

# 1

90921



909210



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 1 Agricultural and Horticultural Science, 2018

### 90921 Demonstrate knowledge of livestock management practices

9.30 a.m. Thursday 22 November 2018  
Credits: Five

Achievement	Achievement with Merit	Achievement with Excellence
Demonstrate knowledge of livestock management practices.	Demonstrate in-depth knowledge of livestock management practices.	Demonstrate comprehensive knowledge of livestock management practices.

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 2–12 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**

**22**

ASSESSOR'S USE ONLY

**QUESTION ONE: DAIRY CATTLE**

The majority of dairy cows in New Zealand are artificially inseminated (AI) by an AI technician.

- (a) Describe THREE actions that are performed when artificially inseminating dairy cows, and explain why each action is carried out in that way.

Action	Explanation
Technician arm placed through rectum //	This is to help guide the pistol through the cervix into the uterus. The hand is able to feel if the pistol has damaged or scratched the uterus. <del>Also</del> //
<del>Person</del> Cow is put in a crush / safe environment //	This is so the animal isn't in a safe environment and the technician isn't going to run the risk of being injured //
Gear is working correctly //	The gear is checked before insemination of the cow to make sure that we don't damage the animal and we are getting all semen deposited into/close to the cervix. //

Bovine viral diarrhoea (BVD) is a highly infectious disease in New Zealand cattle that can cause reproductive losses, reduced growth rates, and lowered milk production. Cattle with BVD cannot be cured, but they can be vaccinated to prevent them getting it.

- (b) Describe what a vaccine is, and explain how it works to improve animal health.

A vaccine is a liquid which is put into the cattle system to help to build up an immunity towards BVD. With the cattle beast having the BVD injection given to them, if they are in close range of infected animals, they may have the ability to fight the disease. The vaccine would hopefully try to prevent the disease in the first place. Vaccines improve animal health because when the cow is lactating and feeding offspring, the vaccination is passed down through the milk and passed onto the offspring so they will hopefully begin to build an immunity to fight BVD //

In order to control bovine viral diarrhoea (BVD) in New Zealand, farmers vaccinate their cattle and cull any stock that are infected.

- (c) Justify why vaccinating the herd and culling infected cattle prevents outbreaks and the spread of BVD.

In your answer, consider

- short-term and long-term effects on herd health
- the effectiveness of controlling the disease
- overall farm production.

When culling the effected animal that has BVD, we are removing the infected animal completely off the farm so that infected cow can no longer spread the BVD. The short-term effect on herd health means that if you find one infected cow, you run the risk of all animals being infected but eventually, you will cull out all infected animals so the health of the herd begins to improve again. Just because we cull one infected cow we cannot be 100% certain that the disease is gone as it may have been passed onto other animals before we find the infected animal as BVD is a highly infectious disease. Culling the animal is effective as a short term fix because you are removing the infected completely straight away however, this becomes a costly expense as you are having to replace those animals each time you cull one compared to if you were to vaccinate your animal to help prevent the outbreak of BVD in the first place. Culling your infected animal is also very labour intensive having to bring each individual animal in to go to slaughter, you may be doing this multiple times a week as each infected animal shows up compared to just bringing all animals in once a year to be vaccinated to help prevent it in the first place. Culling the infected animal helps to improve production on the farm because any cow infected with BVD have lower milk production, reproductive loss and slower growth rate and this means that the cow isn't making money so //

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

removing the animal completely means the ~~cow~~<sup>family</sup> isn't wasting time milking a cow that isn't going to make money. A farmer is better off to have a smaller healthier herd BVD free than a larger herd with sick cows which are unable to produce high quality milk, raise offspring and continue to grow. A BVD free cow and herd means an increase in production therefore an increase in profit. //

**QUESTION TWO: SHEEP**

Sheep need to be crutched/dagged (removal of wool from around the tail and between the rear legs) regularly.

- (a) Explain how crutching/dagging improves sheep health.

Crutching/dagging is ~~the~~ improving sheep's health because you are removing a breeding ground for an external parasite. Flies lay their eggs on a dagging sheep as this is a area which is generally warm and the maggots/larvae/pupae, have a feeding ground to breed and grow. We are decreasing the chance of flystrike where the maggots eat away at the sheep's meat and skin and cause them pain and their health deteriorates. //

Milk from sheep is a highly nutritious alternative to cow's milk. In New Zealand, milking sheep are farmed in a similar way to dairy cows and are milked twice a day.

**Sheep-milking platform**

Source: [www.stuff.co.nz/business/farming/sheep/9441640/Milking-ewes-for-all-their-worth](http://www.stuff.co.nz/business/farming/sheep/9441640/Milking-ewes-for-all-their-worth).

- (b) Describe the feed requirements of lactating ewes, and explain why they differ from maintenance feed.

A lactating ewe is an animal producing milk to help to feed offspring and milking a ewe is ~~remov~~ removing milk so they are having to replace this milk which requires more carbohydrates/protein/calcium, which is physically demanding of the sheep and the ewe needs to be in a healthy and fit enough state to do so compared to maintenance where the ewe is not putting on nor losing weight. //

In order to increase the quality and quantity of milking sheep in their flock, a farmer can either buy in rams to breed with their ewes or purchase more ewes.

ASSESSOR'S  
USE ONLY

(c) Justify why a farmer would buy rams to breed with, rather than purchase ewes

In your answer, consider:

- genetic potential
- short-term and long-term effects on production
- costs and efficiency.

Ewe	Ram
- cannot only use 1x year	+ select genetics
- 50 for each ewe	+ don't have to raise
- may only have 1 lamb	+ ram sell to make 7
- get old ↓ quality	+ use straight away
+ produce offspring	- may bring in new disease
↓ reliability	- only use for 2-3 yrs
↓ produce milk	
↓ produce wool	

With the farmer purchasing rams instead of ewes, it is more effective ~~than~~ for multiple reasons. With purchasing a ram, you are able to select a ram with genetic traits of which you desire and you have a higher guarantee of those genetics being passed on because you know the genetic combination and know the offspring the ram is producing compared to the ewes which may have not been produced offspring so you don't know what that animal is going to produce. A ewe ~~can only produce offspring~~ normally only produces offspring once a year so for the remainder of the year the ewe isn't being milked or raising a lamb it serves no purpose and it will cost you as a farmer to help maintain the health and well being of the animal whereas after you have used the ram, you are able to offer him for lease to other farmers this is resulting in an extra source of income for the farmer. ~~When purchasing a ram, you have the ability to use him straight away~~ <sup>straight away</sup> ~~considering you have other ewes that are cycling compared to purchasing a ewe which you have to wait for to cycle to then impregnate them wait another about 2-4 days before~~ again before the lambs are born. Buying in either a ram or a ewe does run the risk of bringing in new diseases. Rams you are only able to use for 2-3 years before you begin to inbreed your animals so you have to get a new ram to bring in new genetics ~~the~~ compared to a ewe which you are able to continue to breed from until ~~she~~ she can breed no longer.

E7

## QUESTION THREE: DEER

ASSESSOR'S  
USE ONLY

Female deer can get pregnant only when they are in season or "on heat".

- (a) Describe what "on heat" means, and explain why deer can get pregnant only during this time.

On heat is the time of which the female deer is <sup>ovulating</sup> ovulating, this is when she releases her egg for <sup>fertilisation</sup> fertilisation. If a <sup>male</sup> male deer is not on heat, she is not releasing an egg so this means the sperm have nothing to fertilise so she can't get pregnant. //

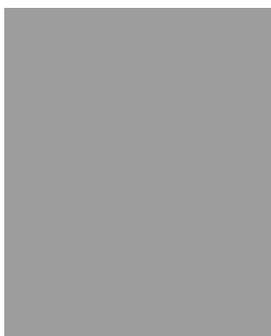
A farmer has decided to buy in grain and palm kernel expeller (PKE) to use as supplementary feed.

- (b) Explain why it is important that deer are gradually introduced to these feeds. <sup>sudden change</sup>

The deer should be gradually introduced to the palm kernel expeller because it is a supplementary feed, this means the farmer is only giving this feed to the deer to accompany their primary feed which may be lacking an extra source of nutrients required for the deer. <sup>to gain more than weight or care for other way</sup> If you were to clean out them off their previous diet to the palm kernel expeller, the deer's digestive system wouldn't know how or what to do with all these extra nutrients, so the animal is eating less because it is making them ill because of the palm kernel being so nutrient rich, so the deer begin to lose weight therefore a decrease in production. Steadily introducing the supplementary feed gives the digestive system time to adjust so the animal ~~can get~~ and farmer can get the best results of performance from the animal. <sup>and the digestive system can use these extra nutrients effectively</sup> [to get the best performance off the animal. //]

Copper is an element essential for deer health, and often deer need more than they can get from their diet alone. In order to increase the amount of copper in a herd's diet, a farmer can either place a slow-release capsule down the throat into the rumen or mix a copper-rich solution into the water troughs.

Copper capsules



Source: <https://www.bayeranimal.co.nz/en/products/products-details.php?id=993>.

Deer at a water trough



Source: <https://www.rainmakerwildlife.com/drinkers/>.

- (c) Select the better method for ensuring that deer get enough copper in their diet. Justify your selection by comparing and contrasting it with the other management practice.

Selected management practice: Copper Capsules

In your answer, consider:

- effectiveness of each method
- labour and other costs
- long-term deer health.

Capsules	Trough
<ul style="list-style-type: none"> <li>- slow release</li> <li>- every deer is getting one</li> <li>- give exact dosage</li> <li>- no way to get animal in</li> </ul>	<ul style="list-style-type: none"> <li>- can't guarantee every animal gets some</li> <li>- always having to get in troughs</li> <li>- rains may wash it out</li> <li>- expensive as # troughs on farm</li> <li>- don't have to get animal in</li> <li>- one deer may have increased copper and will kill them</li> </ul>

The use of capsules means you can monitor intake compared to animals drinking out of the water trough.

The use of copper capsules instead of water trough solution is better for many reasons. When using the copper capsules, you know that you are giving one to every single animal compared to the water trough solution where you cannot guarantee the animal is drinking enough to reach the amount required for the individual animal. The use of the capsules also means that you can buy the capsules suited to each individual deer's requirements whereas the ~~animal~~ deer drinking from the trough drinks so much that the copper intake is too high and may result in the death of the animal. With the copper capsules being slow release, this means that the capsule is releasing enough copper regularly to maintain healthy copper.

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

levels whereas the water trough copper solution means that the animal is drinking the water and only for the time the water has copper in, they have a sudden increase in copper levels and once the concentration levels of the trough decrease so does the intake for each individual. With the use of copper capsules, you know the time period of which they are ~~effective~~ effective for so you are not having to keep giving a capsule to the animal ~~as~~ whereas the water-trough solution you run the risk of it being washed out when it rains and the water trough over-flows so you are again having to put more solution into the trough which is very time consuming. However, when using the copper capsules, this requires you to bring the deer into the yards physically get in with the animal which is both physically demanding and dangerous compared to just driving to each water-trough on the farm and tipping in a solution. The copper capsules ~~may cost~~ are financially more sustainable than the water-trough solution because you can guarantee that each animal is getting a bullet once every year so the capsules are a one off cost whereas you are having to buy water-trough solution all year round to keep putting in which is costing you each 3 months or so when you have to add more solution.

\* and if intake is too low it may mean the deer isn't growing or as healthy as it should be //

E8

## Excellence Exemplar 2018

Subject	Level 1 Agricultural and Horticultural Science		Standard	90921	Total score	22
Q	Grade score	Annotation				
1	E7	The candidate has a well written and well-rounded answer in part C. They were able to demonstrate their understanding of how AI is performed with explanations of the action. To receive an E8 the candidate would have needed to have a greater understanding of how a vaccination works, i.e. stimulating an immunity response and also how culling and vaccinating can work together as a control method.				
2	E7	The candidate has well written answers for this question, showing a greater understanding. For part C, they have clearly understood the genetic potential and possible implications of using ram vs ewe to increase quantity and quality. To move to an E8 the candidate would have needed to show more of an understanding in comparison to the costs involved and be more explicit in the short- and long-term impacts.				
3	E8	The candidate has a well written, rounded and thorough answer. They have been able to demonstrate a greater understanding of all three sections of this question. The part C of this question was answered. It gave a clear compare comparison, and a well-reasoned justification was provided.				