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NEW ZEALAND QUALIFICATIONS AUTHORITY
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QUALIFY FOR THE FUTURE WORLD
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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.

Excellence

TOTAL

E8

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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: _____

Dairying

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.

The goal of every farmer is to profit ~~not~~ maximise, they want achieve the highest price possible whilst ^{keeping} ~~maintaining~~ costs/expenses at a low level. Due to this mindset we have seen the environment take a hit due to it not been looked after when chasing high profits. To obtain high profits, farmers are maximising productivity and increasing ~~intensification~~ in ~~intensification~~, ~~the~~ as mentioned to ~~max~~ obtain high returns and profit maximise, farmer maximises productivity, this one of the ways they do this is by making use of all land on their property including wetlands, when I say make use I mean, make it available for grazing, this means converting wetlands and forestry areas into grazable land, It also means allowing cattle to

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

* earlier is said farmers have become more intensified, by this I mean they are now apply 300% more⁴ fertiliser than they ~~were~~ were 10 years ago. ~~that~~

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go right down to water ways to graze. The result of these management practices are a huge decline in biodiversity and also negative social ~~env~~ impacts.

By converting wetlands and forestry into grazable land, you are destroying the home and breeding grounds of native species, this results in them either dying during the conversion or having to risk their life to go find a new home. Agricultural and Horticultural expert Mike Joy says that nearly 90% of wetlands have been converted into grazable land since the 1900's. This is an astonishing figure and really shows the loss in biodiversity in recent years.

By allowing cows to graze right down to waterways it damages the environment for predatory fish. Cows make the waterways very murky by standing in them, which destroys predatory fish vision of their prey, meaning they either die or have to go somewhere

else for food to survive, both of which decrease biodiversity.

As previously mentioned, fertilizer application has increased 300% over the last 10 years. If all fertilizer stayed in the ground this wouldn't be a problem, but it doesn't. The soil can't hold that much fertilizer, therefore it flows through the soil and into the waterways. The nitrogen in the fertilizer is very harmful once into the waterways. It kills macroinvertebrates which is what a lot of fish eat to survive, resulting in fish dying due to no food which again decreases biodiversity. Fertilizer in the waterways also encourages algae blooms to grow which is very harmful for humans. ~~which~~ The negative social impact to intensification is that of waterways becoming unusable for both fishing and swimming. Places that were once a tourist destination are now becoming considered 'poisonous' waterways due to the algae blooms growing in them which is a result of farmers chasing high profits and forgetting about the environment and 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 - *stocking limit riparian plantings*
- include social and economic considerations.

The negative impacts on the environment from dairy farming can only ever be mitigated, never obliterated. The two courses of action to help improve biodiversity believe will help improve biodiversity, taking into consideration social and economic factors are riparian plantings and stocking limits.

By introducing riparian planting, you are making it compulsory for farmers to fence off 5-10m from waterways. This will stop fertiliser from getting into waterways by allowing the grass in between the fence and waterway to intake excess fertiliser run off. Also by fencing off waterways you are ensuring cows aren't able to walk through waterways, harming the environment for predatory fish. By now fertiliser getting into waterways and no cows making the water murky, fish will have an environment to

them in with macroinvertebrates to
 eat and clear vision. With healthy
 fish environment and a secure breeding
 ground it allows for recreational
 fishing which is a big up and will
 make rural communitys more
 vibrant that they are able to
~~fish~~ undertake a hobby ^{with this said,} with no
 damage done to a species. The
 economic flow on is as positive,
 the price of riparian planting is roughly
 \$10,000 a year but the gain in biodiversity
 is very great and something I believe
 is worth it. its time for farmers to
 stop being dead focused on profit and
 think about the environment. Trade envoy
 Mike Peterson says "for only \$10,000,
 you'd be stupid not to, the benefits
 are endless"

Another result of riparian planting is
 it creates ~~as~~ a place ~~as~~ for wildlife
 to live and travel through. they
 are able to live in a natural
 environment with little danger and also

provides corridors for wildlife to travel between Q₂ ² comments.

Stocking limits is a more basic way to help improve biodiversity and it does not bring a financial cost to farmers just a potential loss of opportunity cost. (profit ~~max~~ point will decrease). Stocking limits will bring a cap of how many cows you can have per hectare of land, the result of this will be that there will be enough pasture for all cows on the already appointed land and will stop cows from needing to go right down to waterways to graze. I do not believe the social flow on effects of this will be very positive, because it is simply just another law farmers need to follow ~~unpleasantly~~ but it does not come with a price tag for farmers, unlike riparian planting.

Overall I believe riparian planting is a more effective choice, because even though there is a hefty

Extra space if required.

Write the question number(s) if applicable.

QUESTION
NUMBER

part B),

cost, the improvement in productivity would be immense and also on positive social factors. ~~It~~ TO help with the financial side, I believe a smart move would be for local councils to subsidise the cost, because in the long run, the improved environmental state is benefiting everyone, not only farmers.

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Excellence exemplar for 91532 – 2016		Grade Score: E8
Question part	Annotation	
A + B	<p>The candidate explained positive and negative environmental, social, and economic impacts that production systems contribute to in relation to reducing biodiversity, with lots of examples and figures. The candidate provided good, relevant figures that were appropriate to the question. The candidate justified one course of action over other courses of action. There were good justifications in terms of the economic impacts, as well as consideration of social and environmental impacts. The answer was well written and easy to understand.</p>	