

EXAMINATIONS AND ASSESSMENT CHIEF DIRECTORATE

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2019 NSC CHIEF MARKER'S REPORT

SUBJECT:	AGRICULTURAL SCIENCES
PAPER:	2
DURATION OF PAPER:	2HRS 30 MINUTES
DATES OF MARKING:	01 – 14 DECEMBER 2019

SECTION 1: (General overview of Learner Performance in the question paper as a whole)

OVERVIEW OF LEARNERS PERFORMANCE IN PAPER 2

General Comments

(a) Generally the performance of the 2019 Agricultural Sciences candidates in paper 2 was better than of previous years. This awesome performance is a clear indication of a significant improvement by candidates on the understanding of basic agricultural knowledge of concepts which are the prerequisite for higher level of thinking.

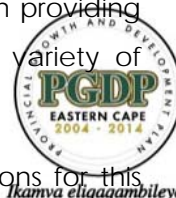
(b) Question 1.2 was the best-answered question in paper 2. Weaker and average candidates were familiar with the basic terminology as a result they got all the matching exceptionally correct.

(c) In most cases, candidates seem to perform well in sub questions requiring short answers, but struggled in questions demanding extended responses where answers have to be further substantiated. This may be due to lack of substantive preparation and less practical application opportunity through class revision tests.

(d) Generally, candidates were struggling in expressing themselves using the agricultural terminology and language of the subject resulted in candidates generalizing their answers and repeating themselves unknowingly failing to outline the more complex aspects, the subject concepts.

(e) Data response questions and interpretation of graphs, tables, illustrations, pictures and flow diagrams are still challenging to most learners. Teachers play a crucial role in providing learners with the opportunity to practice with and be able to respond to a variety of questions that demand different levels of thinking.

(f) Candidates seemed to be more prepared for a challenging genetics questions for this examination. There was an encouraging significant improvement in genetics as compared to previous years where most learners were getting zeros and some leaving the question for



genetics not engaged. However, one skill that separates the successful from the less able candidates is the ability to focus specifically on the information that is relevant to answer each sub-question, and to use time effectively.

SECTION 2: Comment on candidates' performance in individual questions

(It is expected that a comment will be provided for each question on a separate sheet).

QUESTION 1: SHORT QUESTIONS (AGRICULTURAL MANAGEMENT AND GENETICS)
(a) General comment on the performance of learners in the specific question. Was the question well answered or poorly answered?
<p>(SECTION A) QUESTION 1 Short Questions</p> <p>This question was generally well performed by most candidates. This performance could be attributed to the understanding of basic knowledge of agricultural concepts and continuous exposure to these terms through informal and formal tasks. This is a positive indication that teachers are beginning to implement the strategies outlined in Chief Markers and internal Moderators' diagnostic reports.</p> <p>Common errors and misconceptions in question 1</p> <p>(a) In Qn 1.1.6 Most Candidates failed to give the correct production capital in dairy enterprise as they associated dairy enterprise with milking machine as a production capital instead of Silage.</p> <p>(b) High order multiple choice question of combination of various options (Qn 1.1.9) was very challenging to most candidates.</p> <p>(c) In question 1.3 candidates had to give an agricultural term for a given concept description. Overall, the performance was fair though candidates were having some common errors and spelling problems. In Qn 1.3.2 some candidates were writing business plan or strategic planning instead of planning. Another common error was found in question 1.3.4 and 1.3.5 where candidates failed to differentiate between polygenic inheritance and multiple alleles and GM and GMO respectively.</p> <p>(d) In Qn1.4 the major misconception was on differentiating between entrepreneur and entrepreneurship in question 1.4.1.</p> <p>(e) Candidates further lost one mark in question 1.4.2 as they were writing less-capitalization instead of under capitalization.</p> <p>(f) In Qn 1.4.5 most candidates failed to correctly differentiate between heritability and heredity. There should be much emphasis when teaching concepts that appear to have the similar meaning.</p> <p>Suggestions for improvement</p> <p>(a) Basic Knowledge of the subject terminology remains very important and is the main determinant of candidate's performance. Candidates should be explicitly taught the subject terminology to ensure that they are well acquainted with essential subject terminology.</p> <p>(b) Assessment of terminology could be made interesting for learners through the introduction of speed tests on crossword puzzles, matching items, one-word answers and multiple-choice</p>

items that can be incorporated into daily teaching.

(c) Learners should also be encouraged by their teachers to prepare a terminology bank for each topic and be encouraged to know the importance of concepts in mastering the subject.

(d) Short Terminology tests at regular intervals are advised

QUESTION 2: AGRICULTURAL MANAGEMENT AND MARKETING

In general, this question was fairly answered by most candidates. Candidates with developed skills of interpreting questions and apply concepts were able to score 30-35 in question 2. The question was demanding direct understanding of agricultural management and marketing content as outlined by CAPS. Weaker candidates were also able to articulate the question using diverse explanations trying to explain the concepts. Learners could have maximised on this question but due to the common errors and misconceptions outlined below they could not take maximum advantage of this question to score more marks.

Common errors and misconceptions

(a) Qn 2.1.1 This question was very direct, demanding candidates to give reasons for drawing up a business plan but some candidates were giving too generic responses to this question showing deficiencies in Agriculture Economics vocabularies to express their subject knowledge. For instance, few candidates were able to explain well the concept of testing the feasibility and economic viability of the business ending up writing income and expenditure. Some candidates could not differentiate between reasons of drawing up a business plan and problems in drawing up a business plan.

(b) In Qn 2.1.2 very few candidates were able to interpret the question to know that the question was requesting of the 4 Ps of marketing, common responses were 'market research and environment'.

(c) In the graph (Qn 2.3.1) many candidates did not score all 6 marks as some omitted the units and majority failed to calibrate the Y axis.

(d) Many candidates could not understand the trend analysis between supply and demand of sugarcane within the given time frame in Qn 2.3.2 instead they explained the law of demand and supply in response to price.

(e) In question 2.4 weaker learners were not able to derive the entrepreneurial phases from the flow chart with various descriptions. Learners ended up

(f) In Qn 2.5.1b Most candidates assumed that the question was requesting for a cool place therefore they wrote cooling facilities like fridge, refrigerators and cold rooms instead of storage.

(g) Question 2.6.1a candidates related selling spinach from the farm with fresh produce

market instead of farm-gate marketing.

(h) Qn 2.6.2 weaker candidates wrote advantages of free marketing instead of disadvantages.

(i) A number of learners could not distinguish between demand curve and supply curve.

(j) Candidates could not differentiate between equilibrium price and equilibrium point in

Qn 2.7.2.

(k) Candidates could not state factors that affect demand instead they repeated price that was already mentioned in the question paper and some also gave the factors that affect supply.

Suggestions for improvement

Provide suggestions for improvement in relation to Teaching and Learning

- a) Teachers should expose learners to different text books for diagrams and use flow diagrams, tables and scenarios during assessment. Teachers should also expose learners to all types of questions that need an application and instructional questions.
- b) Learners need to be given frequent assessment on data response questions, e.g. scenarios and tables. They should also be taught to translate information from tables and graphs into words.
- c) Learners should also be drilled on the skill of drawing graphs especially calibration and how they can get all marks.
- d) Various assessments given to learners should be thoroughly reinforced with evenly distributed cognitive levels to equip candidates with all skills of articulating various questions so that they will not get some surprises only in exams.
- e) Various teaching aids like Video, TV and radio channels, Telematics and farmer's weekly magazines would be very effective to the fourth industrial generation.
- f) As a starter because not all our schools are agricultural schools, it is important to have a school garden for the learners to improve their interest in the subject. Excursions also improve the learners' exposure to the practical application the theoretical concept.
- g) Team teaching also helps in sharing various teaching styles and skills.
- h) The use of examination guidelines and diagnostic report is very crucial as it guides candidates on areas which they should concentrate on when revising and also diagnostic report help learners not to repeat the same errors year after year.

Recommendations:

The criteria in marking graph should be adjusted to benefit candidates like a mark on accuracy should not only awarded after the learner has obtained all correct but be redirected to the correct calibration and actual plotting of the graph.

QUESTION 3: PRODUCTION FACTORS

Performance in this question was slightly fair as compared to question four also with some instances of exceptionally good answering of some sub-questions. The performance could be attributed to the improved ability of candidates to critically analyse and interpret questions derived from scenarios and pictures that correlates to the application of subject content. Even though the question was fairly answered by most candidates there were some major misconceptions that caused learners not to score all marks.

Common errors and misconceptions.

- a) Candidates experienced difficulty in interpreting the graph in question 3.1 to deduce the production factor that was represented by financial management capability and also in comparing the skills of the farm worker with those of a farmer. In Qn 3.1.3 candidates ended up comparing the skill C and skill D instead of relating them to the farm worker and the farmer.
- b) In Qn 3.2.1, it was clear that learners lacked knowledge of an income statement as they thought the financial document illustrated in the table was a cash flow.
- c) In Qn 3.2.2 a number of candidates lacked the necessary insight to differentiate between fixed cost and variable cost as they failed to identify the examples of each from the given table. Instead they end up guessing and mixing the two.
- d) In Qn 3.3.2 some candidates tried to use a formula from financial mathematics to calculate interest that the farmer will pay back but they were getting it wrong.
- e) Candidates who failed to calculate net income correctly in Qn 3.3.3 further on gave a wrong comment whether the enterprise was sustainable or not because their response was based on the answer from the calculation.
- f) Question 3.4.2 also posed a challenge to candidates as they ended up giving similarities of casual and seasonal farm workers instead of differentiating the two.

Suggestions for improvement

- a) Teachers are once again advised to regularly expose learners to data response questions in their assessment as these types of questions will encourage learners to be creative in thinking of valid responses. However, teachers must learners aware that their responses must be valid, bases on fact, and, in line with the requirements of the question.
- b) Teachers should focus on all aspects of content as listed in both the CAPS and the Examination Guidelines for Agricultural Sciences. Furthermore, teachers should encourage learners to also be updated with current issues that affect agricultural sector.

Question 4 Basic Agricultural Genetics

There is an improved performance in Qn4 as compared to previous years. Looking at the rash question by question analysis for 2019, candidates' performance in genetics has significantly improved. Most learners used to leave genetics questions un-attempted and other candidates scoring zero out of 35. This positive performance may be due to the role the subject advisors are doing in various schools to cover the up the content gap in the knowledge and understanding of basic genetics concepts.

Common errors and misconceptions

- a) In Qn 4.1.1 some candidates wrote allele B instead black as the dominant color.
- b) Question 4.1.2 Learners were able to justify their answers i.e. they understand dominant and recessive alleles even those who had written B in Qn 4.1.1
- c) The phrasing of question 4.2.1 cause some learners to write punnet square instead of dihybrid cross.
- d) Some candidates in Qn 4.2.3 only wrote green and rough as the possible phenotype of the F1 generation not aware that the question required the F2 phenotypes outlined in the punnet square.
- e) Question 4.3, learners confused variation with mutation, continuous and discontinuous instead of variation.
- f) In Question 4.3.2 most candidates gave only climatic factors ending up getting one mark.
- g) Types of selection in question 4.3.3 – learners were confusing types of selection with the methods of selection also learners.
- h) Question 4.5, learners failed to get full marks for punnet square, only one set of gametes were correct, even genotypes were incorrect and some learners drew dihybrid cross failing to separate the gametes (AA and Aa).
- i) In question 4.5, Learners were confusing a punnet square with a pearson square. Educators should clearly distinguish the two during their revision by giving more work to practice on punnet square, also educators should make learners aware of the topics falling on each of the two papers (paper 1 and 2) as early as beginning of the year and be reminded each term.
- j) Weaker learners find it difficult to calculate the percentage of the offsprings that were yellow and smooth in question 4.2.4 Furthermore majority of learners could not interpret the meaning of additive genes ended up failing to calculate the height of the highest plant in Qn 4.6.2.

Suggestions for improvement

- a) The Subject should be also be incorporated in e-learning programs like telematics and SABC TV programs which helps learners to have a clear understanding of Agricultural genetics.
- b) Teachers should in their teaching, pay special attention to basic crossing, genetic concepts and terminology.
- c) Emphasis should be given to the pattern of inheritance that leads to different genotypes: incomplete dominance, co-dominance, complete dominance, multiple alleles, polygenic inheritance and epistasis.
- d) The teaching of genetics should be enhanced by providing practical examples within the learning site, such as plants, flowers and animals.

(b) Provide suggestions for improvement in relation to Teaching and Learning

More exercises should be given on concepts and scenario analysis. Use of exam guidelines is important for teaching. Markers should report on their clusters on the problematic areas of the question paper. Teachers should guide the learners on how to process data in all forms (tables, graphs, calculations, scenarios or case studies). They should relate this data to the content that they have been taught even before they work on the questions set before them.

(d) Describe any other specific observations relating to responses of learners and comments that are useful to teachers, subject advisors, teacher development etc.

Educator seem to spot when teaching leaving some areas of the content unattended, this cause learners to answer some questions using general knowledge rather than applying subject concepts. In cases where some educators are having content gape in some topics, it is highly recommended that they must twin with experienced and highly performing teachers to share various skills.

Teachers should use in cooperate the use of current technology when presenting their lessons. Teachers are advised to promote reading and analysis of text and discourage memorization without understanding the concept. Teachers should focus on all aspects of the content that are listed in the CAPS document and Examination guidelines. Developmental content workshop is required quarterly to equip teachers. Subject advisors should be visible in schools to track and monitor the content average.