

90454



NEW ZEALAND QUALIFICATIONS AUTHORITY
 MANA TOHU MĀTAURANGA O AOTEAROA

2

SUPERVISOR'S USE ONLY

Level 2 Agricultural and Horticultural Science, 2011

90454 Describe manipulations to influence growth and development, and productivity, in livestock or plants

2.00 pm Thursday 24 November 2011

Credits: Four

Check that the National Student Number (NSN) on your admission slip is the same as the number at the top of this page.

Answer ***EITHER***: ALL questions in Section A – Agricultural Science (pages 2–8) (Tick one box)

OR: ALL questions in Section B – Horticultural Science (pages 10–15).

If you need more room for any answer, use the extra space provided at the back of this booklet.

Check that this booklet has pages 2–16 in the correct order and that none of these pages is blank.

YOU MUST HAND THIS BOOKLET TO THE SUPERVISOR AT THE END OF THE EXAMINATION.

ASSESSOR'S USE ONLY			Achievement Criteria		
Achievement		Achievement with Merit	Achievement with Excellence		
Describe the effect of factors on growth, development, and productivity of livestock or plants.	<input type="checkbox"/>	Explain how factors influence the growth, development, and productivity of livestock or plants.	<input type="checkbox"/>	Explain how factors influence the growth, development, and productivity of livestock or plants.	<input type="checkbox"/>
Describe manipulations of factors used to influence the growth and development, and productivity, of livestock or plants.	<input type="checkbox"/>	Explain how manipulations of factors influence the growth and development, and productivity, of livestock or plants.	<input type="checkbox"/>	Explain how manipulations of factors influence the growth and development, and productivity, of livestock or plants.	<input type="checkbox"/>
				Justify manipulation(s) used to influence growth and development, and the productivity of a livestock or plant production system.	<input type="checkbox"/>
Overall level of performance (all criteria within a column are met)					<input type="checkbox"/>

You are advised to spend 40 minutes answering the questions in this section.

EITHER:

SECTION A: AGRICULTURAL SCIENCE

QUESTION ONE: CONTROLLED FEEDING IN INTENSIVE PIG PRODUCTION

Intensive pork production, shown in the photograph below (left), means that pigs are totally dependent on the food supplied to them by the grower, and that target liveweights of 100 kg are met.

An intensive pork production piggery



Feed label giving details of ingredients

“Weaner Grow Pellets”
(5 mm pellets)

For pigs from around 35 kg liveweight to slaughter.

Ingredients selected from : Barley, Bran, Soya bean, Fishmeal, Molasses, Milk powder, Vitamins and Minerals.

Feed Analysis

Energy	12.2 MJME / kgDM
Protein	16.5%
Fats	1.7%
Fibre	5.4%

- (a) A typical feed label is shown above (right). Describe how TWO of the ingredients on the label affect growth or development.

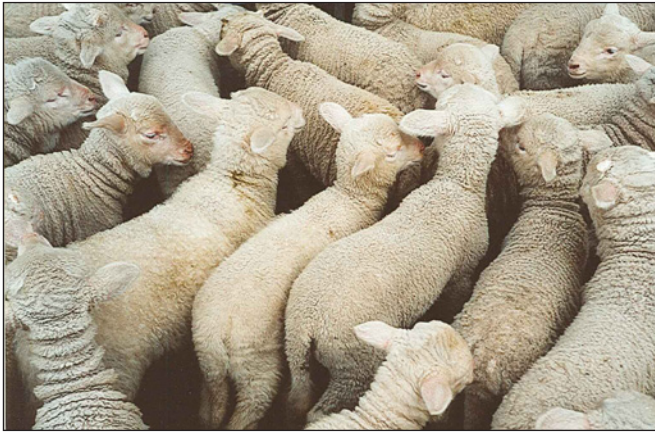
Ingredient 1: _____

Ingredient 2: _____

- (b) Explain why feed quality is important when feeding pigs through to 100 kg liveweight by explaining why a pig aged one month is given a feed with 20% protein, while a six-month-old pig is given a feed with 16.5% protein.

QUESTION TWO: IMPACT OF TAILING PRACTICES ON GROWTH/DEVELOPMENT

The photograph below (left) shows merino lambs at tailing. These lambs are from ewes that were run as a mob after mating through to tailing of their lambs. The photograph below (right) shows the tailing process on a high country property.

Merino lambs at tailing**High country tailing process**

- (a) (i) Describe at least TWO factors that could account for the difference in size between the lambs shown in the photograph on the left.

Factor 1: _____

Factor 2: _____

- (ii) Explain how these factors produce the differences in lamb size.

QUESTION THREE: INTERNAL WORMS AND DRENCHINGASSESSOR'S
USE ONLY

Drenching is the main technique used by farmers to reduce the effects that internal parasites, mainly worms, have on growth rates.

- (a) (i) Describe how sheep and cattle become infected with internal worms.

- (ii) Explain how high internal worm numbers reduce the growth and/or productivity of lambs or calves.

It is recommended that farmers use faecal egg counts when planning drenching and take steps to ensure that all animals receive the required dose when drenching livestock.

(b) Select ONE of the actions associated with drenching:

Faecal egg counts.

OR

Giving all animals the correct dose rate when drenching.

Selected action: _____

(i) Describe how the action is carried out.

(ii) Explain how the action is important for controlling intestinal worms to increase livestock productivity.

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You are advised to spend 40 minutes answering the questions in this section.

OR:

SECTION B: HORTICULTURAL SCIENCE

QUESTION ONE: CROP PESTS

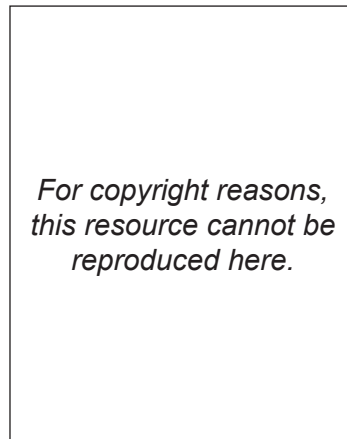
The cabbage looper caterpillar, shown below (left), and the lettuce aphid, shown below (right), are examples of insect pests that attack lettuces.

The cabbage looper caterpillar



Source: <http://waggabirds.files.wordpress.com>

The lettuce aphid



Source: <http://2.bp.blogspot.com>

- (a) (i) Describe the damage that a chewing pest such as the cabbage looper caterpillar would cause to plants, and its effect on plant growth.

- (ii) Explain how this damage would affect plant processes and plant productivity.

QUESTION TWO: HARVESTING CROPS

The climate largely determines the time of harvesting fruit such as apples, grapes, and kiwifruit.

- (a) Select a fruit crop you are familiar with.

Selected fruit crop: _____

- (i) Describe features of this fruit crop that indicate that the crop is ready for harvest.

- (ii) Explain how specific climatic factors influence these features.

- (b) Before a fruit crop is harvested, it should be tested for the features you have described above. The photographs below show tests used on apples (left), and a device used on apples, grapes, and kiwifruit (right), to determine the best harvesting time.

The starch test on apples cut in half



A refractometer



QUESTION THREE: HYDROPONICS

Hydroponics allows the grower to control the level of plant nutrients available to plants, and hence increase crop yield and quality. A typical hydroponic system is shown in the photograph below.

A hydroponic system



- (a) (i) Describe the effect that TWO major nutrients have on growth/productivity.

- (ii) Explain how controlling a **balanced** supply of nutrients produces a higher crop yield.
