

# Agricultural and Horticultural Science

2012 Chief Assessor's Report



Government  
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# **AGRICULTURAL AND HORTICULTURAL SCIENCE**

## **2012 CHIEF ASSESSOR'S REPORT**

### **OVERVIEW**

Chief Assessors' reports give an overview of how students performed in the school and external assessments in relation to the learning requirements, assessment design criteria, and performance standards set out in the relevant subject outline. They provide information and advice regarding the assessment types, the application of the performance standards in school and external assessments, the quality of student performance, and any relevant statistical information.

### **GENERAL COMMENTS**

Overall, the standard of student work seen by markers and moderators this year was at a level higher than in previous years. While the student cohort undertaking the subject has unfortunately remained small, the presented work continues to provide examples of excellence, and demonstrates the enthusiasm of both teachers and students for the subject.

### **SCHOOL ASSESSMENT**

#### **Assessment Type 1: Investigation**

Most investigations this year were well developed and suitably carried out, and corresponding reports were quite well structured, demonstrating students' ability to identify appropriately significance to an agricultural or horticultural scientific question, issue, or practice. Topics were varied and reflected the breadth of student interests and available resources and options.

It was noted this year that a number of students put too much raw data into their reports, and then to minimise the effect of doing so on their word count, directed readers to appendices that contained the interpretation of the data. Teachers should check that students do not include large amounts of raw data in the body of the report but do include interpretation of all tables and figures. Students are reminded that all of their own words, including in the main report and appendix, count towards the word-limit. Moderators noted that students' referencing improved overall since 2011.

Teachers are reminded of the importance of a consistent interpretation and application of the performance standards. This year, some of the presented work included samples that clearly fitted the performance standards at a particular grade, while others in the same grade band did not. Teachers should be aware of the need to ensure that all student work presented at a particular grade level is of a comparable standard.

## Assessment Type 2: Skills and Applications Tasks

In most cases, the assessment tasks comprised four tests (one per exam topic) and either three or four practical tasks.

Tests mostly used past exam questions. While this is a useful strategy, as the past exam questions cover a wide range of topic key concepts and understanding, teachers are reminded to include not only questions that require a recall of knowledge, but also more challenging questions that require analysis and evaluation.

While some scaffolding of tasks may be necessary for clarity and to support certain students, tasks should also include opportunities for students to demonstrate higher levels of achievement wherever possible. Heavy use of scaffolding often leaves no scope for discrimination between students, particularly in practical activities. A student who correctly answers a series of short questions may not be able to attain the highest standards in some specific features that require more in-depth analysis and evaluation. Tables and graphs that have been partially constructed in the task sheet provide fewer opportunities for students to demonstrate their abilities to display results.

## EXTERNAL ASSESSMENT

### Assessment Type 3: Examination

This year, 54 candidates sat the examination. The overall standard was higher than in 2011, although a wide range of marks was awarded, as in past years.

Students are reminded to read and answer all parts of the questions with great care. This year, for example, when asked for an alternative method to the one stated in a question, some students listed or explained the stated method, and this could not be awarded any credit. Students also need to take care with terminology; for example, jetting and dipping are both chemical treatments of sheep, and not two different types of disease control.

### Part 1: Short-answer Questions

#### Question 1

Generally, students answered this question very well. Students were well aware of the anatomical features and functions of the digestive tract of a sheep.

#### Question 2

Students used the information provided to satisfactorily answer these questions about concentrated feeds and energy.

#### Question 3

Answers to this question produced the lowest marks in the examination. To respond successfully, students needed to display their understanding of rumen functions and the role of microbes in cellulose digestion. Very few students could correctly explain the benefits of bypass protein or identify a method to protect protein.

#### **Question 4**

Most students were able to distinguish satisfactorily between hormonal and nervous responses that occur in the milk letdown process.

#### **Question 5**

Students generally answered 5(a) well, although a number of responses would have benefited from greater detail on how to store semen. In responding to 5(b), many students did not answer all aspects of the question and so did not gain full marks.

#### **Question 6**

Most students were familiar with issues of quarantine and its importance to agriculture. This was the best answered question in the exam and most students gained full marks.

#### **Question 7**

Most students scored highly on this question, but it was noted that some students either did not read the question properly or did not respond to the instruction to describe two biosecurity methods *other than* quarantine.

#### **Question 8**

Students generally answered this question well.

#### **Question 9**

Most students correctly identified the invertebrate group to which sheep keds belong, but their descriptions of practices that farmers may use to minimise damage to flocks tended to be less accurate.

#### **Question 10**

Students were generally able to identify the micro-organism as a fungus in 10(a), but also needed to explain how damage caused to the plant leads to decreased agricultural production in 10(b). This part of the question required students to go beyond rote-learned answers to consider links between concepts.

#### **Question 11**

Most students were able to use the graph correctly in linking pH with available aluminium in the soil and lucerne yield.

#### **Question 12**

Students were generally able to read from the soil texture triangle and to justify issues relating to cation exchange capacity and soil texture.

#### **Question 13**

Responses to this question, which related to the nitrogen cycle, tended to be less successful. Students needed to interpret the diagram and, although most were able to name a bacterium in 13(b), few correctly explained or identified one of the two

steps in the decomposition process in 13(c). To answer well, students also needed to identify problems that may arise from fertiliser application in 13(d).

#### **Question 14**

To respond successfully to this question, students needed to structure their longer response effectively in part 14(b), covering all the required aspects and remembering the context of the question. Students are reminded to respond to the specific terms of the question.

#### **Question 15**

Students generally answered this question well.

#### **Question 16**

Most students demonstrated a good understanding of the leaf structures and processes. In 16(c), which required a longer response, some students did not answer aspects of the question. Teachers should encourage students to highlight all aspects of the question and to check that they have responded fully.

#### **Question 17**

Most students satisfactorily drew the dicotyledonous flower and six reproductive structures in 17(a)(i), but they did not always label the structures correctly. Students usually demonstrated a satisfactory knowledge of asexual reproductive processes and their role in the horticultural industries.

#### **Question 18**

Students averaged half marks for this question. Many correctly identified the function of the three identified macronutrients in 18(a), but few described common deficiency symptoms for one of these macronutrients in 18(b). It was noted that many students did not identify another plant macronutrient in 18(c), although the subject outline includes two others. Teachers may wish to reinforce this aspect of the plant science topic in their teaching and learning program.

### **Part 2: Extended-response Questions**

The quality of the responses to these questions has improved steadily over the past 3 years, for which students and teachers are to be commended.

Each extended-response question is marked out of 20, with 16 marks allocated for content and 4 marks for communication.

The following factors were taken into account in the communication marking:

- clarity and expression
- organisation and relevance
- correct use of Agricultural and Horticultural Science terminology.

Most students chose to answer Question 19, and these averaged slightly higher marks than the few students who answered Question 20. It was noted that a number

of students correctly itemised their responses as dot points (perhaps due to lack of time), gaining some marks for content.

### **Question 19**

Students who chose this question generally elaborated on each dot point and provided appropriate examples. It seems that the heavy media coverage of the Murray–Darling Basin in 2012 allowed students to focus their thoughts. Students generally considered appropriate possible effects of a reduction in water application on soil fauna, soil structure, and plant and livestock production.

The final dot point elicited the greatest range of answers; some creative responses strayed far from the content in the subject outline. Marks were awarded for answers that attempted to answer the question, when justified appropriately.

### **Question 20**

Students tended to provide inadequate detail when discussing intensive production systems. The first dot point seemed the most challenging for students, as it required them to go beyond the obvious in the first part of the question. Students provided some appropriate answers for the second, third, and fourth dot points. Most students correctly identified one mineral deficiency and one vitamin deficiency, though some did not link them into intensive production systems in the explanation part of their response. Most students satisfactorily explained and justified the sustainability or otherwise of intensive production systems.

## **OPERATIONAL ADVICE**

Teachers generally followed the requirements for moderation materials submission very well.

Teachers are reminded that, when a student has not completed one of the tasks identified on the approved learning and assessment plan, but has submitted another in its place, the change and its reason must be noted on the addendum.

A set of task sheets that clearly identifies the requirements of the task (and the specific features assessed) must be included with the moderation materials. If these sheets are attached to student work the moderation process is more efficient.

Agricultural and Horticultural Science  
Chief Assessor