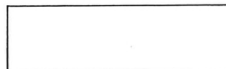


91297



NEW ZEALAND QUALIFICATIONS AUTHORITY
MANA TOHU MĀTAURANGA O AOTEAROA

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SUPERVISOR'S USE ONLY

Level 2 Agricultural and Horticultural Science, 2012

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

2.00 pm Monday 26 November 2012

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.

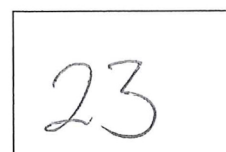
If you need more room for any answer, use the extra space provided at the back of this booklet.

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



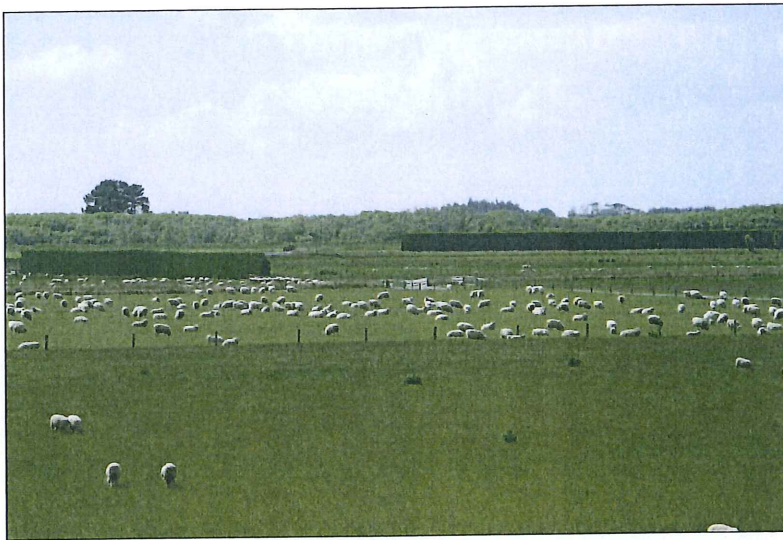
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You are advised to spend 60 minutes answering the questions in this booklet.

QUESTION ONE: DAIRY CONVERSIONS

This year it is expected that 20 farms in both the Southland and Canterbury regions will convert to dairying – mainly sheep farm conversions in Southland, and cropping farm conversions in Canterbury. Dairy cow numbers have expanded to 5 million, and now there are concerns over the continued growth of dairy cow numbers, both in regions where dairying has been the traditional land use and in regions where dairy conversions have occurred. A typical farm with potential for such conversion is shown in the photograph below.

Southland sheep farm for dairy conversion



- (a) Explain in detail how economic and environmental factors are affecting the rate at which sheep and cropping farms are being converted to dairying.

(i) Economic factors

Lamb ~~and beef~~ ~~price~~ prices have been down in the last 10 years (\$100 for a 17kg 4M lamb at the moment but it has got down to \$70 for a lamb which is considered unprofitable) ~~and beef~~ ~~at \$4.50/kg~~ and while this has been happening prices of milk solids have gone up dramatically ~~to~~ (about \$5.50/kg of milk solids now and has got up to \$7 in the last 10 years, where if the price is above \$4.50/kg of milk solids it is considered profitable). Due to the decrease in the price of lamb ~~and beef~~ and increase in the price of milk solids it has become much more encouraging for, especially sheep ~~farmers~~ farmers, to convert to dairying ~~in the last couple of years~~ in the last couple of years.

(ii) Environmental factors

Due to the access farmers have to rivers or places where they can extract water from around their farm it means that it is easy to irrigate meaning that dairy may be a good, easy option. Also because dairying require much more irrigation it therefore makes the grass, and the landscape, ~~look~~ ^{much} greener, ~~than~~ ^{than} sheep farms, which involve less irrigation, so may make the general public and neighbours of the farmer happier and more pleased with the land as it is a much more ~~pleasant~~ ^{pleasant} sight, having greener pasture.

(b) Evaluate the impact that **increased dairy/cow numbers** is having on the New Zealand economy, the land, and its people.

Consider the relative importance of the impacts of increased dairy cow numbers by comparing:

- positive impacts on the economy
- negative impacts on the environment
- positive impacts on society.

Because milk solids prices are getting so high this means that more people are converting to dairy, ^{growing the dairy} ~~and~~ ^{population, therefore} ~~therefore~~ ~~the~~ New Zealand (NZ) will have more milk solids being produced and exported meaning NZ is receiving more of an income, giving us a better economy. Because 65% of NZ's income comes from primary production it means that if agriculture, such as dairying, is doing well (getting high prices for milk solids and exporting plenty of milk solids) it means that NZ is earning more money meaning that the ~~general~~ ^{general} population of NZ ~~is~~ ~~do~~ will receive better things like health care, housing and cheaper food, which is having a positive impact on society. Dairying though requires plenty of water, for irrigation, creates lots of effluent and cows produce methane. If more people convert to dairy, meaning that dairy cow numbers increase it means that more

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QUESTION TWO: TRADITIONAL HILL COUNTRY FARMING

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Semi-extensive pastoralism in the form of sheep, cattle, and deer production has long dominated land use in the hill country of the North Island. A typical property of this type is shown in the photograph below.

Hill country property



- (a) Explain in detail, considering economic and social factors, why farmers on North Island hill country properties continue to farm a combination of sheep, cattle, and deer.

(i) Economic factors

Due to the landscape of the central north island, being very hilly, semi-intensive sheep, beef or deer farming has always been an economical option. This is because these animals can develop with this kind of landscape where as if it was put into ~~orchards~~ something else such as orchards or dairying, in the hilly areas, they may be more difficult to carry out, due to the machinery involved having to work on hills or the dairy cows wasting energy walking over hills (which could be used for producing milk) it has proved to be the most economical way in which to ~~farm~~ farm this type of land.

(sheep, beef and deer)

(ii) Social factors

As the north island has a much larger population than the south island much more jobs are going to be needed in the north island. These semi-intensive sheep, beef and deer farms would offer these jobs (whether it be as farm hands, stock truck drivers, vets or freezing works workers) where as if it was converted to something such as forestry, which would be one of the next best options, it would not require some many people to attend to it continuously which is a social reason why central north island farms continue to farm sheep, beef and deer.

- (b) Justify the decision of most farmers to continue with existing land use (some combination of sheep, cattle, and deer) for these hill country properties.

In your answer, consider sustainable production in terms of:

- economic returns
- technological requirements
- social advantages.

If the properties were converted to something such as forestry the owner of the land would have to wait 20-25 years (for the ~~grass~~ trees to grow, before they received money for the timber produced. This means that in the mean time they must find an alternative job to keep producing income constantly where as with sheep, beef or deer farming you get paid every year as you would send animals to the works every year meaning that you would still get paid every year earning income consistently, which is consistent economic returns if the farmers stayed in sheep, beef and deer. The technological requirements for sheep, beef or deer farming is very little (yards, if wheel drive vehicles) and is technology which can cope with the hilly country. Where as if the land was converted to dairy or orchards or forestry (which all require quite large specialised equipment such as ~~very~~ large irrigators, harvesting and felling machines) the machinery used in these operations may be find it very difficult to operate on the hilly

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QUESTION THREE: KIWIFRUIT DILEMMA

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The kiwifruit disease Psa-V has killed vines in the Bay of Plenty, a region that produces 80% of New Zealand's export crop. Experts say that the disease affects nearly 1,000 orchards growing the gold variety, and they expect a 20% reduction in the volume harvested. Affected growers are now considering other forms of land use for their properties.

Bay of Plenty kiwifruit orchard



- (a) Explain in detail other land use options that could be considered for Bay of Plenty orchards affected by Psa-V.

In your answer, consider:

- economic factors
- social factors OR technological (which could include research) factors.

- (i) Economic factors

Due to Psa-V killing many kiwi fruit vines, it means that individual growers will have less kiwifruit to harvest, less kiwifruit to sell and therefore less income. Switching to a land use which would then earn them more income would therefore be a suitable option. Switching to a land use, such as dairying, would be a good economic option, especially due to the rise in milk solid prices lately (\$5.50/kg of milk solids at the moment but has got up to \$7 ~~which was~~ where \$4.50 is considered ~~just~~ just profitable) so would earn you plenty of more money than kiwifruit at the moment with the threat of Psa-V.

(ii) Social OR technological (which could include research) factors

Also due to the technological advances lately in dairying it has made it much more ~~app~~ appealing and easier to convert to dairy. Due to the development of centre pivot irrigators it has made it easier to irrigate over a large, flat (as alot of kiwifruit orchards would be) area, with less labour cost. Also the development of dairy sheds (such as rotary sheds) and efficient disposal systems it has allowed for larger herds (make income) and less labour cost. These make it ~~cheaper~~ cheaper, ~~to earn~~ you more income and make it easier to farm dairy could.

(b) Justify the decision of a kiwifruit grower to continue to grow kiwifruit rather than selling the orchard or changing to another form of land use. Support this decision by analysing the advantages and disadvantages of the grower's options.

In your answer, consider:

- the economic impact of change
- potential technological improvements
- social factors that include the grower's family and the wider community.

If many of the kiwifruit growers converted to an ~~the~~ alternative land use this may have a large impact on NZ's economy. Because 65% of NZ's exports come from primary production, which includes kiwifruit, if many of these kiwifruit growers switched to an alternative land use nearly the whole kiwifruit industry would be wiped out ~~at~~ possibly over supplying things like dairy products and under supplying kiwifruit. This means the price of ~~a~~ milk solids would decrease while the price of kiwifruit would increase but ~~there would~~ be no one producing the kiwifruit so the increased price would have no effect. This would have a large impact on NZ's economy as we would receive much less income from primary production export, which we rely so much on, so have a large impact on NZ's economy. If kiwifruit growers switched to alternative land uses, such as dairying they would have to spend alot of money on converting (buying stock and new equipment) then after they have converted a few years later something was developed which killed PSA-V and kiwifruit could be grown successfully again those kiwifruit growers could have wasted alot of money converting land uses where really it was not necessary, ~~the~~ due to the technological improve ments of ~~developing~~ killing PSA-V. If the kiwifruit grower converted land uses it means that he would have to spend alot of money on converting meaning he may not make much profit for a couple of years ~~as~~ he would have to pay the money off. This means his family would have to live very cheaply for a couple of years while the ~~debt~~ debt was paid off. Also kiwifruit orchards require a large work force (pickers, truck drivers, packagers and advisors/bankers) where as something such as dairy, which the kiwifruit grower could convert to, would not require the same amount... MORE ON BA

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Extra space if required.
Write the question number(s) if applicable.

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QUESTION
NUMBER

1(b) water will have to be extracted and more methane and effluent will build up. The problem then is if too much water is abstracted for irrigation and there is not enough left for the environment to maintain itself naturally as it is or how we will then dispose with the amount of effluent built up in a way which won't harm the environment or counteract the methane build up in the atmosphere to not harm the environment, which all have a negative affect on the environment. //

2(b) country of these north island farms. Because of the north islands large population there will always be ~~jobs~~ people willing to do jobs sheep, beef and deer farmers need, such as farm hands, truck driving for transporting stock, freezing works workers or advisors/bankers so the fact that these farmers will not have people to work for them should not influence them when wondering if they should change land ~~use~~ uses, so should not influence them to change from sheep, beef or deer, which is a social advantage. //

3(b) of people to work for them meaning people around the farm would lose jobs, affecting the wider community. //

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