

No part of the candidate evidence in this exemplar material may be presented in an external assessment for the purpose of gaining credits towards an NCEA qualification.

3

91531



915310



NEW ZEALAND QUALIFICATIONS AUTHORITY
MANA TOHU MĀTAURANGA O AOTEAROA

QUALIFY FOR THE FUTURE WORLD
KIA NOHO TAKATŪ KI TŌ ĀMUA AO!

SUPERVISOR'S USE ONLY

Level 3 Agricultural and Horticultural Science, 2018

91531 Demonstrate understanding of how the production process meets market requirements for a New Zealand primary product(s)

2.00 p.m. Tuesday 27 November 2018
Credits: Four

Achievement	Achievement with Merit	Achievement with Excellence
Demonstrate understanding of how the production process meets market requirements for a New Zealand primary product(s).	Demonstrate in-depth understanding of how the production process meets market requirements for a New Zealand primary product(s).	Demonstrate comprehensive understanding of how the production process meets market requirements for a New Zealand primary product(s).

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 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 2–8 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

E8

ASSESSOR'S USE ONLY

INSTRUCTIONS

This assessment consists of ONE task, in TWO parts.

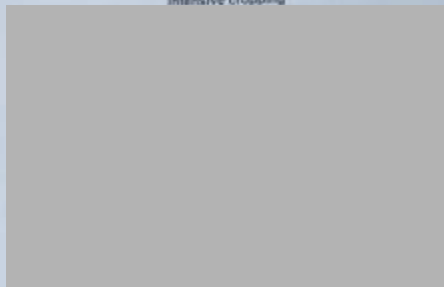
Select a nationally significant primary product and its specific market, and write them in the box below. Before doing this, however, read the **entire task** carefully, to ensure that your selection will allow you to meet the requirements of the task.

Nationally significant primary product (in unprocessed form): Golden Kiwifruit //

Specific market for this product: Japan (Golden kiwifruit) //

RESOURCE A

Intensive cropping



The Ministry for Primary Industries has a goal to double New Zealand's primary sector exports between 2012 and 2025 to \$64 billion. Between 2012 and 2016, the value of exports grew by 3.3%. To reach the 2025 target, the value of exports will have to grow by 9.5% per year between now and 2025.

One of the more recent reports highlights that horticultural products and other primary foodstuffs have shown good growth towards the target. However, production will have to scale up substantially and quickly in all sectors to reach the goal. That means a combination of more intensive use of land, more inputs, more irrigation, and more investment to drive more productivity, in combination with adding value to products.

RESOURCE B

The growing cycle of an agricultural or horticultural product is summarised below.

Production phases

Some examples of management practices



Selection of a dairy bull
Preparing a seed bed

Pruning a grape vine
Drenching a cow

Drafting a lamb
Selective picking fruit

PART A

Explain how a producer of a primary product of your choice could manipulate their management practice decisions to increase market returns from their product.

Note: This could come, for example, from producing a greater volume of product for sale, or from increasing the market value of their product.

In your answer:

- provide details of THREE specific management practices
- ensure that each phase of the growing cycle, as shown in Resource B above, is represented
- clearly state how increased market returns could be achieved by the grower.

Management practice (1)

Artificial Pollination takes place in the establishment phase and is when pollination of kiwifruit flowers takes place using equipment/machinery such as the Robobee. For a kiwifruit flower to be fully pollinated using regular bees, it takes a minimum of 40 visits per flower, which is time consuming and not economical, and makes it harder for growers to produce quality fruits in time for the market opportunity, that is Golden Week. To speed this process up, the Robobee is used to spray and carry pre-harvested pollen straight to the flower, meaning it is pollinated in one visit and can begin growing stages earlier using artificial pollination.

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

allows growers to begin growth earlier than when natural growth occurs, leaving longer for the kiwifruit to develop certain attributes demanded by Japanese consumers, such as brix levels of at least 16.2 and dry matter of at least 15%. By giving more time for these attributes to establish, growers are then able to begin harvesting toward end of February and have a greater quantity of quality fruits. This allows fruit to be exported to Japan and be in markets ready for Golden Week, where growers can expect to receive up to \$6 per kg, compared with regular prices.

*continue on page B

Management practice (2)

Supawine training takes place in the growth phase and involves stringing vines up into triangular shaped structures, exposing more kiwifruit to the sun for longer times, increasing the rate of photosynthesis and allowing fruits to develop desirable attributes. These include brix levels of at least 16.2 and dry matter of 15%, as well as improving ventilation so the kiwifruits remain less susceptible to diseases and pests, while the sun helps to evenly ripen and sweeten the fruit. Using supawine increases the quantity of fruits produced to around 18256 tonnes compared to 13322 tonnes when conventional methods of training ^{are} used, almost a 5000 tonne increase. With fruits ripening and developing desirable attributes faster, while remaining pest free, growers can increase the quantity of quality fruits that are ready for harvest, before the natural harvest point, so they can reach Japan before Golden Week. As New Zealand is the only country that can have kiwifruit ready for Golden Week, growers can demand double the price at \$6 per kg from Japanese consumers if the fruit reaches the market on time. This makes supawine training a key management practise to use in the growth phase to ensure growers take advantage of the ~~max~~ potential for increased market returns, meet the demands with more quantity of quality fruits and make a sizable profit for their efforts.

Management practice (3)

Prior to harvest taking place, growers have their fruits tested to ensure they are pest and disease free, while containing internal attributes such as a brix/sweetness level of at least 16.2, dry matter of around 18% and are evenly ripened. This testing stage is vital to ensuring crops are not harvested too early and ensures the grower has produced fruit of exceptional quality. As the market returns are increased around Golden Week, to a possible \$6 per kg compared to the usual \$3 per kg, the testing of fruit is a crucial management practice to use to determine when harvest should take place and which fruits should be harvested. Using this management practice allows growers to harvest their crops at optimal times so that the fruit can be packed and exported in time for Golden Week in Japan, allowing growers to take advantage of the market opportunity or increased market returns from Japanese growers. //

This examination continues
on the following page.

PART B

By analysing the three management practices discussed in Part A, justify which management practice you believe would have the greatest potential impact for a producer wishing to increase market returns from the product by meeting market requirements.

In your answer, provide specific data.

Artificial pollination allows growers to begin ~~of~~ pollination early and guarantee full pollination of an orchard therefore increasing the potential crop size and giving more time for the desired attributes to develop ^{before} ~~before~~ ^{brw levels to 2 and dry matter to 15%} harvesting takes place. This means growers can ensure they have larger quantity of fruits ready for export so they can take advantage of the increased market returns at this time.

Supervine training not only increases the quality of the fruit but also the quantity produced as it exposes more fruit to the sun and helps to space the fruits out to allow for full growth and development of more kiwifruit. This means growers have kiwifruit which have brw levels of at least 16.2 and dry matter of 18%, while maintaining ventilation to stop pests and/or diseases having time to settle on the fruit. This means the volume of kiwifruit produced is at a high level of quality but also speeds up ripening to allow for earlier than usual harvest, so the fruits reach Japanese consumers in time for Golden Week and the demands of consumers at this time is satisfied, at a quality level.

Pre-harvest testing allows growers to determine the exact time of harvest for their crops and helps to guarantee the market requirements are met throughout all ^{crops} ~~crops~~ produced. This means growers can harvest earlier and are assured their produce will reach growers in optimum conditions thus increasing the market returns to \$6 per kg instead of the regular \$3 per kg, while maintaining and meeting market expectations and requirements.

Overall, I believe that artificial pollination, through the use of the Robobee, is

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

QUESTION NUMBER

(A1) of \$3 per kg, during Golden week, if the ~~the~~ desired attributes, eg: brix levels and dry matter, are produced and fruits are in the market on time using. Adaboise allows growers time to fully develop these attributes and supply Japanese markets on time, thus increasing the market returns expected.

(B) so market returns can be increased. While both other management practises are vital to the success of growers meeting market requirements and their ability to increase market returns they are not as important as artificial pollination. Without the use of artificial pollination the quality kiwifruits would be ready after Golden week thus wasting the market opportunity. Therefore it is the most important management practise, out of these three, for growers to use to ensure they meet market requirement within the required timeframe for Golden week, so they can capitalise on the market ^{opportunity} ~~opportunity~~ created and maximise market returns.

91531

Excellence Exemplar 2018

Subject	Level 3 – Agricultural and Horticultural Science		Standard	91531	Total score	E8
Q	Grade score	Annotation				
1	E8	<p>The response provided a sound and thorough use of data and well-linked explanation of relevant management practices that have an impact on the market returns from golden kiwifruit for different phases.</p> <p>Full and comprehensive justification of a specific manipulation that has the greatest potential to increase market returns, in Japan, for golden kiwifruit, with relevant detail / data. Market requirements are included in the analysis.</p>				