

## Assessment Schedule – 2024

### Agricultural and Horticultural Science: Demonstrate understanding of how NZ commercial management practices influence livestock growth and development (91294)

#### Assessment Criteria

Achievement	Achievement with Merit	Achievement with Excellence
<b>Describes</b> how management practices influence livestock growth and development in commercial livestock production in New Zealand.	<b>Explains</b> how management practices influence livestock growth and development in commercial livestock production in New Zealand.	<b>Evaluates</b> how management practices influence livestock growth and development in commercial livestock production in New Zealand. This may involve <b>justifying, comparing and contrasting, or analysing</b> the use of the techniques.

#### Evidence

Question ONE	Sample evidence	Achievement	Achievement with Merit	Achievement with Excellence
(a)	<p>Explain how farmers monitor the health of your chosen livestock to ensure successful growth and development.</p> <p><i>These are examples; other methods for monitoring health for other livestock can be accepted.</i></p> <p><b>Faecal egg count in sheep</b></p> <ul style="list-style-type: none"> <li>Farmers can monitor parasitism in sheep by getting a faecal egg count (FEC) done, which provides the farmer with information on whether the sheep has worms or not. This informs the farmer's decision to drench or not. An FEC requires specialised equipment, including a microscope. A farmer can either do the test themselves or send the faecal samples to a veterinarian. It is best practice to do an FEC prior to drenching and again around 10 days after drenching.</li> <li>If sheep have internal parasites, they can be drenched to reduce worm burden. Internal parasites can result in reduced feed intake; having parasites in the digestive system leads to inflammation of the gut lining, resulting in reduced appetite and feed intake. This can lead to reduced nutrient absorption, which means lower growth rates. Blood-sucking parasites can cause anaemia. Anaemic sheep have lower red blood cell counts, which can lead to weak and lethargic stock with less energy for growth and development of muscle.</li> </ul>	Describes a practice for monitoring health. Basic facts given.	Explains a practice for monitoring health. Makes some links.	

<p>(b)</p>	<p>Consider the statement above and justify whether you agree or disagree. In your answer consider the economics of production and timing.</p> <p><b>Economics of production</b></p> <p>It is not economically viable or practical to do an FEC on all sheep in a flock, therefore only a sample is done. By doing an FEC, farmers will ensure that only sheep with parasites are drenched. This prevents unnecessary costs and time drenching, and it also helps reduce the chance of drench resistance within sheep. An FEC accurately identifies a reason why sheep might be showing symptoms of worms, so sheep are correctly drenched. Drenching ensures that sheep growth rates can be maintained. There is a cost associated to drenching. However, this outweighs the loss in production through sheep having worm burden.</p> <p><b>Timing</b></p> <p>A lamb born on 1st September at 4.5kg liveweight, growing at 400 grams per day, reaches 37kg of liveweight by mid- to end of November (81 days). Farmers try to meet this target for slaughter, as this is when schedule prices are at their peak. This is due to the increased demand for lamb at Christmas. Drenching when a lamb has worms ensures that growth rates are maintained throughout their period of rapid growth from birth.</p> <p>Doing an FEC before drenching is best practice. This ensures that sheep are not being drenched unnecessarily and reduces the chance of them building a resistance to the drench.</p>	<p>Considers whether preventing health issues is more beneficial than treatment for growth and development.</p> <p>Basic facts given.</p>	<p>Considers whether preventing health issues is more beneficial than treatment for growth and development.</p> <p>Considers ONE factor more than the other.</p>	<p>Considers whether preventing health issues is more beneficial than treatment for growth and development.</p> <p>Considers the statement in terms of TWO factors and gives a comprehensive answer.</p>
------------	---	---	--	--

N1	N2	A3	A4	M5	M6	E7	E8
<p>Some writing but does not describe how farmers monitor the health of livestock.</p>	<p>Partial or insufficient description of how farmers monitor the health of livestock.</p>	<p>Describes how farmers monitor the health of livestock.</p>	<p>Describes how farmers monitor the health of livestock, with reference to growth rates.</p>	<p>Explains how monitoring health issues ensures that livestock's growth and development can be enhanced.</p>	<p>Explains how monitoring health issues ensures that livestock's growth and development can be enhanced, by linking to energy intake or informing decisions through monitoring.</p>	<p>Justifies if preventing health issues is more beneficial than the treatment of health issues in livestock is more beneficial for growth and development, or not.</p> <p>Clear evidence for superiority in ONE impact, either economics of production or timing, with the other impact well supported.</p>	<p>Justifies if preventing health issues is more beneficial than the treatment of health issues in livestock is more beneficial for growth and development, or not.</p> <p>Clear evidence for superiority of BOTH impacts.</p>

**N0** = No response; no relevant evidence.

Question TWO	Sample evidence	Achievement	Achievement with Merit	Achievement with Excellence
(a)	<p>Explain how pasture quantity and quality changes throughout the year and influences the growth and development of your selected livestock.</p> <p><i>These are examples; other livestock can be accepted.</i></p> <p><b>Cattle</b></p> <ul style="list-style-type: none"> <li>• Pasture growth rates are at their highest during the spring flush. This pasture growth is timed to meet the increased feed requirements of lactating cows at and after calving, as well as the calves once they are weaned. Excess pasture is cut and stored as pasture silage or hay over spring and summer for times when there are pasture deficits. Pasture quality is measured by the energy and protein content, and changes throughout the year.</li> <li>• Pasture is most digestible July–November. Short, leafy pasture in spring contains up to 24% protein and 12MJME. That quality decreases to a protein content of 10–15% protein during the end of summer and energy of 8–10MJME.</li> <li>• Protein is needed for the growth of muscle and bone, and energy is needed for growth of livestock, as well as milk production.</li> </ul>	<p>Explains pasture in terms of quantity and quality for growth and development.</p> <p>Basic ideas expressed.</p>	<p>Explains pasture in terms of quantity and quality for growth and development.</p> <p>Makes links between the two.</p>	
(b)	<p>Choose a crop that a farmer might use instead of pasture to improve growth and development of your selected livestock.</p> <p>Justify the use of this crop. In your answer also consider the quality, timing, and economics of production.</p> <p><b>Evidence given for fodder beet</b></p> <ul style="list-style-type: none"> <li>• Fodder beet is a high energy crop that can be fed to cattle.</li> <li>• Quality: Fodder beet is a good option as it provides cattle with medium protein (13%) and high energy (12MJME).</li> <li>• Timing: Beef cattle should reach their target weight between 18 and 20 months old. Fodder beet is usually fed during winter when pasture quality and quantity is low, and can maintain growth rates between 0.5–1kg / day in cattle.</li> <li>• Economics of production: The increased growth rates result in a higher-valued carcass at slaughter. A high energy crop, like fodder beet, helps ensure that cattle reach their potential in growth and development. Therefore, the cost of putting out the crop will yield a return on investment at slaughter.</li> </ul>	<p>Describes aspects of crop quality, timing, and economics of production.</p>	<p>Explains how a crop quantity and quality changes throughout the year and how it impacts livestock.</p>	<p>Justifies the use of a crop in terms of quantity and quality and how it impacts livestock.</p>

N1	N2	A3	A4	M5	M6	E7	E8
Some writing but does not describe pasture quantity and quality changes throughout the year for livestock.	Partial or insufficient description of how pasture quantity and quality changes throughout the year for livestock.	Describes how pasture quantity (pasture surplus/deficit) or quality (energy / protein) changes throughout the year for livestock growth.	Describes how pasture quantity (pasture surplus/deficit) and quality (energy / protein) changes throughout the year for livestock growth.	Explains how pasture quantity (pasture surplus/deficit) and quality (energy / protein) changes throughout the year and how this has an impact on growth rates of livestock.	Explains how pasture quantity (pasture surplus/deficit) and quality (energy / protein) changes throughout the year and how this informs the farmer's decision-making to enhance the growth rates of livestock.	Justifies how a selected crop has higher energy and protein for growth and development. Evidence for superiority in TWO impacts, either quality, timing and economics or production, with the other impact well supported.	Justifies how a selected crop has higher energy and protein for growth and development. Clear evidence for superiority of all THREE impacts.

**N0** = No response; no relevant evidence.

Question THREE	Sample evidence	Achievement	Achievement with Merit	Achievement with Excellence
(a)	<p>What is your chosen livestock's ideal environmental conditions? Explain how indoor housing might enhance their growth and development?</p> <p><i>These are potential examples; other livestock can be accepted.</i></p> <p><b>Pigs</b></p> <ul style="list-style-type: none"> <li>• Pig health and performance is strongly influenced by the environment that pigs live in. Controlled indoor housing units are a popular way of raising pigs in New Zealand due to the ability to provide the conditions necessary to allow pigs to reach their potential in growth and development.</li> <li>• Indoor conditions for pigs should be clean and well ventilated. Removing noxious gases, dust particles, and moisture is important to ensure that disease does not spread between livestock living in close contact.</li> <li>• Commercial pigs have difficulty controlling their body temperature due to having no sweat glands and very little hair cover. Indoor farming allows the lower and upper critical temperature of pigs to be controlled to prevent heat and cold stress. Therefore, energy intake from feed can go to the growth and development of the pigs.</li> </ul>	Describes the ideal conditions for indoor farming of livestock.	Explains the ideal conditions for indoor farming of livestock	

<p>(b)</p>	<p>Discuss issues with indoor housing that could limit the growth and development of your chosen livestock. Refer to quantity, quality, and economics of production in your answer.</p> <ul style="list-style-type: none"> <li>• Indoor farming systems are considered intensified due to the high number of livestock within a confined area. Although indoor farming is a way of enhancing the growth and development of pigs, the environment can result in issues such as the spread of disease, and the inability of pigs to maintain their natural behaviour habits.</li> <li>• Pigs living close together must be carefully controlled through a variety of mitigation practices such as vaccinating and regular cleaning of effluent.</li> <li>• <b>Quantity:</b> Preventing disease through vaccination programmes is important to prevent disease outbreaks. A disease outbreak can be devastating for pig farmers, as they can lose many pigs in a short space of time.</li> <li>• Healthy pigs mean a higher proportion of offspring make it to their target weight, and therefore to market.</li> <li>• <b>Economics of production:</b> There can be increased labour because of disease outbreaks. Keeping pigs vaccinated and their environment clean is much more cost-effective than having to treat the livestock or dealing with livestock deaths.</li> <li>• <b>Quality:</b> Health issues within livestock can result in stress. Stress in livestock has adverse effects on meat quality through the change in pH level of the meat. This can be caused through stress of the pig prior to slaughter. Pork that is too pale or too dark in colour is not appealing to the consumer.</li> </ul>	<p>Discusses limitations of indoor housing.</p>	<p>Explains limitations of indoor housing specific to chosen livestock. Some factors more fully discussed.</p>	<p>Explains limitations of indoor housing specific to chosen livestock in terms of quality, quantity and economics of production.</p>
------------	---	---	--	---

N1	N2	A3	A4	M5	M6	E7	E8
<p>Some writing but does not describe conditions for indoor farming of livestock.</p>	<p>Partial or insufficient description of the ideal conditions for indoor farming of livestock.</p>	<p>Describes the ideal conditions for indoor farming of livestock.</p>	<p>Describes the ideal conditions for indoor farming of livestock with reference to growth rates.</p>	<p>Explains the ideal conditions for indoor farming of livestock improves growth and development.</p>	<p>Explains the ideal conditions for indoor farming of livestock improves growth and development, linking energy intake or increased production.</p>	<p>Discusses issues with indoor farming by linking the conditions to the overall growth and development of livestock. Clear evidence for superiority in at least ONE impact either the quantity, quality, or economics of production with the other impact well supported.</p>	<p>Discusses issues with indoor farming by linking the conditions to the overall growth and development of livestock. Clear evidence for superiority of ALL impacts.</p>

**N0** = No response; no relevant evidence.

**Cut Scores**

<b>Not Achieved</b>	<b>Achievement</b>	<b>Achievement with Merit</b>	<b>Achievement with Excellence</b>
0–7	8–13	14–18	19–24