

Assessment Schedule – 2016

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

Assessment Criteria

Achievement		Achievement with Merit			Achievement with Excellence		
“Demonstrate understanding” involves explaining how the production process meets specific market requirements for a New Zealand primary product(s).		“Demonstrate in-depth understanding” involves explaining, in detail , how the production process meets specific market requirements for a New Zealand primary product(s), with quantitative data.			“Demonstrate comprehensive understanding” involves using detailed explanations to justify how the production process used meets specific market requirements for a New Zealand primary product(s).		
N1	N2	A3	A4	M5	M6	E7	E8
<p>No useful information about consistency or uniformity requirements.</p> <p><i>OR</i></p> <p>A partial explanation of the effect of a management practice on the quality and / or quantity of a specific product at harvest, but it is not linked.</p>	<p>Some information about consistency or uniformity requirements.</p> <p><i>OR</i></p> <p>A partial explanation of the effect of a management practice on the quality and / or quantity of a specific product at harvest, from ONE phase.</p>	<p>The consistency or uniformity requirements are described in general terms.</p> <p><i>AND</i></p> <p>A basic (poorly linked) explanation of the effect of relevant management practices on the quality and quantity of a specific product at harvest, from TWO phases:</p> <ul style="list-style-type: none"> • Establishment • Growth • Harvest 	<p>The consistency or uniformity requirements are described in detailed terms.</p> <p><i>AND</i></p> <p>An adequate explanation that shows links to the effect of relevant management practices on the quality and quantity of a specific product at harvest, from TWO phases:</p> <ul style="list-style-type: none"> • Establishment • Growth • Harvest 	<p>The consistency or uniformity requirements are explained, using specific details / data.</p> <p><i>AND</i></p> <p>Sound and thorough (use of data <i>OR</i> well-linked) explanation of at least TWO of the three relevant management practices that have an effect on quality and quantity at harvest, from TWO phases:</p> <ul style="list-style-type: none"> • Establishment • Growth • Harvest <p><i>AND</i></p> <p>An adequate explanation for a third practice and / or period.</p>	<p>The consistency or uniformity requirements are explained, using specific details / data.</p> <p><i>AND</i></p> <p>Sound and thorough (use of data <i>AND</i> well-linked) explanation of THREE different relevant management practices that have an effect on quality and quantity at harvest, from at least TWO phases:</p> <ul style="list-style-type: none"> • Establishment • Growth • Harvest 	<p>The consistency or uniformity requirements are explained, using specific details / data.</p> <p><i>AND</i></p> <p>Sound and thorough (use of data <i>AND</i> well-linked) explanation of THREE different relevant management practices that have an effect on quality and quantity at harvest, from at least TWO phases:</p> <ul style="list-style-type: none"> • Establishment • Growth • Harvest <p><i>AND / OR</i></p> <p>A partial justification for which management practice they consider would have the greatest impact on the overall price received and the quantity available for sale for the producer, but</p>	<p>The consistency or uniformity requirements are explained, using specific details / data.</p> <p><i>AND</i></p> <p>Sound and thorough (use of data <i>AND</i> well-linked) explanation of THREE different relevant management practices that have an effect on quality and quantity at harvest, from at least TWO phases:</p> <ul style="list-style-type: none"> • Establishment • Growth • Harvest <p><i>AND / OR</i></p> <p>A full and comprehensive justification for which management practice they consider would have the greatest impact on the overall price received and the quantity available</p>

						lacking detail / data.	for sale for the producer, with relevant detail / data.
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N0 = No response; no relevant evidence.

Evidence

Part	Possible answers in abbreviated form
A	<p><u>Heavy lamb – early contract</u></p> <p>1. Age New season’s lamb only.</p> <p>2. Price \$5.90 /kg (\$5.90 x 23.0 kg = \$135.70).</p> <p>3. Weight range 20–25 kg carcass weight.</p> <p>4. Timing December to May.</p> <p>5. Numbers Minimum 50 per line. Must be separate from others on that day. May be restrictions in any one month.</p> <p>6. Grading All grades acceptable. Maximum 5% fat.</p> <p>7. Penalties 10 cents /kg penalty for every 10% reduction in the number per line that meet all the conditions (including weight and contracted total).</p> <p>N.B. These penalties will be strictly adhered to.</p> <p>Source (adapted): http://bluesky.co.nz/Supply/Supplier/Heavy-Lamb-Contract-Conditions</p>

B Dairy cows prior to calving

Mating management

This is one of the most important factors in the running of a successful dairy farm. As with any mammal, cows produce milk following birth to feed their calves. Cows that are not pregnant will not produce a calf, and hence will not produce milk. Heifers are usually mated for the first time at around 15 months of age. A popular alternative to natural mating is to synchronise the heifers and then get them pregnant using AI. This can involve giving heifers a course of progesterone through a CIDR, which once removed will induce oestrus at the same time. At this point they will be ready to receive semen from a high-genetic merit bull. While this is an expensive process, it will result in the bulk of the heifers calving over a 2–3 day period (usually a week before the main herd), which allows them to be introduced into the routine of milking more easily. Identifying cows in oestrus requires diligence by farm staff. Identified cows are removed from the herd after milking, and then inseminated by an AI technician ... etc.

Teat-sealing

Teat-sealing of heifers prior to calving.

Dry cow therapy

A dry cow therapy programme is the cornerstone of mastitis control. Dry cow therapy cures existing infections, and prevents new infections in the dry period and around calving.

Preventing new infections

The closure of the teat canal at dry-off is critical to prevent new intramammary infections during the dry period. Ninety-seven per cent of clinical mastitis in the dry period occurs in quarters with open teat canals. Most cases of dry period clinical mastitis occur in the first three weeks after dry-off, when a significant number of cows have not yet formed a natural keratin plug. Teat-seal is a non-antibiotic, inert substance that forms a physical barrier immediately on insertion, blocking the entry of bacteria into the udder throughout the dry period.

Lambs

In breeding for optimum lamb growth, most genetic improvement comes from the selection of rams used. Some breeds will result in faster-growing, earlier maturing lambs, while other breeds will be more suited to growing lambs that will achieve heavier carcass weights without the risk of becoming over-fat. Increases in carcass weight of up to 30% can be achieved by using specialist sires ... etc.

Feijoas

Pruning

Growers aim to achieve a compact, single-stemmed, multi-branched, round tree. Pruning may be required in many instances in order to achieve this, especially with certain cultivars or growing conditions. Most pruning is done in winter straight after harvesting, but a summer prune once flowering is finished will improve access at harvest and promote growth in the centre of the tree. Trees are limited to a height of two metres, to allow for hand-harvesting without the need for ladders. Branch thinning is required in order to enhance pollination and light penetration, thus increasing the flowering on the centre showing shoots, etc ...

Broiler chickens

Feeding

Regulating growth by feed can be done by adjusting feed quality in terms of nutritional value, the physical presentation of feed pellet vs. mash, or the quantity the birds are allowed to eat. Cereals provide energy, and soybean meal, blood and bone meal, or fishmeal act as protein sources. Two amino

	<p>acids, lysine and methionine, are added, because they are deficient in other constituents. The nature of the fat in the diet is monitored, otherwise fat deposits in the body can become more liquid than usual, producing “oily bird” syndrome. Protein sources are expensive, and in order to be cost-efficient, computerised programming of feed is essential. Some animal health products are also added – coccidiostat is a chemical that suppresses protozoa, which cause an infection called coccidiosis. If this infection is left uncontrolled, the birds develop a bloody diarrhoea and can die. The coccidiostat should not be present in the meat, so growers stop feeding the chemical three days before slaughter. Pelleted feed, etc...</p> <p><i>Temperature and ventilation</i></p> <p>Air temperature is critical to bird performance in the early stages of growth. Like most warm-blooded animals, chicks are sensitive to cold and infection, so for the first two weeks of life they are placed under heat lamps. Initially, the temperature should be 30°C, but after the heat lamps are turned off, the birds should be able to adjust to normal changes in temperature. The ideal temperature is 22°C. Chicks will huddle together and become stressed if cold, or spread out from the lamps if it is too hot. Both of these actions divert feed energy to temperature regulation rather than meat production, etc...</p>
C	<p>Whilst all factors, including breed, stocking density, water management, temperature, ventilation, and feeding, all contribute to the price received and the quality of broiler chickens at harvest, the most important factor, I believe, is disease control, for both the price received and the quality of broiler chickens. This is because regardless of the environment the birds are grown in (indoor, free-range), disease control influences both the growth rate and quality of meat for sale more than other factors. Without correct disease control, etc ... disease can spread quickly in a broiler environment. Diseased animals have no commercial value, etc.</p> <p>Even though temperature is a key factor in the first two weeks of life, healthy animals can still maintain good growth rates. Further, the health of the animal ensures that a quality, disease-free product is available for sale, etc.</p> <p>Whilst ventilation ...</p> <p>Therefore I believe ... for the following reasons, etc ...</p>

Cut Scores

Not Achieved	Achievement	Achievement with Merit	Achievement with Excellence
0 – 2	3 – 4	5 – 6	7 – 8