

MARKER CODE				



STUDENT ENROLMENT NUMBER (SEN)									

TONGA NATIONAL FORM SEVEN CERTIFICATE

2024

AGRICULTURAL SCIENCE

QUESTION AND ANSWER BOOKLET

Time allowed: 3 Hours

INSTRUCTIONS:

- Write your **Student Enrolment Number (SEN)** on the top right-hand corner of this page.
- This paper consists of **THREE SECTIONS** and is out of 70 weighted scores.

SECTION	STRANDS	TOTAL SKILL LEVEL
A	PRIMARY PRODUCTION	21
B	SUSTAINABLE PRIMARY PRODUCTION	25
C	PRODUCTION MANAGEMENT	24
TOTAL		70

- Answer ALL QUESTIONS. Write your answers in the spaces provided in this booklet.
- Use a **BLUE** or **BLACK** ball point pen only for writing. Use a pencil for drawing if required.
- If you need more space for answers, ask the supervisor for extra paper. Write your **Student Enrolment Number (SEN)** on each additional sheet, number the questions clearly and insert them in the appropriate places in this booklet.
- Check that this booklet contain pages **2-15** in the correct order and that page 15 has been deliberately left blank.

YOU MUST HAND IN THIS BOOKLET TO THE SUPERVISOR BEFORE YOU LEAVE THE EXAMINATION ROOM.

Question Two: Factors Influencing Primary Production

You are required to choose a Pest from the list given below and use it to answer a.

List of Pests:

- i. Rose beetle
- ii. Yam scale
- iii. Yam mealy bugs
- iv. Nematodes

Chosen Pest: _____

a. Describe how your chosen pest affects the production of yams.

Skill level 2	
2	
1	
0	
NR	

b. Explain the effect of Government control on the marketing of yams.

Skill level 3	
3	
2	
1	
0	
NR	

c. Discuss how consumers' income levels affects the production of yams.

Skill level 4	
4	
3	
2	
1	
0	
NR	

Question Three: Effects of Market Control

Use the information provided as a guide to answer a. and b.

A regulated market is a market over which government bodies or, less commonly, industry or labor groups, exert a level of oversight and control. Market regulation is often controlled by the government and involves determining who can enter the market and the prices they may charge. The government body's primary function in a market economy is to regulate and monitor the financial and economic system.

Source: (Kenton,2022)

a. Identify an organization that regulates the marketing of a primary product.

Skill level 1	
1	
0	
NR	

b. Describe how an organization regulates the marketing of a primary product.

Skill level 2	
2	
1	
0	
NR	

c. Explain the role of PICTA in marketing of a primary product.

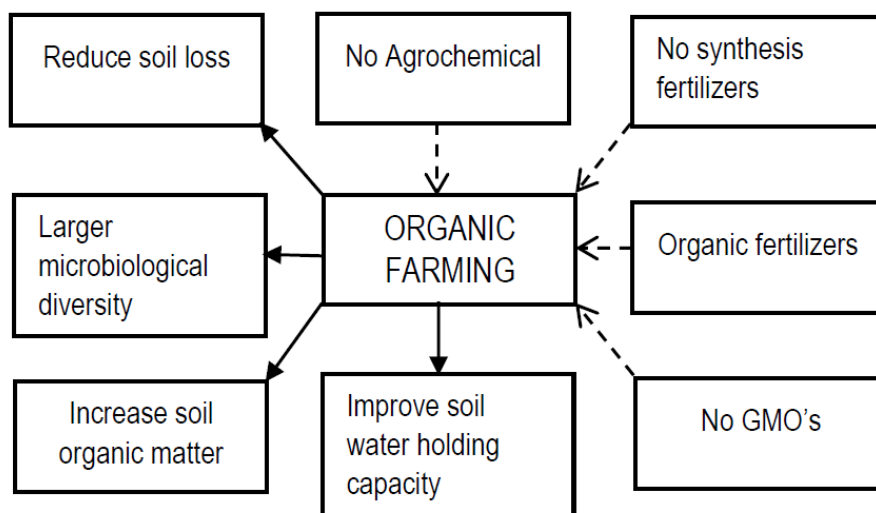
Skill level 3	
3	
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SECTION B: SUSTAINABLE PRIMARY PRODUCTION

Question One: Analysing Production Practices

Use the diagram below to answer a. to c.

Figure 2: Sustainable Farming.



Source: (Furtak & Galazka, 2019)

a. Define sustainable agriculture.

b. Explain the relation of the sustainable farming in **Figure 2** to Biodiversity.

Skill level 1	
1	
0	
NR	

Skill level 3	
3	
2	
1	
0	
NR	

Question Two: Sustainable Agriculture Issue

A farmer from Navutoka observed the following symptoms from one of his sows who just farrowed 12 piglets, 6 days ago.

- Obviously ill.
- Will not suckle.
- Fever – temperature range from 40–42°C (104–107°F).
- Affected glands swollen, red colour and painful.
- Discoloration of the whole udder, but particularly over the affected glands.
- Mammary tissue is infiltrated with hard lumps that are usually not painful when palpated.
- They may ulcerate to the surface and become a potential source of infection to other sows.

a. Name the disease that affects this sow.

Skill level 1	
1	
0	
NR	

b. Describe the best way to control this disease.

Skill level 2	
2	
1	
0	
NR	

c. Describe the main issue related to the sustainable farming of pigs in Tonga.

Skill level 2	
2	
1	
0	
NR	

d. Use the diagram below to answer d.

Figure 3: Castration



Source: <https://www.four-paws.org.au/campaigns-topics/topics/farm-animals/piglet-castration>

Explain why it is important to adopt this husbandry practice in Tongan farms.

[illegible]

Skill level 3	
3	
2	
1	
0	
NR	

d. Discuss the global issue of Methane Emission by a ruminant animal.

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Skill level 4	
4	
3	
2	
1	
0	
NR	

SECTION C: PRODUCTION MANAGEMENT

Question One: Schedule of Operation

Use the information in the chart below to assist you in answering a. and b.

Figure 4: part of a schedule of operation for pig production.

Management	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
i. Mating (Establishment)												
ii. Farrowing									↔			

- a. Identify the possible mating time for the sow to ensure that it farrows in the month of September. (You can draw an arrow ↔ indicating the month where mating should be done).

Skill level 1	
1	
0	
NR	

- b. Describe the best way to establish young piglets.

Skill level 2	
2	
1	
0	
NR	

- c. Explain how to prepare piglets to be sold for roasting.

Skill level 3	
3	
2	
1	
0	
NR	

Question Two: Factor affecting Schedule of Operation

Select **ONE (1)** local primary product from the list below and use that product to answer a. to d.

- i. Yam
- ii. Kava
- iii. Vanilla
- iv. Squash pumpkin

Name of chosen Primary Product: _____

- a. Identify a management skill that can increase the production of your chosen product.

Skill level 1	
1	
0	
NR	

- b. Describe the management practices that are involved in the preparation of land for your chosen product.

Skill level 2	
2	
1	
0	
NR	

- c. Outline **TWO (2)** inputs that should be used during disease control for your chosen product.

Skill level 2	
2	
1	
0	
NR	

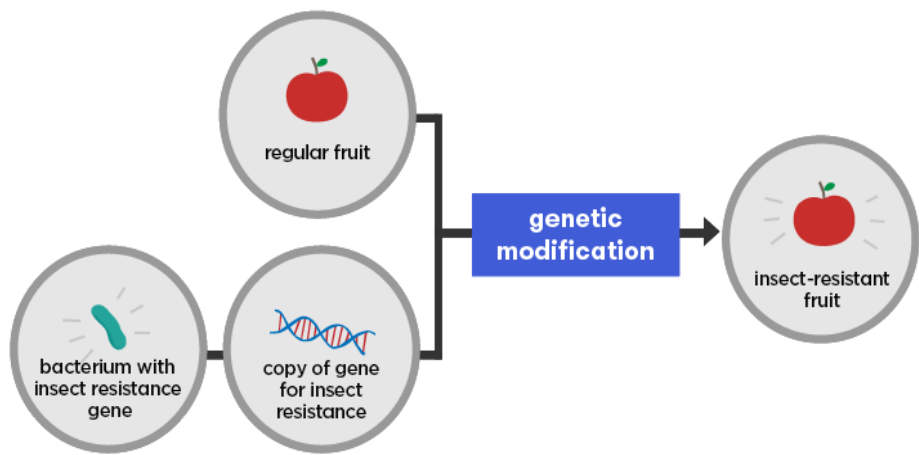
- d. Explain the influence of technology on a specific step in the schedule of operation of your chosen product.

Skill level 3	
3	
2	
1	
0	
NR	

Question Three: Manipulation of the Schedule of Operation

Use the diagram below to answer part a, b, c and d.

Figure 5: Genetic engineering



Source: <https://www.science.org.au/curious/earth-environment/what-genetic-modification>

a. Identify the attribute of the product that is affected by the manipulation technique in Figure 5.

Skill level 1	
1	
0	
NR	

b. Describe the concept of profit maximization.

Skill level 2	
2	
1	
0	
NR	

c. Explain how genetic engineering affects the maximization of yields for tomato farmers.

Skill level 3	
3	
2	
1	
0	
NR	

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