not calibrated the sprayer and as a result, mixed more chemical than he needed for the operation, (ii) he did not apply the chemical properly and (iii) he did not spray the entire area which should have been sprayed.

The safe disposal of the excess chemical provided the greatest challenge as few candidates stated that the farmer should identify an area away from water courses, dig a hole and dispose of the chemical, or store safely in a labeled container for later safe disposal. Many candidates advised the farmer to simply empty the excess pesticide down the drain, or dispose of it in an unused area of the farm.

Most candidates correctly identified the safety precautions the farmer was ignoring such as not wearing a respirator and spraying into the wind.

It is extremely important that students be exposed to the full range of practical activities required by the syllabus. It was obvious that most candidates had never been exposed to this aspect of the syllabus in a practical way.

Question 2

This question required candidates to demonstrate knowledge of manual and chemical weed control measures, and to identify monocotyledonous and dicotyledonous plants from drawings. The performance on the question was average.

Most candidates were able to identify the control measure illustrated in the pictures as mechanical and chemical weed control.

Chemical control was correctly identified as the most suitable approach to control weeds on slopes as this minimizes the possibility of erosion.

Most candidates were not able to distinguish between monocotyledonous and dicotyledonous plants from the pictures provided in the question.

This emphasizes the need for students to understand and have knowledge of basic science before embarking on a course in Agricultural Science.

Question 3

In this question candidates were required to demonstrate their knowledge of seed germination, and its relevance to seed viability.

The level of performance was below average.

Although Part (a) was the best answered part of the question, far too many candidates could not define seed viability as the "ability of a seed to germinate". Many candidates listed parts of the seed instead of defining seed viability.

This was also the case in Part (b). The most popular correct responses included: planting seeds too deeply; lack of moisture, damage to seeds; suitable temperature; maturity of seed.

Teachers need to pay more attention to teaching this concept and provide opportunities for students to perform and record results of seed viability tests. They should also point out that the ability of a seed to germinate is mainly dependent on factors affecting the seed and not on soil conditions.

Question 4

The purpose of this question was to test candidates' knowledge of the production of hybrid plant varieties and the application of such knowledge in terms of advantages and disadvantages in a farming situation. The question was very poorly answered.

Many candidates could not correctly explain that hybrid plant varieties were produced by crossing two different purebred varieties. In most cases candidates did not seem to know that "purebred' varieties were required for such a cross. Some even expressed the view that hybrid varieties could be produced by budding and grafting.

Correctly listing advantages and disadvantages of hybrid varieties also proved to be challenging to candidates. Far too many candidates felt that hybridization always led to larger or bigger fruits. Some simply stated "better" fruits.

Very few candidates provided the expected responses such as: higher yields; increased resistance to diseases and pests, improved quality and earlier maturity

Expected answers for disadvantages included: higher costs for hybrid seeds; the seeds of hybrid varieties cannot be reused for establishing another crop; seeds may not breed true to type; important genes may be lost.

Examples of incorrect responses in terms of disadvantages included: when seeds are replanted lower yields result, and that specialized training is needed to grow hybrid crops.

Question 5

The intent of this question was to test candidates' knowledge of the characteristics of top soil and the common soil types in the Caribbean.

This question was fairly well answered.

Some candidates gave vague responses in Part (a) such as: top soil is identified by its colour without stating that it was dark in colour.

Most candidates gave correct reasons why topsoil is better for plant growth. Expected answers include: higher organic matter content; soil organisms are present and their activities improve soil aeration.

Some examples of incorrect responses in this section included: free of pests and diseases; has fertilizer added to it.

Almost all candidates correctly named two common soil types in the Caribbean.

Question 6

This question tested candidates' knowledge of simple genetic terms and principles. Candidates did not perform well on this question.

It was surprising that so many candidates could not define basic genetic terms such as "phenotype" and "recessive gene". The explanation of recessive gene was even more problematic than that for phenotype.

Incorrect responses to the explanation for recessive gene included: gene that is not active; gene that is dormant; gene from one parent; gene given by the mother.

The cross between two heterozygous parents should be common to students being prepared for this examination and so the expected 1:2:1 ratio should have been obtained by the candidates.

Teachers need to ensure that the basic concepts and principles of Genetics are taught as required by the syllabus.

Question 7

This question focused on livestock production and tested candidates' knowledge of forage conservation and feeding of forage to animals.

Candidate performance on this question was good with most students scoring fifty to sixty percent of the marks.

Most of the candidates correctly cited lack of nutrients, weight loss, and increased susceptibility to diseases. Also, producing hay and silage were correctly identified as methods of conserving forage.

Candidates were similarly knowledgeable with regards to supplemental food materials fed to livestock.

It was obvious that candidates were adequately prepared in the objectives tested by this question.

Question 8

The intent of this question was to test candidates' knowledge of the characteristic of the Barbados Blackbelly sheep which contributed to its importance as an animal breed in the Caribbean.

Performance on this question was average.

Most candidates were able to correctly list characteristics of the Barbados Blackbelly sheep with docility, hardiness and adaptation to local climatic conditions among the most popular correct responses.

In Part (b) of the question correct responses included the prevention of entry of exotic diseases and pests by examining the material for the presence of pests and diseases. Incorrect responses to this section included protecting animals from predators, checking for acclimatization of new breeds and for male animals to breed in peace.

Some candidates saw the superior breeding ram providing protection for the females from other rams, and that the farmer would save money since he would not need Artificial Insemination. Expected answers included: hybrid vigour, more prolific, increased production, upgrade of local herd.

This question again showed that students should be familiar with the fundamentals of science, for the previous question which dealt with the fundamentals of genetics was poorly answered, whereas its application on a farm situation was better understood.

Question 9

This question tested candidates' knowledge of the structure of the ruminant stomach and the functions of the rumen.

The performance on this question was fair.

Most candidates scored marks in Parts (a) and (c) by correctly identifying the parts on the diagram and naming two other ruminant animals

In some cases it was clear that candidates were not familiar with the diagram and thus parts were named as appendix, hepatic portal vein, cloaca and proventriculus.

Question 10

The practice of "culling" in animal production was tested by this question.

Some candidates were able to correctly state that culling is the removal of animals from the breeding or production herd or flock. However, candidates who did not have the knowledge required to give a correct answer made wild guesses, which included cutting of the tail of the animal, removing excess hair from the animal and removing the animal's horn.

Those who knew what culling was were able to correctly list reasons why culling is done. Expected responses included preventing the spread of disease, increasing the average production per animal, with the overall goal of increasing profits.

Some candidates had difficulty with the concept that the farmer could gain an income from the culled animals, although many of them correctly stated that culled animals could be slaughtered and the meat sold, and that they could be sold for their hides (skin).

Question 11

This question tested candidates' knowledge of the causative agent of mastitis in cattle, how the farmer can detect its presence in the herd and how the spread of the disease could be prevented.

Performance on the question was not satisfactory with most candidates scoring much less than fifty percent of the marks.

Many candidates correctly identified the causal agent as a bacterium and correctly described the strip-cup test as a means of confirming that the disease was present. Less popular correct responses focused on the increase in temperature of the udder, and hardness and swelling of the udder. The California Milking Test and the Milk Quality Test were also expected answers.

Candidates experienced the greatest difficulty in Part (c) where they were required to identify ways in which a farmer could prevent the spread of mastitis. Expected responses included the practice of good sanitation, washing the udder, milking infected cow last and milking infected quarter last. Popular incorrect answers to this part required that the farmer test the faeces and examine the animal's blood for the organism. Vaccination as a means of control of mastitis was also proposed.

Question 12

This question was based on the Machinery aspect of the syllabus. The question was poorly answered.

The part of the question which presented the greatest difficulty to candidates was Part (b) which asked for two ways in which power is lost from an engine. Some candidates correctly focused on problems in the cooling, exhaust and lubrication systems. Other expected responses included faulty transmission and inadequate servicing.

Teachers are encouraged to pay more attention to this aspect of the syllabus as newer and smaller items of machinery are made available to farmers, and understanding the machines and performing self maintenance would be a great cost-cutting device.

Question 13

Candidates' knowledge of using the tractor and ploughs for land preparation, and the safety measures to be employed when using a farm tractor were tested in this question.

The performance on this question was below average with many candidates scoring between 2 and 4 marks.

Many students could not state that PTO meant Power Take-off.

Most candidates could name two plough types apart from the rotary plough. The safety precautions to be observed when using a tractor for land preparation were also well known. Many candidates provided expected answers such as avoiding sharp turns when operating, ensuring that the PTO is disengaged when not in use, ensuring that the gear is in neutral when starting.

Question **14**

This question tested candidates' knowledge of marketing cooperatives. This question was not well answered with many candidates obtaining between 0 – 3 marks.

Many candidates gave an adequate explanation of what an agricultural marketing cooperative is. However, a few thought that it was a place where people go and sell their goods in the market.

Part (b) proved the most challenging as many candidates could not correctly state the benefits farmers get from membership in a marketing cooperative. Expected responses included farmers benefiting from economies of scale, access to technical and financial services from other institutions. Too many candidates felt that the farmer could obtain loans from the marketing cooperative.

Part (c) was well answered, with many candidates correctly stating common problems faced by marketing cooperatives, identifying dishonesty among members , members not playing an active role and the infusion of politics in the business, as the major obstacles.

Question 15

This question was intended to test candidates' knowledge of the factors involved in production, avenues available to farmers for obtaining capital, and calculating straight line depreciation.

Performance on this question was fair.

Most candidates were able to list land, labour, capital and management as the factors involved in production, with land and labour being the two most commonly mentioned.

Some candidates could not correctly identify sources of capital for farmers as from the farmer's own savings, commercial and agricultural development banks and credit unions. Some expressed the misconception that farmers could obtain money from the Ministry of Agriculture.

Most candidates did not have a clue on the formula to calculate depreciation, or what is meant by salvage value. As depreciation is one of the most fundamental aspects of economics one would have to assume that poor response stemmed from the question coming as the last question of a long examination, rather than a lack of knowledge by the candidates.

PAPER 03 – Extended Response

Candidates were required to respond to seven of ten essay-type questions based on three of the four profiles of the syllabus. The profile, Agricultural Mechanization, is not tested in this paper.

Detailed comments on candidate performance in this paper follow.

Question 1

This question sought to ascertain candidates' knowledge of seasonal water management strategies, and seedling production practices. This was the most popular question in this paper. The question was fairly well answered. Many candidates obtained more than fifty percent of the marks, with a few candidates obtaining full marks in this question.

Many candidates correctly identified irrigation, mulching, and planting on flat beds as acceptable water management strategies for vegetable crop production in the dry season, whereas in the wet season suitable strategies include construction of proper drainage systems, formation of ridges and furrows, planting on mounds and raised beds. Quite a number of candidates erroneously suggested mulching in the wet season as a water management strategy.

Part (b) provided the greatest challenge with too many candidates seeming to think that seedlings wilted due to a loss of nutrients during transplanting. Good responses in this section included: root damage; seedlings not having been hardened and pest damage.

Many candidates focused on soil conditions such as inadequate drainage and irrigation.

Expected answers for Part (c) included carefully uprooting the seedling with soil around the root to avoid or minimize root damage; transplanting only well hardened seedlings, and reducing the transpiration rate of the newly transplanted seedlings by removing some of the leaves. Some candidates seemed to think that application of fertilizer reduced the chances of wilting by newly transplanted seedlings.

Question 2

This question intended to test candidates' knowledge of the steps in land preparation to achieve high crop yields and to explain the importance of land preparation. Part (b) required candidates to list the steps in preparing virgin land and to explain how the steps listed contribute to favourable crop growth and development.

The question was the second most popular, and candidates' performance was just below average.

Part (a) was very well done with most candidates being able to correctly list at least three of the four factors, and many of them knowing the importance of the factors named.

Part (b) was poorly answered as candidates had no concept of virgin land, and many of them mentioned applying fertilizers, seeking capital and use of soil admendments.

Question 3

This question tested candidates' knowledge of the stages of plant growth, how these stages related to commercial food production and the advantages and disadvantages of intercropping.

Performance in this question was fair with many candidates obtaining more than fifty percent of the marks.

Part (a) was well done by most candidates, as they correctly identified the stages of plant growth as germination/ seedling, vegetative, reproductive and senescence.

Part (c) was the most challenging part of the question. Far too many candidates could not identify two advantages and two disadvantages of intercropping. Popular misconceptions were that intercropping caused a loss in soil fertility and required more skilled labour than other cropping systems.

Expected answers in terms of benefits of intercropping included increased soil fertility, spreading of risk, less chance of erosion, and legumes providing nitrogen for leaf crops.

Limitations candidates were expected to list included the difficulty in using machinery for harvesting due to different harvesting times of crops and difficulty in pest and disease control as different chemicals are required.

Question 4

In this question, candidates were required to relate the role of soil colour in determining soil fertility, and to identify green manures and their use in improving crop production.

This was not a high response questions, and the candidates who attempted the question performed poorly.

Most candidates were familiar with the positive aspects of a 'black' coloured soil, for example containing humus and organic matter. Very few, however, were able to discuss the negative effects of 'black' soils. This may be due to the fact that 'poor black soils' are only found in small pockets in a few of the islands. The main reason for 'black' soils in the Caribbean is the presence of stagnant water, and not oil spills or erosion as mentioned by a few candidates.

Part (b) was very well answered as most candidates knew of the concept of green manuring, that is, to plough a legume back into the soil to enrich the soil. Candidates could not identify legumes used as green manures, nor list advantages of green manuring over pen manure.

Question 5

This question focused on forages and grazing systems used in cattle production. The question was fairly well answered with many candidates obtaining more than fifty percent of the marks.

Part (a) provided little difficulty to candidates and most of them could correctly name three forages used in grazing systems for cattle and list advantages of using forage as a livestock feed. Expected answers for Part (a) (ii) included; readily digestible; cheap source of feed, readily available.

In Part (b) (i), some incorrect responses included: occasional grazing, shifting grazing, and mixed farming. Expected responses were rotational, zero and free grazing. In Part (b) (ii), most candidates who correctly named the grazing systems could list at least one advantage and disadvantage. It was noted that some candidates knew of the grazing systems but did not name them correctly.

Question 6

Candidates were required in Parts (a) and (b) to list reasons and procedures for cleaning and for not washing table eggs. In part (c), guidelines for the care and handling of hatching eggs were sought. Response to this question was slightly above average.

Almost all candidates knew that table eggs are cleaned to remove dirt and bacteria and to make eggs more attractive for sale. A few of them, however, stated that it was a good practice. Most candidates knew that using a damp cloth with disinfectant is the proper procedure, and that eggs should not be washed.

Part (c) of the question was the most troublesome, as most candidates had no idea of guidelines in the care and handling of hatching eggs. Although many candidates knew that temperature and humidity were important when handling hatching eggs, few knew the correct conditions under which hatching eggs are kept.

Question 7

In this question candidates were required to trace and describe the journey of swill through a pig's digestive tract, naming the parts of the tract, and the processes that take place in each part. Responses were above average.

Most candidates were able to identify some parts of the digestive tract of the pig, with some being able to separate the small intestines into the duodenum, jejunum and ileum, and the large intestines into the cecum and colon. A few candidates mistakenly named the parts of a ruminant animal – rumen, reticulum, omasum.

Confusion arose in describing the processes, for many of the candidates were able to describe the processes but ascribed them to the wrong part, for example, many stated that absorption took place in the stomach.

Question 8

This question was intended to test the candidates' understanding of the problems associated with the marketing of seasonal orchard crops, and the strategies that can be implemented to improve and maximize the returns from the marketing of these crops. The question was poorly done.

Many candidates were able to identify the need for seasonal labour, seasonal income and off-season expenditure as major problems. A few however mentioned low income,and pest and diseases as marketing problems. Some candidates associated seasonal with climate/weather, stating that irrigation may help with off-season production.

Candidates were aware of strategies to maximize returns including processing, preservation of fruit, securing new markets and efficient distribution network. In this section, some candidates also showed that they did not understand the nature of orchard crops, as they stated – plant in phases so that harvesting could be done at different times of the year.

Candidates were aware of advertising, pricing and assembling strategies, but very few were familiar with market research.

Question 9

The benefits of keeping farm records, the components of an inventory of farm machinery and equipment and the application of a straight line method of depreciation were required of candidates in this question. The responses were poor.

Part (a) was very well done, with many candidates being able to list some benefits, for example, obtain useful information for farm planning and budgeting, assess the viability of an enterprise, facilitates loan applications. Others, however erroneously listed types of records rather than listing benefits or listed events one would record in a farm diary or journal as a record.

Candidates knew the important components of an inventory – date, number in stock, date taken from stores, date returned to stores. Some however stuck to financial aspects – initial cost, depreciation, receipt number – these are accounting and not inventory records.

Depreciation proved to be difficult for many candidates. Many stated how it worked but wrote a wrong formula. Others wrote the right formula with the right figures but were wrong in their calculations. Students need to understand the formula for depreciation and more importantly how to apply the formula, that is, the basic mathematical operations.

Question 10

This question examined the candidates' understanding of the necessity for a partial budget, ability to identify and calculate fixed cost, variable cost and net profit, and finally to identify the differences between a whole farm budget and a cash flow budget. The question was poorly done.

Candidates were familiar with the reasons for a partial budget – to increase the size of the operation, to substitute one input for another or to substitute one enterprise for another. Some candidates mistakenly listed – to show a profit or loss, to show income and expenses – as reasons.

Part (b) was poorly done as most candidates could not differentiate between fixed cost and variable cost, many listing taxes and insurance as variable cost, and repairs as fixed cost. As a result many got the correct answer for the calculation, but those who gave the formula were given credit.

PAPER 04 – Practical Paper

This paper, a supporting element of Paper 05, the School-Based Assessment, is a substitute for a hands-on practical examination, and aims to assess the candidates' ability in the field/farm.

It attempts to transport actual and/or simulated agricultural field/farm situations into the examination room, and then requires the candidates to answer a given question on each.

Ten stations are set up, and candidates are required to answer questions at each station. The paper carries a total of 30 marks, and Agricultural Economics is not tested in this paper.

Performance in the paper showed that there was inadequate exposure to field activities in many cases. It was obvious that candidates could not recognize the different types of planting materials used in food and root crops, nor were they familiar with the preparation of planting material other than seeds. Although the candidates were familiar with common grasses, legumes and weeds, botanical names posed a problem. Questions with a laboratory component were well answered.

Question 1

Candidates were asked to calculate the amount of water retained by 2 different soil types, and to account for the difference in water retention. The question was fairly well done.

The responses showed that candidates were familiar with the content area of the syllabus, for candidates knew that soils with a higher percent of clay had smaller pore spaces and retained more water than soils with a higher percent of sand. Some candidates merely repeated the question by stating that one soil drained faster than the other.

Question 2

This question tested candidates' knowledge of food crops -vegetative propagation, identification of food nutrients with simple tests to confirm the nutrient identified and features of postharvest life of the crops. The question was poorly done.

The specimen provided was cassava, and many candidates did not know how cassava is propagated. In order to avoid penalizing candidates, if the answer to identifying the crop was wrong, but the correct method of propagation was named in (b) candidates were credited. This did not happen too often. Candidates did not identify starch/carbohydrate as the main food nutrient of root crops, many of them naming proteins, minerals, vitamins or iron. Those who identified the nutrient correctly also knew that the iodine test was used to detect its presence. Candidates were not familiar with the concept of postharvest life of crops, and one would assume that this is a neglected part of the syllabus.

Question 3

Candidates were exposed to a short stem of the sugar cane plant with the 'eyes' (buds) on the nodes removed, and were required to give the botanical name of the plant together with its family. They were also asked to comment on its suitability for use in propagation, and its usefulness as a livestock feed. The response was just below average.

Many candidates knew sugarcane is a member of the grass family, and a fair number had the botanical name correct *Saccharium officcinarum*, but apparently due to examination pressure the stalk was not examined properly, and only a few were able to notice that the buds were missing. A significant number of candidates were familiar with the uses of sugarcane as a livestock feed, correctly recognizing the cane tops, molasses. comfith, sugar, chopping, and grinding as material/method in which sugarcane is used in livestock feeding.

Question 4

In this question, candidates were required to identify a common weed of the Caribbean, both by its common and botanical names, to describe its means of spreading and to state two methods of prevention/control. The question was reasonably well done.

Many candidates recognized nut grass, but only a few recalled its scientific name – *Cyperus rotundus*. A few, however, thought that it was a pasture grass naming elephant, pangola, and para grass. Students should be taught the difference between sedges and grasses by an examination of the stems. Its method of spread was fairly well known, but some candidates mentioned 'pollen' when they meant seeds. Methods of eradication/ control were also well known with candidates appreciating the need for removal or destruction of the stolons for complete control.

Question 5

Candidates were required to distinguish between three types of banana suckers and to identify the one that would be best as planting material. They were then asked to explain how it is prepared for planting. This question was very poorly done.

This question was a clear indication of the lack of practical knowledge, as many candidates did not identify the different types of banana suckers presented. Some candidates even identified the water sucker as sugarcane or dasheen. Candidates were obviously never exposed to the suckers. In the final part of the question, instead of preparing the material for planting by cleaning off dead material and treating with a chemical, candidates described 'how the material is planted' describing land preparation methods..

Question 6

Candidates were presented with samples of a weedicide, iron supplement, copper sulphate solution, bleach, vermicide and oyster shells and were asked to identify the primary use of each. The question was well done.

Almost all of the candidates were correctly able to link the weedicide, copper sulphate and oyster shells to their correct function. Many of them, however, were unable to identify the use of the vermicide, and instead of its use as for the treatment of intestinal worms, stated that it could be used to control weeds or in the treatment of anaemia.

Question 7

Candidates were shown a picture of eggs in an incubator, and questioned on its use, suitability over brooding hens, days to hatching, suitable temperature and criteria used for hatching egg selection. Response was below average.

Candidates had little difficulty with the first part of the question, correctly stating advantages of using an incubator – less costly, more eggs can be incubated at the same time and better control of hatching conditions. A common incorrect response was that eggs hatched faster. Many candidates did not know that incubation period for eggs (18-21 days), the temperature range (37 -39^{0}C) nor the process of candling to determine if eggs were fertile. Criteria for selecting hatching eggs also posed problems for candidates. Many candidates chose colour, grading or cleaning eggs as a criteria for selection of hatching eggs rather than looking for cracks, well shaped eggs, fertile eggs, length of storage among others.

Question 8

Candidates were presented with drawings of ectoparasites of livestock (lice and ticks). They were required to identify the parasite, name its host, and suggest methods of control. Response was below average.

Identification of the parasites was simple for a significant number of candidates. Many of them however were unable to link the parasite with the infested animal; rather than confining the lice with poultry they were associated with ruminants and the larger animals. Similarly the ticks were associated with the wrong animals. Correct control practices were listed – dusting, spraying, dipping, good sanitation and rotational grazing. A few candidates wrongly mentioned hand picking, or the use of internal medications.

Question 9

Samples of forage grasses (pangola or bermuda and elephant) were on display, and candidates had to name the one most suitable for grazing, and for cutting. They were then required to list the benefits of chopping material before being fed to animals, and to list a forage legume. The question was well done.

Candidates were able to distinguish between grazing (pangola, bermuda) and soiling (elephant) grasses, and to correctly state that forages are chopped before feeding to reduce wastage, to increase intake and digestibility. Candidates were not able to identify forage legumes, however, listing lettuce, corn, edoe or cabbage instead of kudzu, centrosema, giliricidia, albizia or leucaena.

Question 10

This question required the candidates to identify the effort, load and fulcrum of a wheelbarrow, name the type of machine and to identify two simple machines. The question was reasonably well answered.

Although many candidates were able to correctly identify the load, fulcrum and effort, others simply engaged in guess work. Few candidates recognized the type of machine as a lever, calling it a wedge, pulley, hammer or plough. A few candidates listed other types of simple machines, for example, pulley, screw, wedge and axle. Most of them listed farm machinery as simple machines.

PAPER 05 – School-Based Assessment

The School-Based Assessment (SBA) is the practical component of the programme. It accounts for 25 per cent of the total marks of the examination, and a passing grade is a requirement for success

It consists of three elements, and these are performed by the candidates, at their schools and school farms, and assessed by their teachers in the field. The teachers assessment are moderated by a CXC moderator, and the final mark submitted by a prescribed date.

The three elements of the SBA are:

(i) Fifteen (15) practical agricultural skills

(ii) The preparation of 10 farm records

(iii) Diary entries of the practical activities engaged in, on the school farm.

Candidates' performance in the SBA was very satisfactory. These results suggest that many candidates cannot relate 'practical to theory'.

RECOMMENDATIONS

1. Agriculture is a science, and this must be foremost in the teachers' thinking when preparing students for the examination. Students must be exposed to and become familiar with botanical names and scientific concepts along with the local names.

2. Teachers should ensure that students engage in adequate, meaningful field activity together with careful guidance in the techniques of observation and to relate practical activities to theory.

3. During the learning/teaching exercise, there be more careful attention to specifics, and to relevant details.

4. There should be greater use of strategies that would ensure students understand ideas and concepts before attempting to memorize them.

5. Teachers should ensure that students receive adequate practice in identifying and responding to precisely what they are being asked in the questions before them.

6. Serious and continuous effort should be made to assist students in improving their communication skills.

7. Every effort should be made to ensure full coverage of the syllabus by both teachers and students.