LUI | | | | | | | | | | | School code | | | | |

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Book ☐ of ☐ books used

External assessment 2024

Question and response book

Agricultural Science

Paper 1

Time allowed

- Perusal time — 10 minutes
- Working time — 90 minutes

General instructions

- Answer all questions in this question and response book.
- QCAA-approved calculator permitted.
- Planning paper will not be marked.

Section 1 (15 marks)

- 15 multiple choice questions

Section 2 (33 marks)

- 8 short response questions

Clear zone — margin trimmed off after completion of assessment

Queensland Government | QCAA Queensland Curriculum & Assessment Authority

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Section 1

Instructions

- This section has 15 questions and is worth 15 marks.
- Use a 2B pencil to fill in the A, B, C or D answer bubble completely.
- Choose the best answer for Questions 1–15.
- If you change your mind or make a mistake, use an eraser to remove your response and fill in the new answer bubble completely.

	A	B	C	D
Example:	●	○	○	○

	A	B	C	D
1.	○	○	○	○
2.	○	○	○	○
3.	○	○	○	○
4.	○	○	○	○
5.	○	○	○	○
6.	○	○	○	○
7.	○	○	○	○
8.	○	○	○	○
9.	○	○	○	○
10.	○	○	○	○
11.	○	○	○	○
12.	○	○	○	○
13.	○	○	○	○
14.	○	○	○	○
15.	○	○	○	○

Ensure you have filled an answer bubble for each question.

Do not write outside this box.

Section 2

Instructions

- Write using black or blue pen.
- If you need more space for a response, use the additional pages at the back of this book.
  - On the additional pages, write the question number you are responding to.
  - Cancel any incorrect response by ruling a single diagonal line through your work.
  - Write the page number of your alternative/additional response, i.e. See page …
  - If you do not do this, your original response will be marked.
- This section has eight questions and is worth 33 marks.

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QUESTION 16 (5 marks)

Explain the processing stages from the farm gate to the consumer for a chosen agricultural plant product. Describe a marketing strategy for the product and a value-adding process that increases the profit for the involved processors and/or producers.

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QUESTION 17 (3 marks)

Describe what market specifications are in agriculture and provide two examples for a meat animal in the domestic market.

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QUESTION 18 (4 marks)

a) Identify a regionally significant plant pest and the crop that it affects. *[2 marks]*

b) Explain an effective control measure for the plant pest identified in Question 18a). *[2 marks]*

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QUESTION 19 (6 marks)

The tables show the mulesing practices declared by wool producers for Australian sheep in 2011 and 2021 and the percentage of unsold merino fleeces from mulesed and non-mulesed sheep in 2012 and 2022.

	2011	2021
Practice	**% of wool producers**	
Mulesed without pain relief	22.0	14.5
Mulesed with pain relief	17.0	47.5
Non-mulesed	5.0	12.6
Ceased mulesing	3.0	3.2
Not declared	53.0	22.2

	2012	2022
Practice	**% of fleeces unsold**	
Mulesed without pain relief or not declared	10.2	26.3
Mulesed with pain relief	9.5	22.8
Non-mulesed	7.9	18.0

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Draw two conclusions about the effects of consumer demand on the practice of mulesing in the Australian wool industry. Provide evidence from both tables to justify each conclusion.

Conclusion 1:

Conclusion 2:

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QUESTION 20 (4 marks)

The table shows the results of an experiment that investigated the effect of two different fertilisers on the nodulation and yield of chickpeas.

	Number of nodules per plant	Grain yield (kg/pot)
Control	0	15.26
Fertiliser A	62	17.47
Fertiliser B	106	19.16
Fertiliser A and B	122	19.16

a) Contrast the effects of each fertiliser, in isolation or in combination, on each of the measured variables. *[2 marks]*

Number of nodules per plant: _____

Grain yield: _____

b) Draw a conclusion about which fertiliser maximises yield most efficiently when producing chickpeas. Justify your conclusion using evidence from the table. *[2 marks]*

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QUESTION 21 (3 marks)

Explain a risk avoidance strategy that an animal producer could implement to reduce potential production losses from an adverse financial event.

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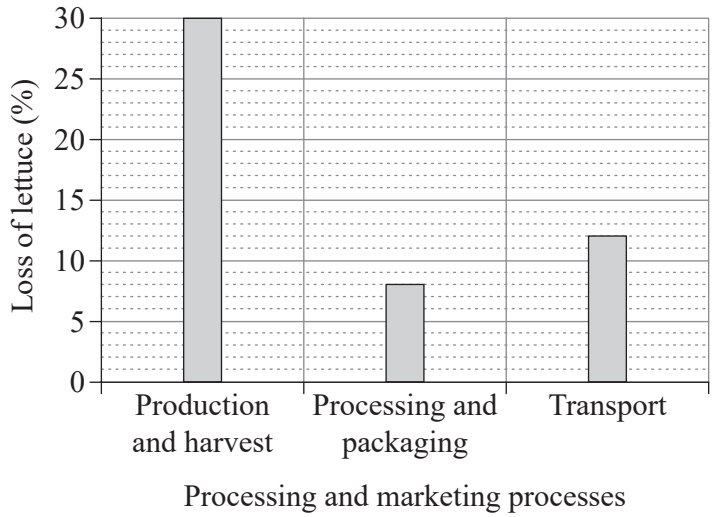
QUESTION 22 (3 marks)

The graph shows the percentage loss of lettuce from production to retail.



a) Determine the total percentage loss of lettuce during post-harvest processes. *[1 mark]*

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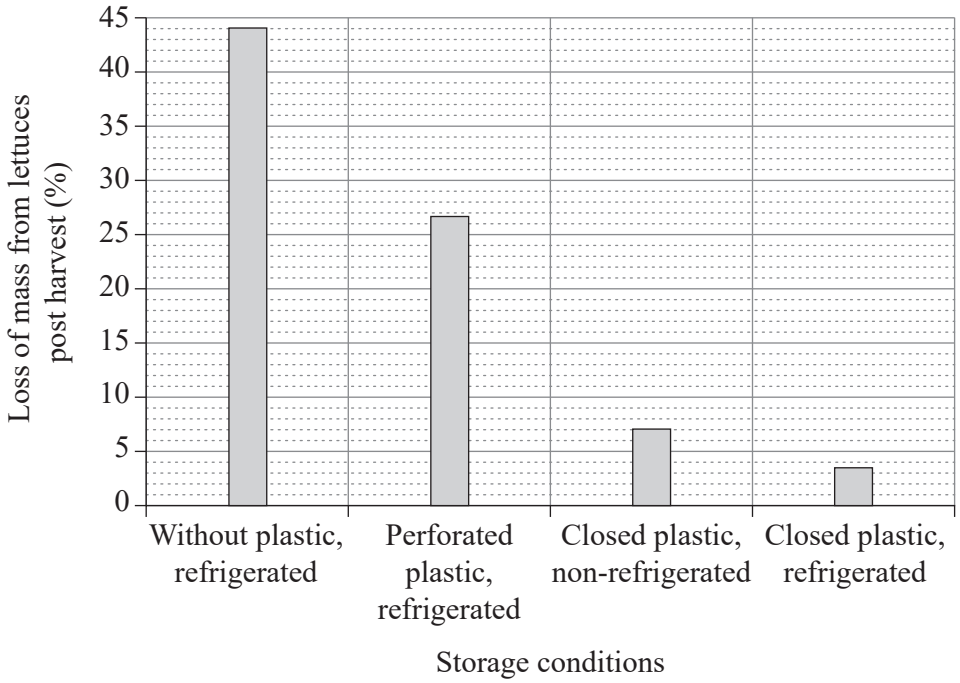
The graph shows the loss of mass from lettuces under different storage conditions.



b) Draw a conclusion about the most appropriate storage condition for lettuces being transported and stored for extended periods of time. *[1 mark]*

c) Explain why the type of storage condition selected in Question 22b) would be effective in minimising loss of lettuces. *[1 mark]*

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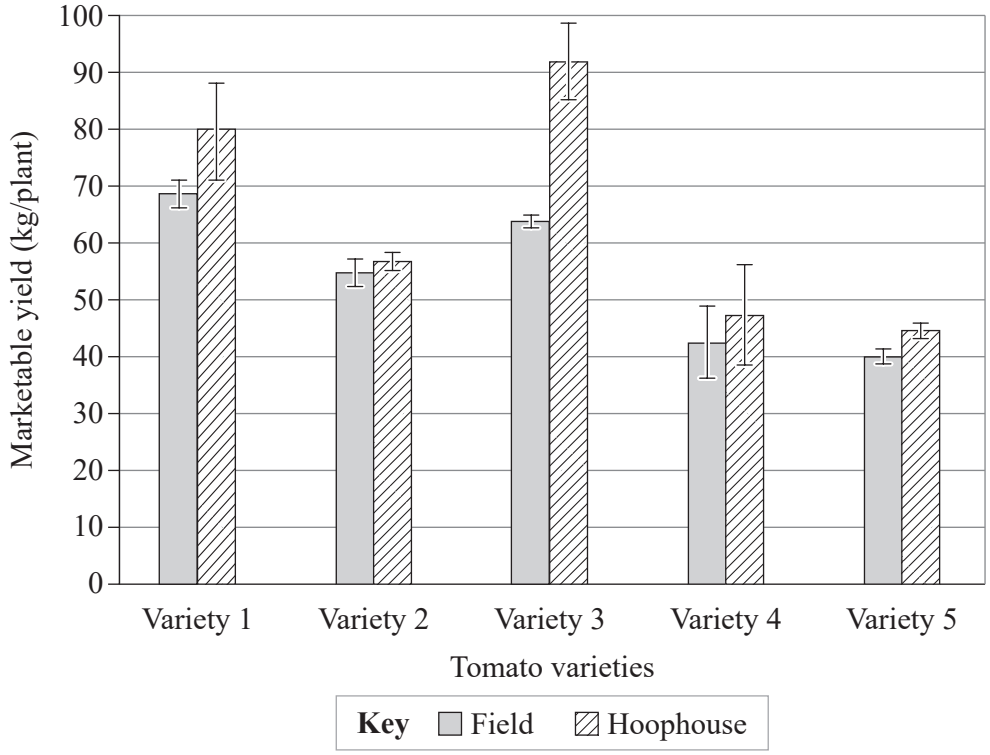
QUESTION 23 (5 marks)

The graph shows the average yield per plant for different tomato varieties grown in two different environments. The graph includes standard error bars.



a) Determine which varieties of tomato should be grown in a hoophouse environment. Justify your response using statistical evidence from the graph. *[3 marks]*

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b) Which two varieties showed the least improvement when grown in a hoophouse environment compared to a field environment? Justify your response using statistical evidence from the graph. *[2 marks]*

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ADDITIONAL PAGE FOR STUDENT RESPONSES

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References

Question 19

Data sourced from Australian Wool Innovation 2022, Trends in Mulesing, Tail Docking and Castration Practices of Australian Woolgrowers: Results of the 2021 AWI Merino Husbandry Practices Survey, AWI, Sydney, https://www.wool.com/globalassets/wool/sheep/research-publications/welfare/surveys/221017-awi-project-final-report-trends-in-mulesing-final-for-publ.docx.pdf.

Question 20

Data reproduced from Siddiqui, A, Shivle, R, Magodiya, N & Tiwari, K 2014, 'Mixed effect of Rhizobium and Azotobacter as biofertilizer on nodulation and production of chick pea, *Cicer arietinum', Bioscience Biotechnology Research Communications*, vol. 7, no. 1, pp. 46–49, http://bbrc.in/bbrc/papers/pdf%20files/Volume%207%20-%20No%201%20-%20Jun%202014/BBRC_009.pdf.

Question 23

Graphs adapted from Schvambach, MI, Andriolli, BV, de Souza, PF, Oliveira, JLB & Pescador, R 2020, 'Conservation of crisp lettuce in different post-harvest storage conditions', *Revista Ceres,* vol. 67, no. 4, pp. 256–262, https://doi.org/10.1590/0034-737X202067040002.

Question 24

Graph adapted from Schuh, M & Jaquinde, W 2019, 'Impact of soil blocks on yield and earliness of six tomato varieties', *Michigan State University Extension*, https://www.canr.msu.edu/news/impact-of-soil-blocks-on-yield-and-earliness-of-six-tomato-varieties.