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91297



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NEW ZEALAND QUALIFICATIONS AUTHORITY
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SUPERVISOR'S USE ONLY

Level 2 Agricultural and Horticultural Science, 2018

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

9.30 a.m. Wednesday 28 November 2018

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.

Achievement

TOTAL

11

ASSESSOR'S USE ONLY

QUESTION ONE: CHANGES IN LAND USE ON THE CENTRAL PLATEAU

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Environmental and financial pressures have forced Landcorp and Wairakei Estate owners to abandon contentious forest-to-dairy land conversions. Freshwater ecologist Dr Mike Joy welcomed the move as a significant win for the environment.

Wairakei Estate, near Taupo, currently comprises 13 dairy farms with 17,000 cows over 6,400 hectares. It had been planned to run 43,000 cows on 39 farms by 2021, but Landcorp chief executive Steven Carden said in a statement that this would be scaled back, without saying exactly how many cows the property would carry.

Text (adapted) and image source: <http://www.stuff.co.nz/business/farming/dairy/77608461/Landcorp-bows-to-pressure-to-halt-dairy-conversions>.

Forestry-to-dairy land conversion



Source: <https://resources.stuff.co.nz/content/dam/images/1/5/g/r/v/j/image.related.StuffLandscapeSixteenByNine.620x349.1a7f2l.png/1457314857545.jpg>.

- (a) Explain why land in the Taupo/Central Plateau region has traditionally been used for forestry.

Land in the Taupo/Central Plateau region has traditionally been used for forestry due to its environment. Firstly a lot of the area is rolling hills meaning it's less suited to being irrigated and farmed intensely. The soils may also have been suited to tree's growing there along with the climate. When the soils & climate are suited to tree's they will grow and mature much better. //

- (b) Justify the decision to scale back the conversion of forestry land to dairy farms by comparing and contrasting the two land uses.

In your answer, consider:

- the local economy
- the environment
- social aspects.

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The decision to scale back the conversion of forestry to dairy land is a good one. It will be good for the local economy as in years to come when the tree's are mature enough to harvest it will provide lots of income depending on the market along with many jobs in the industry. Another reason scaling back forest to dairy conversion is the correct choice is the environment. Cutting down thousand of hectares of tree's and replacing with dairy cows would harm the environment severely as there will be no tree's to reduce carbon. cows will belch methane₂ and fertilisers will cause lots of nitrate leaching into nearby water₂ sources. The social aspects of this decision are good to as the local area will have a boosted morale knowing they are not harming the environment. Also when it comes time to harvest the trees there will be many jobs from manual labour to office workers.

A3

QUESTION TWO: AVOCADOS

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Dairy farms are being converted to avocado orchards in the Auckland and Northland regions as the industry gears up for major expansion. Avocados achieved new records for volume and value in the 2016–17 season, and investors keen to capitalise on the increasing demand for avocados are planning large-scale plantings.

It is an exciting time to be growing avocados, New Zealand Avocado chairman Ashby Whitehead said.

Source (adapted): <https://www.stuff.co.nz/business/farming/94626504/Dairy-farms-make-way-for-avocados-in-north>.

- (a) Identify a traditional land use in Northland, and explain reasons for this land use.

A traditional land use in Northland is Dairy Farming. This is due to the climate being suitable. Good rainfall & warm temperatures which promote pasture growth. Northland is also reasonably flat which helps dairy farming. //

- (b) Explain why Northland's environmental and economic conditions are suitable for subtropical fruit such as avocados.

Environmental factors

Northland's environment is very suited to growing sub-tropical fruit with high rainfall and warm temperatures. This is very different to the majority of New Zealand. The soil is also nutrient rich which helps growing. //

Economic factors

Northland's economic conditions are well suited to avocados as they are very close to the biggest market which is Auckland. Being close to Auckland means reduced transport costs. //

- (c) Evaluate the impact of conversion from a traditional land use to avocado orchards in Northland.

ASSESSOR'S
USE ONLY

In your answer, consider:

- the economy
- workforce supply
- the environment.

The impact of conversion from traditional land use to Avocado orchards will be positive. The economy will benefit as avocados are in great ~~there~~ demand at the moment. This means they will pay higher prices for the same product. Workforce supply will be another thing that will change during this process. During growing season not many workers will be needed but come harvesting time workers will be in big demand. This will put a strain on the workers as they may only get good work & pay a few months of the year. The environment will benefit positively as there will not be the methane being produced or nitrate leaching that occurs in dairy farming. The avocado trees will also use up carbon in the atmosphere not produce it. //

Assessor's
Signature

QUESTION THREE: IRRIGATION

ASSESSOR'S
USE ONLY

The Manuherikia catchment in Central Otago is made up of two principal valleys and a number of dividing hills, and has a total area of approximately 3,000 square kilometres, of which 60,000 hectares are suitable for irrigation. Of this area, currently 15,000 hectares are fully irrigated and 10,000 hectares are partially irrigated.

Source (adapted): <http://www.centralotagonz.com/economic-development/key-sectors/irrigation>.

Farmland around Lake Dunstan, near Cromwell, Central Otago



Source: <https://www.google.co.nz/maps/@-44.977413,169.2110126,6025m/data=!3m1!1e3>.

- (a) Identify the main agricultural and horticultural uses of land in the Central Otago region, and explain the reasons behind these uses.

The main land uses in Central Otago is sheep farming along with viticulture. This is due to the harsh climate the sheep can live in along with the grapes. ~~The~~ There is also warm temperatures which help the grapes.

- (b) Explain how irrigation technology has allowed land use to change.

Irrigation technology has allowed land use to change as what's normally brown tussocks can be transformed to lush green grass. This means what is normally good for merino sheep is now usable for dairy.

cows or crop farming //

ASSESSOR'S
USE ONLY

- (c) The establishment of new irrigation schemes is controversial. Discuss the expansion of irrigation with respect to the environment, the economy, and politics.

Irrigation schemes in the central otago area will be good for the environment as it will turn barren areas to green grass. This will only become bad if dairy farming takes over the land use majority. With ~~the~~ high methane emissions and nitrate leaching counteracting the good of irrigation. This will hurt the economy initially as the costs will be huge. Over time with the land use change the cost should level out or be positive. Politics will also mean there will be a lot of divided opinion what the best thing to do is. Current people who use the land may also not be happy as the land use change could put them out of a job. //

Achievement Exemplar 2018

Subject	Level 2 Agricultural and Horticultural Science		Standard	91297	Total score	11
Q	Grade score	Annotation				
1	A3	The student received an Achieved grade for question one due to the student being able to explain one factor that influenced the decision to scale back the conversion of forestry to dairy. To have gained a more secure achieved grade, they would have needed to show a deeper understanding of the Central Plateau landscape. The student's choice of words 'will cause lots of nitrate leaching into the nearby water sources' needs attestation.				
2	A4	The student gained an A4 grade due to being able to adequately describe the regions environment and economic benefits for growing avocados and pasture. To have gained a merit, the student would have needed to expand on these benefits in relationship to how it promotes growth and extend on the benefits of being in close proximity to Auckland.				
3	A4	The student gained an A4 for their answer as they adequately explained the main farm types in Central Otago and how irrigation has been beneficial to increasing grass growth. To have gained a merit, the student would have need to describe how irrigation has impacted on the income of the farmers that have installed irrigation, i.e. improved yield or quality or timing of production.				