2000 HSC Notes from the Examination Centre Agriculture

Agriculture

Introduction

The total number of candidates presenting for Agriculture in 2000 was 1657, of which 1419 presented for 2/3 Unit (Common) and 238 for 3 Unit.

In general, candidates showed sound knowledge and understanding of the interaction between the components parts of agriculture and the scientific principles that explain key agricultural processes.

In both the 2/3 Unit (Common) and 3 Unit papers students demonstrated skills in and knowledge of an adequate range of syllabus outcomes. The variety of question types and styles catered adequately for the full range of students.

2/3 Unit

Section I

Overall, candidates performed quite well in this section. Most candidates showed a sound and thorough understanding of their chosen farm product.

In this section there was an inadequate interpretation by some candidates of the key words in questions. Many candidates had difficulty in differentiating between *describe* and *explain*. Key words such as *how*, *why*, and *maybe* were often misinterpreted or ignored.

Mathematical and interpretive skills of relative simple graphs were poor. Some candidates were unable to carry out simple calculations even though calculators were not necessary.

The Product Study Question (Question 1) was generally well answered but it is much easier to answer questions relating to 'product specification' if there are specific (preferably statistical) pieces of information that can be given, for example, percentages (fat, oil, protein etc), weights, fat levels etc. Products where the specifications are more subjective, for example, colour, taste etc, are more difficult to describe and hence it is more difficult to gain high marks.

Section II

Most candidates did well in this section of the paper. The short-answer nature of the questions and the large variety of topics and syllabus outcomes that this section examined allowed the better candidates to clearly show what they knew and could do.

Candidates were required to attempt three out of the four questions in this section. This choice allowed students to select those questions that focused on the areas of the course in which they were well prepared.

In each of the four questions candidates showed that they could interpret the stimulus material, which included graphs, tables and graphics, very well. In general, they were able to describe trends, manipulate data and interpret information accurately.

Some specific content or topic areas in which most candidates showed they had a sound understanding included: net value of farm production, factors affecting stocking rates, the pasture-grazing interaction, factors affecting animal production and integrated pest management.

Those topics or areas of specific content that candidates did not generally perform well on included: interference in plant communities, herbicide resistance and feed conversion ratios. Well-prepared candidates gained very high marks in these areas.

Section III

Section III (percentage of candidates attempting each elective)
Q8 (Plant Production): 14%
Q9 (Animal Production): 28%
Q10 (Land Management): 58%

Candidates who were well prepared did very well in this section while less well-prepared candidates did very poorly. One particularly concerning aspect was the number of candidates who gained zero marks in the full page extended response section of the electives [Q8(d), Q9(c), Q10(d)]. This section was worth ten marks and many candidates were awarded very low marks (many did not attempt the question at all), particularly in the Plant Production Elective (Q8). Overall, this section of the Electives was poorly done.

The short answer parts of the electives were answered somewhat better, but again the standard was not high. Many candidates did not know the basics of the topics.

There were some candidates who knew the topics very well and they scored high marks and were in stark contrast to the majority of candidates.

Section IV

Section IV (percentage of candidates attempting each essay)

Question 11: 43 %
Question 12: 24%
Question 13: 25 %
Question 14:   8%

In these extended free-response questions, better candidates showed that they had a thorough understanding of the agricultural concepts being examined, including animal breeding systems, photosynthesis, chemical and physical characteristics of soil and societal pressures on agricultural production. They addressed each part of the question appropriately and used the indicative marks at the side of each question to help plan the available time to spend on each part. These candidates expressed themselves clearly and used headings and sub-headings to structure their responses. They used examples to illustrate their key points and support their argument.

Low scoring candidates did not focus on the key words, such as *describe*, *explain* and *discuss* in each question. They often responded only in broad and general terms and did not use examples to support their argument.

3 Unit

Section I

In this section most candidates could describe the benefits of scientific research to a particular agricultural industry. Better candidates gave an in-depth description that linked the benefits of specific research findings to the industry. They were able to discuss a real problem or controversial issue associated with this research and use examples to clarify their response.

Section II

The most popular options attempted by the candidates were:
1. Animal breeding and reproduction (67%)
3. Alternative agricultural systems (35%) and
9. Whole farm planning (35%).

In general, this section was not well attempted by candidates. Too many candidates attempted to answer these extended response questions in very general terms. Better candidates showed that they had a thorough grasp of the topics by addressing each of the components of the question using specific, factual information and suitable examples. These candidates planned and structured their responses well and expressed themselves clearly.

Research Project

The projects, again this year, covered a very wide variety of topics. While quantitative analysis remains the dominant project type many qualitative / survey projects were submitted.

In general, candidates who scored the highest marks related their research to an agricultural problem that was relevant to them. They posed a realistic, achievable and specific research question and then undertook suitable research methods and used appropriate data analysis to answer that question. Their research report was well presented and concise, falling within the 3000-5000 word limit. In the best reports no superfluous information was submitted. These candidates focused their attention on answering directly the question that they had posed.

This year a small number of candidates submitted projects that were clearly outside the rules set down by the Board of Studies. All reports must be the original work of the candidate.

Specific Comments

Literature Review

In most cases, the literature review was of a satisfactory standard. The best were concise, directly related to the research problem and discussed recent, relevant investigations. Many candidates simply summarised a number of reference books or journal articles that were vaguely related to the topic.

The purpose of the literature review is to outline the current state of knowledge about the problem. It should refer to previous research where this is available. Irrelevant and general information should be omitted. Citation of references used in the review of literature should be included in the bibliography.

Results

Higher scoring candidates presented concise, relevant and tabulated information or data. They drew graphs that were relevant, drawn to an appropriate scale, labeled clearly and referred to in the text of the report. Poorer candidates attempted to graph raw data. They did not calculate means from the replicates of their treatments.

Data Analysis

Many of the better candidates used appropriate statistical analysis of the data and explained why it was necessary and what it indicated about the results of their research. Statistical analysis of results was poorly handled in many projects. Again, this year, some candidates did not demonstrate a clear understanding of their statistical analysis or presented manipulated data with no explanation of how or why it was derived. Better candidates used only simple biometric techniques and displayed a good understanding of the findings of the analysis.

Aspects of Design

Most candidates demonstrated an understanding of randomisation, replication and standardisation and were able to apply these principles in their experimental design. Poorer candidates included too many variables in their design and this created problems in the subsequent presentation and analysis of results. The best projects had a simple and well-stated aim that was investigated using an appropriate research methodology and involved the measurement of only one or two variables.

Project Marking

General Comments

Marking is holistic and based around key criteria, which have been constructed from the syllabus outcomes. Good projects have the following characteristics:

- a consistent story line;

- component parts are clearly linked;

- the component parts achieve their purpose;

- appropriate methodology;

- accurate data analysis;

- relevant literature review and referencing;

- appropriate referencing.

Descriptors

The following points broadly describe the characteristics of projects common to each mark range.

A.   Mark Range: 16 – 20
  - All section included and all sections achieve their purpose to a high level.
  - The project maintains a strong and consistent storyline throughout.
  - The project shows a high degree of interaction and relationship between sections.
  - Conclusions are reflective, evaluative and show insights beyond the obvious.
  - The project displays a high level of communication.
  - The research shows originality in terms of some of the following aspects:
    - the research question
    - methodology
    - linking the project to a local problem
    - insights in the conclusion.

B.   Mark Range: 11 – 15
  - All sections included and most achieve their purpose.
  - The project maintains a consistent storyline.
  - The project shows some degree of interaction between sections.
  - The project may show some originality.
  - Conclusions clearly state the obvious and shows some evaluation.
  - The project displays good communication.

C.   Mark Range: 6 – 10
  - Most sections included and some sections achieve their purpose.
  - The project is not always consistent throughout.
  - Virtually no integration of the sectors occurs.
  - Conclusions state the obvious only.
  - The project displays a reasonable communication.
  - No originality.

D.   Mark Range: 0 – 5
  - Significant omissions, most sections do not achieve their purpose.
  - Little consistency throughout the project.
  - No integration of sections.
  - Often incorrect, poorly stated conclusions.
  - Poor communication.
  - No originality.