90919

909190

1

SUPERVISOR'S USE ONLY

NEW ZEALAND QUALIFICATIONS AUTHORITY
MANA TOHU MĀTAURANGA O AOTEAROA

QUALIFY FOR THE FUTURE WORLD
KIA NOHO TAKATŪ KI TŌ ĀMUA AO!

Tick this box if you have NOT written in this booklet

Level 1 Agricultural and Horticultural Science 2022

90919 Demonstrate knowledge of soil management practices

Credits: Four

Achievement	Achievement with Merit	Achievement with Excellence
Demonstrate knowledge of soil management practices.	Demonstrate in-depth knowledge of soil management practices.	Demonstrate comprehensive knowledge of soil management practices.

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

You should attempt ALL the questions in this booklet.

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 2–12 in the correct order and that none of these pages is blank.

Do not write in any cross-hatched area (▨). This area may be cut off when the booklet is marked.

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

QUESTION ONE: Clay soils

(a) Choose two properties of clay soil, and explain how they impact pasture growth.

	Physical property of soil	Impact on pasture growth
1		
2		

(b) How does applying lime improve the physical properties of clay soils?

A farmer is experiencing poor pasture growth in the clay soil. To improve pasture growth, the farmer can either add a drainage system, or add organic matter in the form of green manure or a cover crop.

(c) Which of the two practices is better, in terms of the impact on soil properties, for improving pasture growth? Explain why you have chosen this practice over the other.

Chosen practice: _____

QUESTION TWO: Nutrients

(a) Name a method of fertiliser application, and describe how it is carried out.

Method: _____

The pH of soil has an impact on nutrient availability.

How soil pH affects availability of plant nutrients.

Source: https://www.quora.com/What-are-the-effects-of-pH-on-soil-nutrient-availability

(b) (i) Select the ideal pH range for plant growth, using the chart above.

Ideal range: _____

(ii) How does soil pH that is outside the ideal range impact nutrient availability and plant growth?

A dairy farmer has noticed that their farm is experiencing poor grass growth. After a soil test, the decision has been made to apply fertiliser.

Fertiliser name	N content	P content	K content	S content	Cost ($/tonne)

(c) Which of the three fertiliser options would you recommend to improve the chemical properties of the soil and pasture growth? Explain why you have chosen this fertiliser by comparing it to one of the other options.

Fertiliser chosen: _____

Other fertiliser: _____

QUESTION THREE: Market gardens

Source: https://teara.govt.nz/files/p17089pc.jpg

(a) With reference to soil texture and properties, why would market gardeners prefer to grow their produce in a loam soil?

Crop rotation is often practised in market gardens.

(b) (i) How is crop rotation carried out?

(ii) Explain the impact crop rotation has on the chemical and biological properties of soil.

Following harvesting, the grower has decided to direct drill the next crop rather than cultivate the paddock or area.

(c) Justify why the grower would direct drill to maintain physical and biological properties of soil and improve plant growth, instead of using traditional methods of cultivation.

Extra space if required.
Write the question number(s) if applicable.

QUESTION NUMBER