

91297



NEW ZEALAND QUALIFICATIONS AUTHORITY
MANA TOHU MĀTAURANGA O AOTEAROA

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SUPERVISOR'S USE ONLY

Level 2 Agricultural and Horticultural Science, 2013

91297 Demonstrate understanding of land use for primary production in New Zealand

2.00 pm Friday 29 November 2013
Credits: Four

Achievement	Achievement with Merit	Achievement with Excellence
Demonstrate understanding of land use for primary production in New Zealand.	Demonstrate in-depth understanding of land use for primary production in New Zealand.	Demonstrate comprehensive understanding of land use for primary production in New Zealand.

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 2–8 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.

Excellence

TOTAL

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You are advised to spend 60 minutes answering the questions in this booklet.

QUESTION ONE: CHANGING LAND USE

Last century, land traditionally used for sheep and beef production was changed to forestry production.

(a) Explain, in detail, what economic and environmental factors may have contributed to farmers converting their sheep and beef land to forestry.

(i) Economic factors

Sheep and beef returns have been low over the last 10 years. Forestry is the 2nd largest primary production in NZ. More money can be made from forestry if done right and much less labour is needed, only pruning, thinning, harvest & planting. Land is steep & extensive and not efficient enough for sheep & beef to continue but the trees grow well there!!

(ii) Environmental factors

The environment benefits so much more from forestry than sheep & beef. The trees take in CO₂ emissions and store it in their ~~trunks~~ trunks & branches. Rather than sheep & beef which doesn't influence the environment positively with animals excreting methane gases and no trees to filter the air apart from hedges. The farmer will get carbon credits for having a forest which benefits the environment.

Many forestry areas are now being converted into dairy farms, as shown in the photographs below.

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During conversion

After conversion

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(b) Justify the decision of farmers to change land use from forestry to dairy production.

In your answer, consider production in terms of:

- positive effects on economic returns
- negative impacts on the environment
- technological improvements.

More money can be made from dairying over forestry. This land is reasonably flat so intensive dairy farming can take place, higher inputs ~~are~~ will be needed but more outputs/profits will be made by intensive farming as land is being used more efficiently. More irrigation will be needed but the returns are pastures and labour so much higher as heaps of milk gets produced to export rather than waiting on the trees to grow. The environment gets influenced negatively from dairying though as a lot of fertiliser is needed to keep pastures growing sufficiently and this can get into waterways and pollute them along with effluent the cows produce. Where as forestry won't pollute the water as minimal fertiliser is needed and the trees filter the nutrients cleaning the water. During the conversion I would recommend keeping trees around water ways to reduce harm to the environment from dairying. Dairying also negatively

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QUESTION TWO: ROOT CROP PRODUCTION

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Ohakune is located in the central North Island, where land is traditionally used for root crops such as carrots.

- (a) Explain, in detail, why seasonal root crops can be grown more successfully in areas such as Ohakune than in other parts of the North Island. In your answer, consider the environmental and economic factors which make root crop growing in the Ohakune area a preferred option.

- (i) Environmental factors

The climate is closer to the equator than the south island so much warmer which carrots prefer. The land is flatter than ~~the~~ ~~other~~ ~~places~~ so machinery can efficiently cultivate. Soil is also good for growing carrots in Ohakune, fertile land so the carrots roots absorb it and maximise growth.

- (ii) Economic factors

Land is cheaper in Ohakune than places like Auckland. So the plants still grow well with desired environment and cheaper land improves profit. Ohakune is accessible to towns and airports so produce can be moved and ~~the~~ seasonal workers can be brought in for cheap labour during harvest.

An environmental court has ruled to restrict the amount of fertiliser that growers in Ohakune can use on their land, to stop it leaching into waterways. This may have an influence on the profitability of root crop growing. One grower is considering changing the land use to dairy production.

(b) Analyse the advantages and disadvantages of changing the land use to dairy production.

In your answer, consider:

- the environmental issue of fertiliser
- existing workforce considerations
- economic returns of root crop production compared with dairy production.

~~the~~ Both root crop growing and dairying require large amounts of fertilisers to make as much growth from their crop and pastures as they can. If changing to dairying they could put on effluent to pastures to give them nutrients to grow more. Dairying could give more of a economic return than root crop production which isn't growing well. ~~There~~ No experienced dairy farmers will be there ~~as~~ if they switch over as workers only know how to grow root crops. Seasonal workers couldn't be used anymore as milking is all year round and skilled labour is required and new staff will be needed with an understanding of dairying. Although without seasonal workers means dairying is more economic as profits come in all year round.

QUESTION THREE: KUMARA PRODUCTIONASSESSOR'S
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A Dargaville (Northland) farmer has been producing kumara for many years. It has been considered to be the best use of the land.

- (a) Explain, in detail, why the land in Northland is suitable for kumara production. Consider the environmental (climate and soil type) and economic factors for continuing to grow kumara in the area.

(i) Environmental factors

The land is flat and fertile so kumara grows best there. No other place in NZ is really more suitable because of the climate and soil in the Northland area. It's almost as warm as you can get there which results in more produce growing better as less frosts and they grow better in the warm. //

(ii) Economic factors

It's the fertile warm area of NZ so is most suitable for market garden produce to take place here. Most money will be made as such intensive farming and efficient use of land will give more profits than other methods of farming in the area. //

(b) Justify the decision of the farmer to continue with the existing land use (producing kumara). In your answer, consider why continuing with kumara production in Dargaville is a good decision, in terms of:

- social factors that include the grower's family and the wider community
- existing infrastructure and markets which impact on economic returns.

People keep their jobs ~~that~~ at the Kumara farm as the people that come to work from overseas keep the community afloat. While working there they need somewhere to stay and more people interacting in the community as Kumara farming brings in more people than ~~the~~ ^{other farming} and when they switch over there will be no experienced workers. Other farmers ~~are~~ in the area will also grow Kumara so processing plants will already be there and shipping will be much easier whereas the locals wont have travel arrangements/ ~~exporting~~ ^{exporting} ~~other~~ ^{other} products as much ~~as~~ ~~the~~ ~~area~~. The area is already set up for Kumara production making it easier on the farmer and buyers of the product.

Extra space if required.

Write the question number(s) if applicable.

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QUESTION
NUMBER

1 b affects the soil by pugging and ruining soil structure and methane produced by the cows adding to the greenhouse gases whereas forestry would keep the air cleaner. More money can be made from dairying from the improvements of technology. Pivot irrigators have been developed to irrigate large amounts of land efficiently and milking sheds have become better. The equipment within the shed has become faster so that milking is quicker and less labour is needed or more cows can be milked. With the developments of irrigation makes it easier to irrigate in places where dairying didn't used to be possible but now is.

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Question G.P. Paper 22 Credits.

1 a(i)

Question 1 a(ii)

Environmental benefits of forestry are explained

Question 1 b

A concise and coherent explanation that focusses on economic, environmental and technological reasons for conversion. Answer is supported with examples e.g. pivot irrigators, methane gas, pugging . Another example of an excellence answer.

Question 2 a (i)

Soil fertility is linked to plant growth

Question 2 a (ii)

Explanation of how the Location of Ohakune in New Zealand results in greater profitability

Question 2 b (ii)

Evidence provided for seasonal workers , fertiliser and economic returns. More detail is required to award a higher grade.

Question 3 a(i)

Environmental factors associated are explained - fertile soil, frost free climate

Question 3 a(ii)

Question 3 b

Social factors are explained in detail. Existing infra structure needs to be explained in greater detail to obtain a higher grade.