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1997 HSC

**EXAMINATION
REPORT**

**Sheep Husbandry
and Wool
Technology**

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**1997 HIGHER SCHOOL CERTIFICATE
EXAMINATION REPORT
SHEEP HUSBANDRY AND WOOL TECHNOLOGY**

In 1997, 26 candidates presented for the examination in Sheep Husbandry and Wool Technology.

SECTION I SPECIAL TOPIC

Question 1

- (a) (i) Most candidates were unable to suggest four advantages of selling stud rams at an on-property auction. The following are some of the reasons given:

This method:

allows clients to compare all the rams on offer;
causes less stress on the rams; causes less rise of disease;
causes lower costs for the stud by preparing for one sale;
eliminates transport costs; and,
provides a good promotional focus for the stud.

- (ii) Some candidates misread the question to read *advantages* rather than *disadvantages*.
(iii) The majority of candidates answered this question well.

- (b) (i) This question was poorly answered. Very few candidates were able to mention the core sample taken for AWTA testing of FD, Y% and VM%, with the results displayed in a sale catalogue. The grab sample is used to provide a display sample and the additional measurements of SS, SL and POB, if requested by the owner. Next, the broker values the lot for the grower and a reserve is set. Buyers inspect the display sample prior to the auction.
- (ii) This question was reasonably well answered.
- (iii) Candidates had little trouble in giving four reasons for the dissatisfaction of superfine wool growers with Centralised Selling and Sale-by-Description. Some reasons given included:
- the higher standard of clip preparation for the better styles of wool sold this way;
loss of identity for the specialist selling centres and distance to other sale centres.
- (c) (i) This question was well answered. Candidates were able to calculate the total premium at 75 cents and the total discounts at \$1.05, the variation from contract price as being – 30 cents and the final price at 370 cents.
- (ii) Most candidates were able to mention the advantage of being able to budget as a mechanism to aid in borrowing funds from a bank, and also that it is a guaranteed price in advance.

Question 2

- (a) (i) This part was well answered.
- (ii) Most candidates were able to describe the method of selling lambs in the paddock, viz. an agent or the owner arranges for buyers to inspect the lambs in the owner's yards or paddock. The lambs are valued on \$/head or grid system. The grower is not committed to sell at the price offered and the agent guarantees payment.
- (iii) 1 Candidates had little trouble with this question.
- 2 This question was poorly answered. Few realised that lambs were dressed to AUS-MEAT standards and sold on a grid system based on weight and fat depth.
- (iv) A No candidate was able to state that label A indicated 110 mm.
- B Few candidates could nominate the GR site.
- (b) (i) This question was well answered.
- (ii) Most candidates incorrectly believed that electronic scanning is a common paddock technique for determining fat score. Few could say more than the fact that sheep are felt in the paddock to determine fat score.
- (iii) Most candidates were able to list four factors that influence average skin value, viz: FD, breed, staple length, VM% and type, coloured fibres and skin damage.

- (c) (i) The calculation of minimum and maximum liveweight was well done. Candidates did have a problem, however, with the calculation of fat depths.
- (ii) This question was poorly answered; most candidates did not know the sale lot for the market specifications given.
- (iii) Most candidates were able to list four factors that affect the dressing percentage of lambs.

SECTION II

Question 3

- (a) (i) Candidates had few problems with this question.
- (ii) Most candidates were able to mention factors such as *quantity* and *quality of feed*, physiological status of the animals and temperature as being two reasons why herbage intake varies over the year.
- (iii) This question was well answered.
- (iv) This question was also well answered.
- (b) (i) Most candidates had difficulty in answering this question. Merino wethers are found in the far west of the State, first-cross lamb production in the middle and self-replacing merino flocks (18μ) in the Northern, Central and Southern Tablelands.
- (ii) Candidates successfully indicated that high quality pastures, high rainfall and irrigation are three environmental characteristics required for top quality prime lamb production.
- (iii) 1 Most candidates understood the concept of rotational grazing but nominated neither a time-period nor the fact that stock are moved to allow the pasture to recover.
- 2 Again, time-periods were not usually mentioned in answering this part.
- (c) (i) Very few candidates could recognise all the deficiency symptoms. The minerals most likely to be associated with specific deficiency symptoms are, in order: Selenium, Magnesium, Copper, Calcium, Fluorine and Zinc.
- (ii) This question presented few problems.

Question 4

- (a) (i) The majority of candidates could answer this part correctly.
- (ii) 1 Some candidates were unable to define the *oestrus cycle*. They defined *oestrus* instead.
- The oestrus cycle in the ewe lasts for approximately 17 days.
- 2 Most candidates could not define *parturition*.
- (iii) Here the majority of candidates were able to give the correct factors that influence the milk yield of a ewe. Common answers were *breed, age of dam, level of nutrition, number lambs* and *sex of the offspring*.
- (iv) Most candidates were unable give the effect of the autumn photoperiod and higher ovulation rates as reasons for the higher percentage of lambs weaned to ewes joined. Some candidates restated statistics from the table but gave no reasons.
- (b) (i) Most candidates were able to answer parts 1 to 4 correctly.
- (ii) Candidates used similar answers for this question as they did in part (a) (iii). Some other options used were: disease, weaning-time and environment.
- (iii) Candidates correctly stated that testosterone was the reason why ram lambs grow bigger and faster than ewe lambs, but could not state the reason.
- (c) (i) Candidates were unable to define *inbreeding* and *line-breeding* correctly. Both involve the mating of closely related animals. *Inbreeding* usually involves mating father to daughter, while *line-breeding* involves mating more distant relations, for example, cousin to cousin.
- (ii) This part showed that some candidates were not able to interpret tables or to describe how estimated breeding values are developed. In part 3 some candidates did not keep within the frame of the question and introduced rams like the Poll Dorset or Corriedales as their recommended ram. The correct answer to part 3 was the Erinalee ram.

Question 5

- (a) (i) This question showed that candidates had difficulty in outlining an effective vaccination program. The program should have included the dam's annual booster before lambing, vaccinations at lamb-marking and again at weaning and the annual booster for the rest of its life.
- (ii) Most candidates were unable to answer this question. The bacterium, *Mycobacterium Paratuberculosis*, is the cause of Johne's disease. Symptom(s) include severe wasting and ill-thrift in older sheep, plus a distinct *tail* in a mob of sheep. Symptoms appear after 2 years of age. Environmental conditions that favour the spread include: mild temperatures, moisture, faecal contamination of pasture and water. Johne's disease is a *notifiable* disease.

- (iii) The majority of candidates were able to identify correctly four factors that increase the incidence of fly strike in sheep. Most answers included fleece rot, warm moist conditions, long wet wool and skeletal faults as well as the fact that such sheep had not been mulesed.
- (b) Most candidates were able to complete the calendar correctly, commencing with flushing (3) followed by drenching (8) and crutching (5). Jetting (6) and pregnancy scanning (1) followed in April. July saw drenching, crutching and vaccinating (4) take place prior to the commencement of lambing (2). September saw lamb marking (7), mulesing (9) and vaccinating occur. In November vaccination took place, while December saw weaning (10), drenching and jetting take place.
- (c) Here candidates failed to circle the correct answer, as required by the directions to the question. The majority could not answer the multiple-choice questions. The correct answers were; (i) C, (ii) C, (iii) D, (iv) C, (v) B, (vi) A.
- (d) This question was also poorly answered, with most candidates failing to name and explain two treatments that aim to improve the performance of wool as a textile fibre. Treatments given included Superwash, Sironized, SI-RO-Mothed and SI- Ro-Set.

Question 6

- (a) Most candidates were able to answer parts (i), (ii) and (iii) correctly.
- (b) Parts (i) and (ii) were answered correctly by the majority of candidates.
- (c)
 - (i) Candidates were unable to name correctly two machines that would have measured fibre diameter for the Ram Sale Catalogue extract. They are the Laserscan and OFDA.
 - (ii) Most candidates were able to indicate that Lot 63 had the most desirable FDCV%.
 - (iii) This question was poorly answered. High FDCV% results in spinning problems that produce an uneven yarn.
 - (iv) The amount of clean fibre, free of all impurities, is the required definition of *yield*.
 - (v) Candidates failed to answer this part correctly. The processes for determining each of the four components of wool-base are: Ashing process (A), Total Alkali Insolubles (T), Alcohol Extractable process (E) and Oven Drying.

Question 7

- (a) (i) The majority of candidates failed to gain full marks for this question. Suitable reasons for skirting a fleece for sale include:
- the Code of Practice requires fleeces to be skirted for sale by auction;
 - to remove excessive VM, short crutch and wiggling wool, stain, dung, seedy jowls and shanks which may impede processing and end-use;
 - to reduce fibre breakage in carding and combing and to increase the volume of Top.
- (ii) Few candidates indicated that the *entire fleece* should be kept separate if it contains a single black spot. It is then branded BLACK.
- (iii) Candidates knew that the presence of polypropylene in a sale lot is a problem in processing but failed to acknowledge how it fibrillates throughout the wool batch and causes a problem in dyeing.
- (iv) Again, candidates failed to grasp the principle of Total Quality Management (TQM). TQM provides a framework for quality improvement, involving viz, a plan, a *do, check, and act* cycle resulting in continuous improvement of the product.
- (b) Most candidates were able to score full marks for this question. The correct sequence was: Farmer (6), Shearer (8), Rouseabout (7), Classer (5), Wool Presser (9), Broker (3), AWTA tester (2), Auctioneer (1), Buyer (4), and lastly Wool Dumper (10).
- (c) Most candidates had no idea of the steps involved in wool textile manufacture. The term corresponding to the statements in order were; Spinning, Combing, Warp, Weaving, Scouring, Carding, Gilling, Yarn, Carbonising and Fellmongering.

SECTION III ESSAYS ON SHEEP HUSBANDRY AND WOOL TECHNOLOGY

General Comments

The standard of essays was again very, very poor. Many candidates had little idea of reading and interpreting the question and presenting information in a logical sequence.

Students need to understand what is meant by: *list, name, describe, explain, and analyse.*

The majority of students failed to realise that listing or describing a point gains marks; they also failed to set out clearly, underline the main point(s) and leave spaces to make a point clear. Moreover, some choose to repeat the question as an introduction to their answer!

Candidates should be aware of the marking procedures followed in these essays. If the question is worth 10 marks and they are asked to select five (5) issues, then each issue and its discussion is worth 2 marks.

Question 8

- (a) The majority of candidates failed to describe clearly the wool characteristics, carcass characteristics, or reproductive performance, of the five nominated sheep breeds.

Wool characteristics should be described as: FD/quality number, staple length, fleece weight and colour.

Carcass characteristics should be reported in terms of: carcass weight (HSCW), leanness, frame size and meat – colour, texture and flavour.

Reproductive performance should be reported in terms of: lambing percentage, milk production, mothering ability, breeding season and ovulation rate.

Some suggestions for answering this question are given below.

Breed	Wool Characteristics	Carcass Characteristics	Reproductive Performance
Medium Merino	64s, 21 – 22 μ 80 – 100mm light/medium Burr/seed 4 – 6kg fleece weight grey/red dusty tip	Useful mutton wether – live export poor muscle small /medium frame	72 – 90% lambing low milk production Poor mothers
Noteworthy Factors	<ul style="list-style-type: none"> – Most common merino strain, mostly used for wool production. – Used for crossing with Border Leicester rams to produce 1st X. – Also crossed with a terminal sire. – Mutton production. 		

Breed	Wool Characteristics	Carcass Characteristics	Reproductive Performance
Poll Dorset	50/56s, 29 μ (25–30) 80 – 100 mm soft colour second semi-lustre 2.5kg fleece	Excellent meat lean good muscle high dressing %	> 100% lambing good milk production good mothers
Noteworthy Factors	– Mostly used to mate to 1st X ewes (and Merinos) to produce prime lambs		

Tukidale	40 μ (35–45) no crimp 150mm(6mths) 3 – 4kg fleece	reasonable prime lamb mothers	100 – 120% lambing good milk production
Noteworthy Factors	– Mainly used to produce carpet wool.		

Corriedale	28 μ (25–32) 56/50s 150 – 180mm 5 – 7kg fleece	good frame good meat lean	> 100% lambing
Noteworthy Factors	– A dual purpose breed. – Equivalent to 1 st X ewe.		

Border Leicester	35 μ (32 –38) 44 –46s 6kg fleece 200 –250mm	OK poor carcass excess fat	> 130% high fertility high milk production large framed
Noteworthy Factors	– Used to mate to medium Merino to produce a 1 st X. – Tolerates dry conditions.		

- (b) Again, it was disappointing to see candidates failing to discuss the role of the four issues given in generally improving the quality of a Western NSW clip. Candidates often elaborated too much on one aspect, while neglecting numerous other point-scoring management options.

To assist candidates, the following points are offered:

Mineral Matter

- (i) Grazing management
 - Do not overgraze, control and manage stocking rate.
 - Do not let pasture deteriorate, exposing the soil.
 - Do not put sheep on fallow paddocks.
- (ii) Sheep husbandry operations
 - Use sheep coats.
 - Water yards before moving/mustering sheep.
- (iii) Sheep selection
 - Select against open backs.
 - Select for dense, high grease content in sheep (keeps out the dust).
- (iv) Shearing shed management
 - Remove dusty (perished) backs from the fleece, according to the Code of Practice.

Vegetable Matter

- (i) Grazing management
 - Heavy grazing prior to seed-setting.
 - Keep sheep off seeding pasture in late spring.
 - Spray topping pasture before the seed sets.
 - Slash pastures, chip.
 - Pasture improvement.
- (ii) Sheep husbandry operations
 - Shear just prior to seed-setting.
 - Wiggling.
- (iii) Sheep selection
 - Select sheep for clean points and open faces.
- (iv) Shearing shed management
 - Skirting to the Code of Practice. Keep different VM types separate.

Unscourable Colour

- (i) Grazing management
- (ii) Sheep husbandry operations
 - Apply brand after shearing, not close to shearing. Use scourable branding fluid.
 - To avoid dip stain in the wool, treat sheep 4 – 6 weeks after shearing.
- (iii) Sheep selection
 - Class young sheep, cull heavy dermo/heavy (yellow) conditioned fleeces.
- (iv) Shearing shed management
 - Keep fleeces/pieces separate, follow Code of Practice clip-preparation criteria.
 - Keep brands separate.

Urine Stain

- (i) Grazing management
- (ii) Sheep husbandry operations
 - Crutch within 3 months of shearing – Stain-free procedures.
 - Mulse, correct tail length, pizzle dropping, do not cut top of the vulva.
- (iii) Sheep selection
 - Select ewes with a plain breech and low tail wrinkle.
- (iv) Shearing shed management
 - Adequate shed staff; instruct board persons to remove stain from BLS, PCS, LKS etc.
 - Follow a Quality Assurance scheme.

Doggy Wool

- (i) Grazing management
- (ii) Sheep husbandry operations
- (iii) Sheep selection
 - Select for good style and crimp definition.

- (iv) Shearing shed management
 - Cull sheep of any age showing signs of doggy wool.
 - Keep separate Code of Practice criteria.

Staple Strength

- (i) Grazing management
 - Provide adequate nutrition, reduce stocking rate.
 - Do not introduce sudden changes in feed.
 - Agistment.
- (ii) Sheep husbandry operations
 - Do not stress the sheep excessively.
 - Change shearing-time.
 - Change lambing-time.
- (iii) Sheep selection
 - Cull poor doers.
 - Select for low FDCV%.
- (iv) Shearing shed management
 - Keep separate according to the Code of Practice.

Fleece rot

- (i) Grazing management
- (ii) Sheep husbandry operations
 - Change shearing-time.
- (iii) Sheep selection
 - Carefully select sheep at classing/culling. Cull heavy yolk fleeces.
- (iv) Shearing shed management
 - Keep separate according to the Code of Practice.

Flystrike

- (i) Grazing management
- (ii) Sheep husbandry operations
 - Timing of crutching and shearing. Jet sheep prior to flystrike conditions.
 - Correct tail length/technique.
 - Mulesing.
- (iii) Sheep selection
 - Correct conformation (no skeletal faults).
- (iv) Shearing shed management
 - Keep flystruck wool separate according to the Code of Practice.

Cotted Wool

- (i) Grazing management
 - Good fences, keep neighbour's sheep out.
- (ii) Sheep husbandry operations
 - Treat all sheep at the one time for lice.
- (iii) Sheep selection
 - Cull cotted fleece sheep.
- (iv) Shearing shed management
 - Keep separate according to the Code of Practice.

Question 9

- (a) Candidates were able to select five types of on-farm records kept by farmers, but failed to describe these under the headings of the four issues chosen.

A few candidates could not differentiate between a Tally Book and a Farm Diary.

The most common types of on-farm records described were; wool book, tally book, farm diary and rainfall chart.

The following are some characteristics of three types of records kept on-farm:

Wool Book:

- (i) Information contained:
 - Bale description, bale number and bale weight
 - Mob breaks, mob wool summary – length, style, VM, age and sex
- (ii) How information was gathered:
 - From the farmer/manager
 - As the bales were pressed
- (iii) Purpose and benefit to the farmer:
 - Used to produce the Classer's Specification Sheet
 - Used to calculate average cut/head
 - A record of lines formed
- (iv) Purpose and benefit to the industry:
 - Required by the wool broker to prepare the clip for sale

Tally book:

- (i) Information contained therein:
 - Shearer's name, run tally, day tally, week tally and total number of sheep shorn
 - Identification of delays
- (ii) How information is gathered:
 - By the person who counts-out at the end of each run
- (iii) Purpose and benefit to the farmer:
 - Used to calculate the wages of the shearers
 - A record for tax purposes
- (iv) Purpose and benefit to the industry:
 - Use for statistical purposes in calculating number of sheep shorn

Classer's Specification:

- (i) Information contained in;
 - Owner/manager's address and payment address details
 - Bale description, bale numbers, lines formed
 - Mob details, age, breed, sex mulesed, crutched
 - (ii) How information is gathered;
 - From the owner/manager
 - Recorded by the classer and owner/manager
 - From the Wool Book
 - (iii) Purpose and benefit to the farmer;
 - For the owner/manager to check the lines formed and suggestions for the broker
 - (iv) Purpose and benefit to the industry;
 - Used as a source of information by the broker to prepare the clip for sale
- (b) This essay was generally well answered by those candidates who attempted the question. The characteristics described by candidates included:
- Elasticity
 - Non-conductivity – It is warm
 - Chemical stability and affinity for dyes
 - Hygroscopic power – High moisture-absorption properties
 - Heat of wetting – warm
 - Non-flammability
 - Does not pick up static electricity
 - Softness
 - Fineness
 - Washability – *Superwash*
 - Durability – long lasting