

**ASSESSMENT AND EXAMINATIONS DIRECTORATE**

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## **NSC 2015 CHIEF MARKER'S REPORT**

<b>SUBJECT</b>	<b>AGRICULTURAL SCIENCES</b>
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<b>PAPER</b>	<b>2</b>
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<b>DATE OF EXAMINATION:</b>	<b>23 NOVEMBER 2015</b>	<b>DURATION:</b>	<b>2½ HOURS</b>
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This section of the instrument is aimed at providing valuable feedback to schools, subject advisors, teachers and learners about common errors committed by candidates in the answering of questions, to assist teachers and subject advisors to identify areas that need to be given special attention in the teaching and learning of the subject in 2016.

Your responses will be based on two parts:

**Section 1:** General overview of Learner performance in the question paper as a whole.

**Section 2:** Comment on candidates' performance on individual questions (Detailed explanations must be provided **per question** as follows: (You may include sub questions where necessary))

- General comment on the performance of learners in the specific question. Was the question well answered or poorly answered?
- Why the question was poorly answered?
- Provide suggestion for improvement in relation to teaching and learning.
- Describe any other specific observations relating to responses of learners.
- Any other comments useful to teachers, subject advisors, teacher development.

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

(a) Generally, the performance of candidates in this paper is lower than that of previous years. Learner performance in all questions was poor as compared to last year.
(b) Question 1 (Section A) was a fairly answered question in Paper 2. Most candidates performed well with few cases of exceptionally good work, weaker candidates revealed a lack of understanding of content terminology in agricultural management and basic genetics.
(c) Section B. In most cases, candidates performed poorly in data response questions. They struggled with interpretation of illustrations, tables, photographs, graphs and scenarios. Learners performed poorly in calculations and this may be attributed to candidates' unfamiliarity with formulae.
(d) Because of the nature of the paper, a significant amount of reading was required , this was a challenge for many candidates.
(e) Candidates writing the examination in a language other than their home language experienced difficulty in interpreting questions and they also found it challenging to correctly phrase their responses.
<b>General suggestions for improvement.</b>
(a) Teachers are advised to do more than minimum number of SBA tasks that comprise the formal requirement, because the learners require additional practice in answering lengthy questions.
(b) Learners should be exposed to reading external articles where the different terms and concepts are used in real life situation and the context in which they are used will help them to expand their understanding of the subject as well as their vocabulary and ability to apply such information in any of the assessments that could be given to them.
(c) Subject terminology is vital and needs to be taught, assessed and revised as often as possible. Genetic modification is a new topic to which teachers require great exposure. Subject advisors should address this need through content gap workshops and expose learners to tasks that require them to read and summarise various texts on it.

## 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).

<b>QUESTION 1</b>
<b>(a) General comment on the performance of learners in the specific question. Was the question well answered or poorly answered?</b>
Question 1 was fairly answered by most learners as they averagely scored between 15 and 20 marks out of 45 marks.
<b>Why the question was poorly answered? Also provide specific examples, indicate common errors committed by learners in this question, and any misconceptions.</b>
<p>Average performance in Question 1 can be caused by a number of things, namely not enough content coverage by the teachers and learners, not effective good use of tuition/contact time, in effective drilling of learners in subject concepts and terminology.</p> <p>Reasons for the average performance in some questions are mainly caused by language barrier, and the inability of learners to understand some of the language of the subject.</p> <ul style="list-style-type: none"><li>➤ The law of diminishing returns graph in 1.1.6 has all got incorrect statements which resulted in difficulties for the learners to choose the correct answer.</li><li>➤ Learners mostly responded by H instead of C in 1.2.4 which means they cannot differentiate between family and pedigree selection.</li><li>➤ The management action required in 1.3.1 is "planning", learners could not distinguish it from a "business plan" which is a document to seek for the financial assistance when thinking of starting a business.</li><li>➤ In Question 1.3.3 learners confused concepts like cash flow, budget and income statement.</li><li>➤ In question 1.3.4 learners gave depreciation and inbreeding as answers instead of inbreeding depression.</li><li>➤ Question 1.3.5. Learners were giving homologous or homolozygous as answers instead of homozygosity/homozygous.</li></ul>

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

- It is clear that learners continue to struggle with terminology questions. Learners need to be tested informally on a regular basis on items from a glossary list to provide them with more exposure to terminology.
- Learners need to be exposed to similar types of questions in their formal SBA activities (tests and activities) as this will make them more comfortable with the expected format of the question.
- Prior to each topic learners should be introduced to concepts in that topic.
- Learners should develop their own terminology bank notebooks.
- Educators/ Subject Advisors should simplify terms/concepts for learners to grasp them easily.
- They must also include pictures, graphs, calculations, etc. in Question 1 so that learners are used in interpreting and analyzing them.

**(d) Describe any other specific observations relating to responses of learners**

- Most learners were unable to spell atavism, homozygosity and adaptability correctly.
- Most did not follow the instruction in 1.1 instead of writing a letter as instructed, they cross answers on that page 1 table which makes very difficult to mark them.
- There is evidence of inadequate tuition in some schools.

**(e) Any other comments useful to teachers, subject advisors, teacher development etc.**

- Concepts should be taught in the way they are assessed.
- Development of common assessment tasks that are up to standard of national papers for practice recommended.
- Scientific approach must be used when teaching the subject and this must be emphasized in order to develop scientific skills to our learners.
- There is a great need for written daily tasks.
- It is evident that some teachers are teaching with only one textbook available at school which is not acceptable, teachers must use a variety of textbooks prescribed for the subject and make notes thereafter to supplement the missing content from the learners textbook.



## QUESTION 2

**(a) General comment on the performance of learners in the specific question. Was the question well answered or poorly answered?**

Candidates performed poorly in Question 2

- Question 2.1.1 – learners could not relate the picture given to the type of marketing depicted. Most of them wrote farm gate marketing.
- Question 2.1.2 – 2.1.5 was depended on the correct response of 2.1.1 and the learners who got 2.1.1 wrong struggled to answer these questions.
- Learners thought of the advantages in 2.1.4 related to producers not to consumers as a result the question was poorly answered.
- Question 2.2 in the table, learners could not relate the price, supply and demand as they are not used in relating three variables.
- Learners in Question 2.2.2 could not differentiate between the dependent and independent variables.
- Question 2.4 learners were mostly giving labour legislation instead of marketing legislation which shows that their teachers did not expose them to this content.
- On average learners got 2 marks out 8 in Question 2.5 as the answers in 2.5.2 depended on the correct response of 2.5.1

**(b) Why the question was poorly answered? Also provide specific examples, indicate common errors committed by learners in the question, and any misconceptions.**

- The learners couldn't interpret the picture as a result they gave farm gate marketing in 2.1.1 instead of free marketing.
- Question 2.1.2 learners gave advantages of the marketing channel to the producer and not to the consumer as asked e.g. most of them responded as 'sales are usually for cash' and so on which are referring to the producer.
- Learners could not see the relationship between the price, supply and demand instead they mostly gave the law of demand which is 'the higher the price, the lower the demand and vice versa.
- On average learners obtained 3 marks out of 6 in Question 2.2.2, graph plotting as they were unable to place the variables in their correct positions and some had difficulties in providing a caption for the graph.
- Question 2.3 was poorly performed as learners most gave steps of a business plan e.g. vision and mission, type of business to be done etc instead of the problems.



encountered when drawing it.

- It is most likely that market legislations in 2.4 are not taught in many schools as the learners were giving labour legislations instead. Most learners got 0 out of 4 marks.
- The high incidence of poor performance in this question may be attributed to inadequate preparation of material related to this question.

### **Provide suggestions for improvement in relation to Teaching and Learning.**

- Teachers are encouraged to give learners all possible tasks related to demand, supply and price graph, which must be plotted on the same set of axis.
- Teachers should guide learners on the use of past exam papers with emphasis being on concepts.
- Learners need to be aware of different methods that are used to ask questions.
- A clear instruction should be made to learners between marketing types, channels as well as their advantages and disadvantages.
- Teachers must use a variety of textbooks to supplement the learners book through note taking so as to cover sub topics e.g. 2.4 market legislations. Remember there might be topics that have not been covered in recent question papers, but they remain important content topics.
- Teachers should focus on all aspects of the content that are listed in the Examination Guidelines.

### **Any other comments useful to teachers, subject advisors, teacher development etc.**

- It seems some candidates were not adequately prepared for the content topics linked to this question, learners need to plan their studies well ahead of time as large volumes of content are also linked in this question.
- Teachers must make learners aware that their responses must be valid, based on facts and in line with requirement of the question.
- Graph papers should be used to train learners in drawing graphs accurately.
- Provide more activities on plotting, interpretation, heading and labeling of graph work.
- Teachers should guide the learners on how to process data in all forms (tables and graphs). Learners should relate this data to the content that they have been taught even before they work on the questions set on them.



### QUESTION 3

**(a) General comment on the performance of candidates in specific question. Was the question well answered or poorly answered?**

Performance in this question was fair, with the exception of Question 3.1.1, 3.1.4, 3.2.1, 3.3 and 3.4.2 where learners struggled.

**(b) Why the question was poorly answered? Also provide specific examples, indicate common errors committed by learners in this question, and any misconception.**

- Question 3.1.1 – learners struggled to relate the type of farm labour with a the photographs especially in B which is not clear as a result some did not see sheep shearing but castration.
- Learners did not understand the economic characteristics of land which might be the language barrier as they will be comfortable when they asked to list them.
- It was evident from the learners' response in Question 3.3 that the learners did not understand the scenario and failed to relate it with the content they have studied.
- Learners found it difficult to identify income and expenditure in 3.4.2 and the formula to be used in calculating was also a problem.

**(c) Provide suggestions for improvement in relation to teaching and learning.**

- Teachers should give different scenarios and photographs when dealing with production factors.
- The economic characteristics of land should be explained with relevant examples – real life examples.
- It is vital for learners to know the formula and steps to follow when doing calculations related to farm budgets such as net profit and gross margins.
- For Question 3.3, compulsory reading in classes should be enforced so as to prepare learners for the exams.
- Subject advisors should make use of workshops to strengthen the knowledge and skills of teachers on these topics and eradicate possible content gaps.
- Diagrams, scenarios and calculations need to be included in assessment tasks given to learners during the school year in order to expose them to activities that will improve their skills in answering these types of questions.



**(d) Describe any other specific observations related the response of learners.**

- Learners could not distinguish between fixed costs, variable costs and overheads in 3.4.1.
- The meaning of terms like assets, liabilities, income, sales, cost expenditure and net profit also proved challenging to learners.
- Challenges facing permanent labour also need to be emphasized when teaching.
- Some learners tend to twist the formula for calculating net income as expenditure – income/ net income = assets - liabilities in 3.4.2.

**(e) Any other comments useful to teachers, subject advisors, teacher development etc.**

- Team teaching especially with mathematics, economics, accounting, business studies and life science teachers could be very helpful.
- Ensure that learners master the concepts of each topic prior to lesson delivery.
- Learners must be able to see both positive and negative concepts that demand critical thinking skills, and must be able to match, compare and contrast statements.

**QUESTION 4**

**(a) General comment on the performance of learners in specific question. Was the question well answered or poorly answered?**

Candidates performed poorly in this question, particularly Questions 4.2 (breeding system), 4.3 (heritability calculation) and 4.3 (genetic modification) which were poorly done.

**(b) Why the question was poorly answered, also provide specific examples, indicate common errors committed by learners in this question, and any misconceptions.**

- Question 4.1.3 – learners wrote incomplete dominance or co- dominance which is evidence that terminology is still a problem in this topic.
- Question 4.1.5 – learners tend to give a Punnet square on dihybridism and mix the placement gametes
- Learners could not identify upgrading in 4.2.1 instead they gave cross breeding/inbreeding or line breeding as answers.
- Question 4.2.4 , most learners just gave the answer 87,5% without showing working.
- Calculation on EBV was generally a challenge to learners as most of them did not know the formula.
- Learners struggled to differentiate the yield on GM and non- GM in two perspectives instead they only gave the greenhouse difference in Question 4.4.1 and in 4.4.3 they confuse it with the advantages GMO.





- Learners gave social problems instead of specific environmental problems in 4.4.4

**(c) Provide suggestions for improvement in relation to Teaching and Learning.**

- More emphasis and clarity on type of dominance.
- Learners must attempt as many questions as possible on Punnet squares and be able to differentiate between monohybridism and dihybridism.
- Candidates must study well the FOUR breeding methods (inbreeding, line breeding, cross breeding and upgrading) in their syllabus and be able to differentiate as well as giving their advantages and disadvantages.
- Calculations on EBV must be thoroughly practiced by the learners using past exam papers and other sources.

**(d) Describe any other observations relating to the response of learners.**

- With questions involving calculations, it is evident that learners do not know the appropriate formulae.
- Question 4.1.5, candidates were given letters representing alleles as A and a, they ignored the instruction and used letters of their choice e.g. Dd
- Learners are twisting the male and female gametes in 4.1.5
- Some candidates gave soil factors 4.4.4. (sunlight, rainfall, bad weather etc) as environmental risks of genetically modified plants.

**(e) Any other comment useful to teachers, subject advisor, teacher development etc.**

- Identification of areas of weakness and coming up with strategies for improvement.
- Use of different textbooks by teachers.
- Teachers should attend Cluster/District meetings and workshops, especially on content gap bridging.
- Displaying posters in classroom as visual aids for example mono and dihybridism crossings, Punnet squares and some calculations.
- Tours to Agricultural Institutes and Colleges and well established farms by both learners and teachers can be considered.
- Encourage schools to purchase magazines with agricultural related issues, journals etc. for reading to broaden teachers and learners' scope in different issues in the subject.



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**NAME OF THE CHIEF MARKER:**

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**SIGNATURE**

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**DATE**

