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NEW ZEALAND QUALIFICATIONS AUTHORITY
MANA TOHU MĀTAURANGA O AOTEAROA

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SUPERVISOR'S USE ONLY

Level 3 Agricultural and Horticultural Science, 2016

91532 Analyse a New Zealand primary production environmental issue

9.30 a.m. Monday 14 November 2016
Credits: Five

Achievement	Achievement with Merit	Achievement with Excellence
Analyse a New Zealand primary production environmental issue.	Critically analyse a New Zealand primary production environmental issue.	Comprehensively analyse a New Zealand primary production environmental issue.

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 BOTH parts of the task 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 2–11 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

A4

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INSTRUCTIONS

This paper consists of ONE task, in TWO parts (A and B), which requires you to discuss the impact on biodiversity of a selected agricultural or horticultural production system. This will include the management practices of a producer to mitigate any negative impacts.

Name of your selected production system: Dairy

A New Zealand example of declining biodiversity.

PART A

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Explain how agricultural OR horticultural production management practices have impacted on the biodiversity of the local environment in New Zealand.

In your answer:

- discuss the **economic** factors that may have contributed to these practices, and the **negative social impacts** of declining biodiversity resulting from your selected agricultural or horticultural production system
- give **specific examples** of the decline in local biodiversity due to intensification of your selected agricultural or horticultural production system.

Biodiversity is the variety of plant and animals in a specific area. Some New Zealand dairy farmers have management practices that have impacted the biodiversity in our local environment. Some farmers have increased the number of their cow herd to increase the amount of income for the dairy farmers. This has caused to be a lot of stock on a paddock at one time, increasing the amount of Nitrogen and phosphate that could get washed or due to erosion get into waterways. Many dairy farmers use fertilisers to increase pasture growth, such as Nitrogen and phosphate as these are important nutrients needed for plant growth. Due to the increase of fertiliser application if not applied at correct times eg. before heavy rain phosphate and Nitrogen can be washed into

and crop important for milk production

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

waterways, via flooding, runoff, or
 pugging. Nitrate and phosphate also
 then ~~apple~~ can get into waterways
 due to cows urinating and
 excreting. If cows are too close
 to waterways and are not
 fenced off, nitrate and phosphate
 can get into waterways. Nitrate
 is the soluble form of nitrogen
 and can be easily washed. Phosphate
 is found in the soil sediment
 and due to erosion can
~~be~~ end up in waterways.
 If this happens, eutrophication can
 be caused due to these nutrients
 in the waterways, increasing the
 growth of aquatic plants, reducing
 the amount of oxygen in the water
 killing our native fish species.
 (6g/L per litre of nitrate is
 the amount can kill species)
 this is a decreasing biodiversity.
~~the native fish species die~~ If native
 fish species die such as whitebait,
 trout and eels, etc, this has
 a negative social impact as
 biodiversity is important for the
 environment and the community around
 the farms. If native fish die

food sources for Iwi are reduced and species won't be there to be caught and enjoyed by the community anymore as well as the future generations.

Some farmers have also taken away trees and forest land to need increase the land usage available.

This also negatively decreases biodiversity and affects the community, as many species could die, as the forest is a major food source and nest site for native species such as Kereru and Bellbird etc. and will no longer be there to enjoy. Decisions farmers make also have an affect on the local biodiversity. As streams and rivers are shared, ~~small~~ ^{farmers can} ~~overall~~ ^{reduce} ~~the amount~~ of species in New Zealand.

by their production management practices, and therefore need to be careful. Some farmers also use herbicides ^{and pesticides} to kill pests in the pasture as well as weeds. This is also affecting biodiversity.

PART B

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Justify a course of action that could be carried out by a producer to potentially mitigate the negative impacts of the management practices on the biodiversity of the local environment for your selected agricultural or horticultural production system.

In your answer:

- evaluate at least TWO courses of action
- include social and economic considerations.

Due to the increased rate of Nitrogen and phosphate Rachel Stuart's suggests that "farmers should have 80% less cows". This could help reduce the problem ^{and reduce amount of phosphate} farmers ^{needed} also need to think of the time they are apply their fertilisers as may decide to put less on which could be cheaper in the long run, and put cows on ^{pasture} ~~grass~~ for a shorter time, to increase pasture growth. Dairy farmers should consider to fence off all waterways as well as ^{of about 5 meters} Riparian Strip planting to increase the ~~area~~ distance so more filtration of nutrients can occur. This will also increase biodiversity and reduce erosion. Cost such as fencing as well as plants could cost the farmers but farmers ~~in their local area~~ can work with government organisations such as Environment

Southland. who can work with farmers and help with fence and plant expenses. Farmers can also fence off ~~the~~ forest remnants and due to organisations some forests are protected which stops some farmers from getting rid of the forest land and overall increasing the biodiversity making native birds species survive.

It will also result in native Ash species to survive and continue to reproduce, and be a good food source for Tui and local community. Dairy farmers should work with the local around them and government organisations such as Environment Southland, to make positive changes that will still benefit the farmer economically but as well as benefiting the community, Tui and the future generations of New Zealand. Environment Southland can help teach farmers who are unsure

of what species are in their waterways and help them learn about their land and what importance it has on biodiversity. Though farmers may go through extra costs in the long run it is benefiting them, the future farmers and the people and biodiversity of New Zealand. So it is important for dairy farmers to look at their production management practices, and work alongside with governments, Māori and the community to make sustainable decisions that will benefit everyone and keep the biodiversity going and hope that it continues.

* Farmers that use herbicides and pesticides could also be reducing the species as they could be killing our native birds and fish if they are in our waterways. Farmers could use less herbicides and use their stock and rotate have the stock on paddocks for

Extra space if required.

Write the question number(s) if applicable.

ASSESSOR'S
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QUESTION
NUMBER

a shorter time, farmers could
also use cows to trample
pests such as ragwort. and
farmers could also use wasps
to reduce the amount of
pests without ruining the
environment, it would also
cost less for the farmer to
use herbicides and pesticides
& ~~more~~ less often, without
ruining the biodiversity.

Achievement exemplar for 91532 – 2016		Grade Score: A4
Question part	Annotation	
A + B	<p>The candidate explained positive and negative environmental, social, and economic impacts that production systems contribute to in terms of biodiversity reduction. Accurate statements were made, but the detail was brief. Not many figures were used to back up the statements. The candidate used enough information for Achievement, but a more accurate explanation of the courses of action would be needed to gain a higher grade.</p>	