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NEW ZEALAND QUALIFICATIONS AUTHORITY
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SUPERVISOR'S USE ONLY

Level 2 Agricultural and Horticultural Science, 2016

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

2.00 p.m. Monday 14 November 2016
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.

Merit

TOTAL

16

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QUESTION ONE: HORTICULTURAL PRODUCTION

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Horticultural land use changes to reflect variations in consumer demand. Some of the changes in land use between 1994 and 2014 are shown in the table below.

	Hectares under cultivation in New Zealand at 30 June		
Product	1994	2005	2014
Apples	15 257	10 982	8 417
Kiwifruit	12 174	12 071	12 081
Wine grapes	7 160	24 793	33 761

Source (extract): Statistics New Zealand

Refer to the table and land use factors such as economic, environmental, technological, social, political, and workforce considerations to answer (a) and (b).

- (a) In 2014, New Zealand produced its highest ever yield per hectare of apples, despite the area of land in apple production being the smallest in 20 years.

Explain in detail TWO factors that may have led to this change in land use.

Technological factors may contributed to the highest ever yield in apple production. This is because technology is getting a lot better as the years go on. In recent years sprayers have been designed and better improved which meant that ^{when} spraying it would cover a larger area and also spray would be placed in direct contact with apples. As of this the spray would kill any pests and or diseases which would result in a higher yield and better quality. This would have impacted economically as it would have resulted in a high financial return. ^{Economic is another factor.} ~~The more income the farmers were receiving meant that they were able to spend more money on ~~more~~ improving their production such as improving technological factors. This meant that the better technology being used on apple production the more quantity of apples they would be growing.~~

(b) Justify traditional, current, and likely future horticultural land use in New Zealand.

In your answer, refer to the table and the land use factors on page 2, to:

- explain changes in land use between 1994 and 2014
- explain, in detail, what this might mean for current land use
- predict how this information might affect future land use.

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Changes in land use between 1994 and 2014 has been significant especially in the production of wine grapes. In 1994 7,160 hectares was under cultivation now in 2014 there is 33,761. This is because there is a high demand on wine grapes which is resulting in a high financial return, therefore many areas in NZ suitable for wine production are now converting to viticulture as of the high demand. This information may affect future land use as from this table we can see how there is a growing area/hectares of land that are producing wine grapes which in future this may get higher as of the high demand.

QUESTION TWO: LAND USE CONFLICTS

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Horticulture New Zealand is calling for protection of land classified as highly productive: "Only 5% of New Zealand soils fall into this category," it says, but 1.8% of this has been lost to less productive uses in the last 10 years. "If councils had any regard for the special characteristics of high production land they would then look at the effects of siting new housing developments there."

Source (adapted): NZ Grower, 2015, Vol 70, No 6, p.13.

Councils need to consider the economic, environmental, and social effects when siting new housing developments on highly productive land.

Discuss the implications for land use if councils do not consider these effects.

In your answer, using TWO land use factors:

- explain why there is a conflict between horticultural land use and residential use
- explain, in detail, how traditional land use has influenced the tension seen in current land use
- compare and contrast the implications if a council does not consider highly productive land when changing horticultural land use to residential land use.

There is conflict between horticultural land use and residential use as there is a growing population which is having an impact on land as ~~people~~ society need somewhere to live. ~~But they are not going to live on productive land~~ But if they are building on productive land this means it will effect horticulture economically. As a result of this it will impact everyone as horticulture ~~releases~~ ^{being made} a lot of money and if that money isn't there then the economy could crash effecting society as there could be a loss of jobs etc. If the council were to consider horticultural land use instead of making it into a residential area this would leave many jobs open to the public/society as there will need to be transport workers, marketing workers, processing workers etc. ~~There is a conflict~~ If the council were to build a residential area on highly productive land, this would have a bad impact on the environment as the council will be ruining the soil etc. therefore making the land un-productive. Seeing as there is only 5% of soils that are highly productive for horticulture, councils need to seriously consider the impacts it will have on the environment.

/socially and economically/

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QUESTION THREE: EL NIÑO

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New Zealand is often affected by the El Niño weather pattern, which can lead to drought. El Niño is a set of warm conditions in the central Pacific that bring dry weather to the east of New Zealand and rain to the west, affecting agricultural and horticultural production. The NZ Institute of Economic Research (NZIER) said:
The 2015–2016 summer El Niño would not be enough to tip the country into a recession, as was the case in the past El Niño in the 1997–1998 summer.
Source (adapted): *New Zealand Herald*, 22 September 2015; article by Jamie Gray.



Source: <http://www.stuff.co.nz/business/farming/sheep/67324546/sheep-and-beef-are-doing-it-tough-in-drought>

Justify, with reference to traditional and current land use, why NZIER made the above statement. Take into account land use factors such as economic, environmental, technological, social, political, and workforce considerations.

In your answer, explain in detail, using TWO land use factors:

- how traditional land use in 1997–1998 may have been affected by the El Niño weather pattern
- how current land use may not be as significantly affected by El Niño.

In 1997-1998 traditional land use had been affected by the El Niño weather pattern. Back then it was hard for farmers to overcome drought conditions as ~~they weren't~~ ^{they didn't} have the technology wasn't as great as now days. Back then they didn't have big centre pivots that were able to irrigate large areas which meant that without any water, grass ^{wasn't} ~~weren't~~ able to grow and therefore live-stock were struggling for feed. This would have had a huge impact on farmers economically as they were spending a lot of money on other feeds to ~~keep~~ maintain their livestock. In the late 90's ~~the~~ farming sheep had a huge loss as ~~the~~ farming sheep became too expensive and farmers weren't receiving a big income. Farmers

were suffering from a huge financial loss and were struggling to keep on top of drought conditions from the El Niño weather pattern. As of this financial loss, farmers may not have been able to afford to pay workers on the farms resulting in a loss of jobs in the workforce.

Nowdays, current land use may not be as significant as farmers are more prepared for drought conditions.

Technology has improved and farmers are able to stay on top of drought conditions with improved irrigation. Improved irrigation such as the centre pivot allows a larger area of land to be irrigated and it is also labour intensive. Nowdays, most popular farming is dairying as dairying comes with a high demand of dairy products and also there is a high financial return, therefore if a drought were to happen the money from dairying are able to cover the costs for food to maintain their livestock.

Annotations

Merit Exemplar 2016

Subject:		Agricultural and Horticultural Science	Standard:	91297	Total score:	16
Q	Grade score	Annotation				
1	5	a) The candidate gives examples of the technology used to increase apple yields and describes how they are used. b) The candidate includes a brief comment regarding the effect of increased demand on financial returns.				
2	5	The candidate fully discusses the effect on the horticultural industry of land lost to residential purposes. They make a broad recommendation without any specific examples for future action by the government.				
3	6	The candidate compares technology available in 1997-1998 against that available in 2015-2016. They are also able to discuss the effects on both dry stock and the dairy industries.				