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90919



Level 1 Agricultural and Horticultural Science, 2019

90919 Demonstrate knowledge of soil management practices

9.30 a.m. Thursday 28 November 2019 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.

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

TOTAL

QUESTION ONE: DAIRY FARMING

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Dairy fan be	farmers require high pasture growth rates and therefore the soil must have high fertility. The achieved by applying lime and effluent.	Γhis
	Cattle grazing	
.\ _	Describe how lines is applied to a paddeck	
a) [Describe how lime is applied to a paddock.	
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ر. د	Explain how lime affects soil pH and nutrient availability.	
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n y	our answer consider:	
,	how the effluent is applied	
	the effect on the physical, chemical, and biological properties of soil	
,	the effect on pasture growth.	
	the offect on pastare growth.	

More space for this answer is available on the next page ➤

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QUESTION TWO: SOIL TYPES

(b)

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(a) Identify the particle and pore sizes of the soil types below, and explain how these affect the soil's water holding capacity.

Soil type	Particle size	Pore size	Effect on water holding capacity
Sand			
Silt loam			
Clay			

Describe how irrigation could be applied to a sandy soil, and explain how water affects the properties of soil.			ecis ine	

Drainage is important in soils, and different soils require different drainage systems. For example, mole plough drains are often used for clay soils, and underground Novaflo drains are used in silt loam soils.

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(c) Select one of these drainage systems, and justify why it is more suited to a particular soil type than the other drainage system would be.

In your answer:

- describe the drainage system
- explain the effect on the physical and chemical properties of the soil
- explain the effect on plant growth.

drainage system	soil type

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QUESTION THREE: CROPPING

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scribe what crop rotation is, and explain how it affects the biological properties of soil and nt growth.
aweed and Blood and Bone can be used as an organic fertiliser. They also increase the
natter in soil.
plain how organic matter affects the biological and physical properties of soil, and how thi proves plant growth.

Seedbeds for crops can be prepared with minimum tillage methods, such as direct drilling. ASSESSOR'S USE ONLY Justify why a grower would direct drill, by comparing it to traditional methods of cultivation. (c) In your answer consider: how direct drilling and traditional cultivation are carried out the effects on the physical properties of soil plant germination and emergence.

More space for this answer is available on the next page ➤

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Acknowledgements				
been adapted for use in this examination:				

Material from the following sources has

Page 2

Image: https://www.dairyflo.co.nz/wp-content/uploads/2015/11/future-of-dairy.jpg

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Image: https://images-na.ssl-images-amazon.com/images/l/81lcH0xTmQL._SX425_.jpg $Image: https://www.bunnings.co.nz/daltons-big-value-blood-bone-8kg_p00162572$