



*Making More From Sheep*

**MODULE 3**

## Market Focused Lamb and Sheepmeat Production



A joint initiative of Australian Wool Innovation and Meat & Livestock Australia

# CONTENTS

<b>Procedures</b>	<b>Page</b>
<b>3.1</b> Decide what product you can produce most profitably - select a production system to suit the environment and monitor and evaluate productivity and profitability.	<b>2</b>
<b>3.2</b> Manage the production system to meet market specifications – use Meat Standards Australia™ (MSA) guidelines for producing sheepmeat.	<b>5</b>
<b>3.3</b> Decide on the most profitable selling method – evaluate selling options and develop alliances along the entire lamb and sheepmeat supply chain.	<b>7</b>
<b>3.4</b> Respond to short and long term price and market signals – use market intelligence to implement a continuous improvement program.	<b>9</b>

<b>Tools</b>	<b>Page</b>
<b>3.1</b> Lamb growth planner	<b>11</b>
<b>3.2</b> Potential markets and specifications for sheepmeat	<b>11</b>
<b>3.3</b> Fat scoring lambs and sheep	<b>13</b>
<b>3.4</b> Lamb production check list	<b>16</b>
<b>3.5</b> MSA production guidelines for lamb and sheepmeat	<b>17</b>
<b>3.6</b> MSA sheepmeat processing guide	<b>19</b>
<b>3.7</b> Factors affecting carcass quality and value	<b>20</b>
<b>3.8</b> Selling options for sheep and lambs	<b>22</b>
<b>3.9</b> Selecting the appropriate marketing option	<b>23</b>
<b>3.10</b> MLA market information	<b>24</b>

## 3

## Market Focused Lamb and Sheepmeat Production

### What does this module offer

This module is designed to assist sheep producers to deliver quality assured lamb and sheepmeat to target market specifications. It integrates technical aspects of the production system with the marketing process to enable you to:

- Better manage the production system and price risks;
- Meet market specifications and consumer expectations for eating quality; and
- Improve business profitability through better understanding of the marketing process.

Genetics, nutrition and management all have a major impact on the ability to meet market specifications. Having an efficient, value-based marketing process in place enables you to capitalise on the benefits of an efficient production system.

Effective integration of production and marketing delivers the following benefits:

- Best quality product to market - knowing the weight and fat specifications is the basis for successfully supplying a target market with a quality assured and consistent sheepmeat product and achieving best financial returns.

- Knowing the cost of production - a key factor affecting the profitability and an important step to assessing and improving the performance of a lamb enterprise.

- Enhanced feed use efficiency – time your key operations to maximise production per hectare, match the system to land capability and supply the target market with a quality product that meets specifications.

- Using the best available selling options – by assessing the advantages and disadvantages, costs involved and likely returns of each selling method and selecting the most appropriate one.

- Supply chain approach to production and marketing - applying the principles of supply chain management can benefit production efficiency and reduce risk for supply chain partners.

- Monitoring, measurement and continuous improvement - the key to benchmarking production efficiency and the implementation of continuous improvement in productivity and profitability.

## Procedure 3.1

Decide what product you can produce most profitably



### Background information



Marketing of lamb and sheepmeat comes at the end of the on-farm sector in a segmented 'paddock to plate' production chain (figure 3.1).

Best practice management seeks to improve the operation of the production chain links to achieve higher levels of product quality and consistency and to direct benefits to all sectors. Sheep producers may benefit from alliances with agents, processors, wholesalers and retailers along the supply chain.

The basic profit drivers of a lamb and sheepmeat enterprise include:

- Quantity of product produced per hectare;
- Lamb weaning percentages (see procedure 10.3 in *Wean More Lambs*);
- Cost of production, including the cost of marketing; and
- Price per kilogram received for product.

Of these factors, the amount of meat produced per hectare has the greatest impact on income and gross margins. Select the time of lambing to achieve highest lamb numbers for sale before optimising the enterprise stocking rate to achieve target growth rates (see procedure 8.3 in *Turn Pasture into Product*). Lamb weaning percentages, feed use efficiency and pasture quality and quantity are the keys to profitable sheepmeat production.

### Key decisions, critical actions and benchmarks

Set annual production targets and timelines to monitor that the business is on-track and profitable in terms of quantity of meat sold (kilograms per hectare), cost of production (cents per kilogram dressed weight) and price received at sale (cents per kilogram). The key decisions in a profitable system are (1) know what you aim to produce, and (2) decide on a target market.

#### Know the specifications you aim to produce

Know your product and production system by measuring and recording details and evaluating performance. Use tool 3.1 to plan the average lamb growth rate to point of sale. Aim to segregate the lamb turnoff into top, middle and bottom thirds to account for the variation in the mob and apply the appropriate pasture management to achieve growth targets. Where possible, benchmark production performance and consider using a livestock adviser to increase performance and profitability.

Use the Lamb Growth Predictor to calculate individual growth rates and then use them to predict future weights of the animals (see signposts). The growth predictor tool helps with the forward planning of dates and numbers for marketing. It also determines whether the slower growing animals will reach the specifications within a specified time or whether early sale might reduce costs.

Modern, automated, easy-to-use weighing systems have also been developed for rapid weighing and sorting.

### AT A GLANCE



- Know the market specifications for lamb and sheepmeat.
- Select a target market to suit the production environment.
- Use the Lamb Growth Predictor to plan the growth pathway to the point of sale.
- Monitor and evaluate the productivity and profitability of the production system.

The Cooperative Research Centre for Sheep (Sheep CRC) E-sheep® program aims to speed up the transition from manual, time-consuming, imprecise flock management to high-tech, fast flowing, accurate individual animal management (see signposts).

#### Calculate your cost of production

Calculating your cost of production (measured in cents per kilogram) is important to identify options for improving enterprise performance. It can be the first step in making changes to the production system (see tool 1.6 in *Plan for Success*).

**Figure 3.1. The segmented supply chain for lamb**

To calculate whether lot feeding lambs is a viable and economically sound management decision use the Feedlot Calculator available on the Sheep CRC website (see signposts). This gross margin feedlot calculator enables you to enter different real time production, economic and feeding scenarios to estimate likely profit for lot feeding lambs.

### Decide on a target market

The specifications for lamb vary depending on the market segment being targeted. Tool 3.2 provides a summary of the specifications for a range of markets for lamb and sheepmeat. Crossbred lambs are more favoured for the lamb trade but market acceptance of Merino lambs is increasing.

Table 3.1 provides a summary of the important features of a range of lamb categories. All of life growth rates for lambs can vary from 400g/day (fast growth), 250g/day (medium growth) 150g/day or lower (slow growth). The minimum requirement for high eating quality is a growth rate of more than 100g/day for crossbred lambs.

Meeting weight and fat score specifications for sheepmeat is important for successfully supplying a target market and best financial returns. Figure 3.2 provides a summary of the range of markets for lamb in terms of carcass weight and fat score. See tool 3.3 for how to fat score your lambs.

Under the Meat Standards Australia™ (MSA) carcass fat guidelines, lean (fat score 1) lambs and sheep are not eligible for MSA grading. Producing fat score 4 and 5 lambs uses too much pasture. Table 3.2 (over page) describes the fat scores and tool 3.3 shows you how to assess your lambs in the yards.

### Decide on the finishing system

#### Pasture forage

A high energy / high liveweight gain pasture for lambs contains 11 megajoules (MJ) of metabolisable energy (ME) per kilogram of dry matter (DM) at 17% crude protein (CP). High energy legume based pastures, cereal forage or special purpose lucerne or chicory pasture all give good daily liveweight gains (see procedure 1.3 in *Turn Pasture into Product*).

#### Lot feeding

Lot feeding to finish lambs may be a viable management consideration, especially when relatively low-priced grain and roughage are available.

Be sure to calculate carefully the cost versus financial gain before starting a lot feeding program. The Sheep CRC Feedlot Calculator will assist in this assessment (see signposts).

Aim for 2 kg or more liveweight gain per week and monitor progress to ensure the lambs are gaining weight. Use an entry liveweight and weigh after 4-5 weeks to check on progress towards target sale weights.

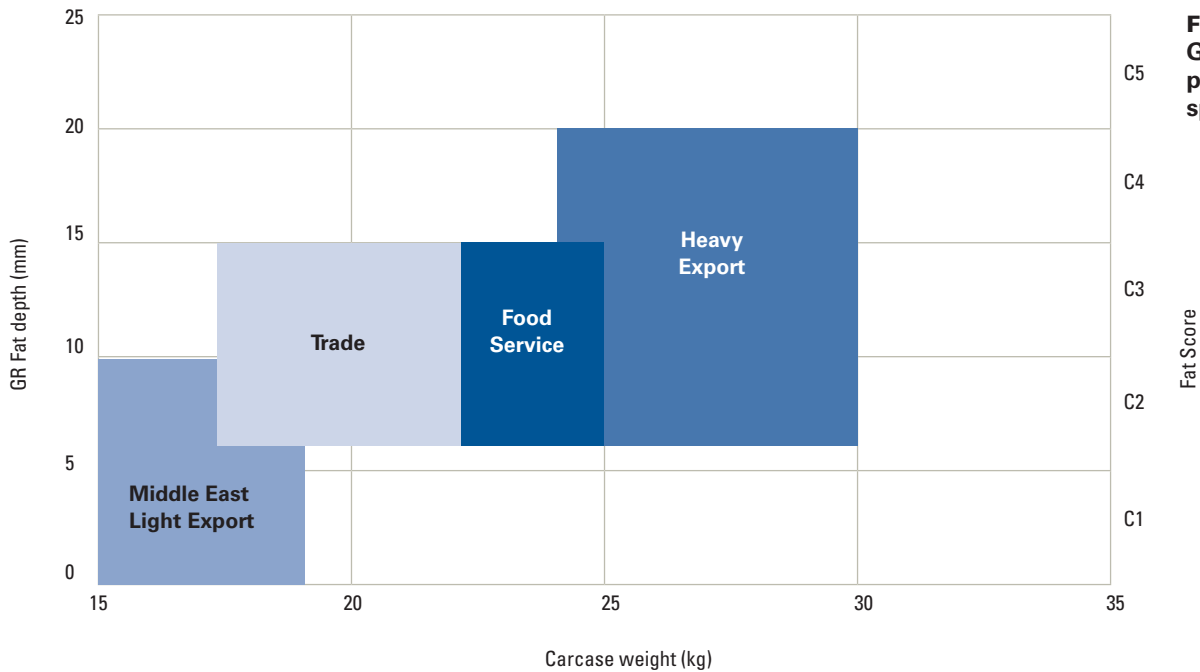
#### Feeder lambs

There is increasing demand for high-quality feeder lambs from specialist lamb finishers and lot feeders who have developed production systems that grow lambs to around 30kg sale weight at 12–14 weeks average age.

**Table 3.1 Key features of lamb market categories**

Lamb category	Liveweight (kg)	Hot Standard Carcass Weight (kg)	Market segment	Estimated growth rate (grams/day)
Weaned (4–6 months)	35	–	Store lamb	200
Weaned (3–3.5 months)	33		Feeder	310
Unweaned (4 months)	40	18	Supermarket	300
Carryover (8 months)	45	20.25	Diverse	170
Carryover (8 months)	55	24.75	Heavy export	210
Merino (11 months)	47	20.21	Diverse	180

Demand for hogget (1 or 2 erupted permanent incisor teeth) and young Merino mutton (1-4 erupted permanent incisor teeth) may eventually compete with live export.



**Figure 3.2**  
Guide to lamb  
processor  
specifications

Explore market options (see procedure 3.3), build a supply chain relationship with finishers and use high genetic merit sires for carcase attributes (see procedure 9.2 in *Gain from Genetics*). Aim for a turn off weight (33kg liveweight minimum – see table 3.1) and ensure health management processes suit the production system (see procedure 11.2 in *Healthy and Contented Sheep*).

To maximise turnover and profit, maintain a focus on production efficiency and turn-off (kilograms of lamb produced per hectare).

**Match the production system to land capability**

Matching target markets to the land capability and production environment can be achieved by:

→ Matching the genetic merit to the availability of pastures and crops, the pattern of rainfall and the length of the growing season (see procedures 9.1 in *Gain from Genetics* and 8.3 in *Turn Pasture into Product*).

Then, by:

→ Matching the proposed target market to the breed and type of lamb.

→ Planning the finishing phase (use of pasture versus fodder crop or grain feeding) and matching this to the choice and specifications of target markets.

**Signposts**



**Read**

**Making the Most of Mutton:** a user’s guide to maximising the value of mutton to an enterprise which includes specifications, live assessment, marketing systems and quality assurance. Purchase a copy from MLA by:

- Calling: 1800 675 717
- Emailing: publications@mla.com.au
- Visiting: www.mla.com.au/publications

**View**

**Sheep CRC Lamb Growth Rate Predictor Tool:** calculate individual growth rates of lambs and predict finishing times. Visit: <http://www.sheepcrc.org.au/index.php?id=300>.

Sheep CRC **E-sheep**®: includes auto-drafting and auto-weighing technologies for remote individual animal management. Visit: <http://www.sheepcrc.org.au/index.php?id=35>

**Feedlot Calculator Tool** developed by the Sheep CRC: enter different real time production, economic and feeding scenarios to estimate likely profit for a lamb feedlotting enterprise. Visit: <http://www.sheepcrc.org.au/index.php?id=301>

**Table 3.2: Carcase descriptions**

Fat Score	1	2	3	4	5
GR tissue depth in mm	0 to 5 mm Not eligible for MSA	6 to 10 mm	11 to 15 mm	16 to 20 mm	20 mm and over
Feel at the 12th long rib	Individual ribs felt easily. Cannot feel any tissue over the ribs	Individual ribs easily felt but some tissue present	Individual ribs can still be felt. Can feel more tissue over the rib	Can only just feel ribs. There is fluid movement of tissue	Ribs cannot be felt. Tissue movement very fluid

## Procedure 3.2

Manage the production system to meet market specifications



### Background information



Consumers demand food products that are consistent in quality and free of chemical residues and other contamination. Tool 3.4 presents a check list to assist production and delivery of quality assured sheepmeat products. Consult your livestock agent, buyer or processor for more specific requirements.

Monitor and assess the productivity and profitability of the production system by:

- Recording the amount of feed on offer from forage and/or supplementary feeding systems.
- Assessing the average growth rate to market (kilograms per day).
- Recording pre-slaughter growth, especially for Merino lambs.
- Calculating the cost of production (cents per kilogram).
- Pre-sale or pre-slaughter weighing and fat scoring lambs.
- Knowing skin values at the time of sale.

### Key decisions, critical actions and benchmarks

#### Weigh and/or fat score lambs

Weighing all or a representative 20% sub-sample of lambs is recommended before sale. Make adjustments for wet or damp sheep and wool length. After weighing, draft lambs into liveweight categories and then use fat scoring to assess the range in fatness.

Fat scoring of sale lambs (see tool 3.3) is an important pre-sale procedure when targeting a market. The fat scores are based on the live animal tissue thickness (both fat and lean tissue) at the GR site (110mm from the carcass midline over the 12th rib). A practical option is to draft lambs into liveweight categories then fat score a 20% sub-sample of the animals. This is used to estimate the amount of fat cover on the carcass and fat scores or MSA processing classes from 1 (leanest) to 5 (fattest).

#### Calculating dressing percentage

Australian lambs generally have a standard dressing percentage of 45-49% hot weight, 2-3 hours off feed.

Use dressing percentage to convert live animal weight into carcass weight (as per figure 3.3).

Factors affecting dressing percentage include:

- Breed type - at the same fatness, more muscled animals dress higher; Merinos tend to dress lower. Border Leicester/Merino and Merino lambs will generally dress 1.5% to 3.5% less than second cross lambs.

### AT A GLANCE



- Use MSA guidelines for lamb and sheepmeat to improve product eating quality.
- Weigh and fat score lambs pre-sale or pre-slaughter and use the information to better manage the production system and meet target specifications.
- Use dressing percentage to convert live animal weight into carcass weight of each sale consignment.
- Understand management factors affecting skin values.
- Age - older animals have a lower dressing percentage (suckers > carryover lamb > ewe mutton). Tool 3.3 tables these differences.
- Fat score - higher fat score animals have a higher dressing percentage (see tool 3.3)
- Time off feed and water prior to weighing - increased time held off-feed increases dressing percentage (see tool 3.3).
- Seasonal feed conditions - low digestibility pasture will reduce dressing percentage by as much as 3%
- Sex - wether lambs dress higher than ewe lambs (see tool 3.3)

→ Skin weight (wool length, wet or dry) – a 75mm (3inch) skin, just too wet to shear, holds 0.2-0.5kg of water. Make no adjustment for dry skins.

**Apply Meat Standards Australia™ (MSA) sheepmeat guidelines**

Use of MSA guidelines for lamb and sheepmeat will improve the eating quality of lamb, hogget, young mutton and mutton.

When applying MSA standards make sure that:

- First and second cross lambs gain at least 100g/day weight for the two weeks before consignment and sale.
- Merino cross and pure bred lambs gain at least 150g/day before consignment and slaughter.
- Sheep are at least fat score 2 at slaughter.
- Sheep are gaining weight for at least 2 weeks before consignment for slaughter.

Tool 3.5 provides the MSA on-farm production guidelines and tool 3.6 presents the MSA processing guide.

**Livestock Quality Systems**

Livestock Quality Systems (LQS) provides certification and verification systems that instil confidence in on-farm food safety practices.

LQS consists of five major programs:

- Livestock Production Assurance (LPA) – a new on-farm food safety certification program designed to help the red meat industry strengthen the food safety systems currently in place.
- National Vendor Declarations (NVD) - the key tool used by sheep producers to declare valuable information about the food safety status of the livestock being sold in Australia.
- Electronic Declaration Program - download software programs that provide electronic versions of the LPA NVD/ Waybill.
- Livestock Fodder Declarations - obtained from the supplier of livestock fodder at purchase to indicate the chemicals used.
- Livestock Integrity (LI) - issues dealing with livestock residues, livestock feeding, and livestock disease.

**The National Livestock Identification Scheme (NLIS) for Sheep and Goats**

All sheep and goats born in or after January 2006 must have an NLIS breeder tag in most cases before being sent to a saleyard or another property. From 1 January 2007 in Queensland and 1 January 2009 in other states and territories, all sheep and farmed goats, irrespective of the date of birth must be identified with an approved NLIS tag prior to movement.

Some processors currently require all sheep to have an NLIS tag regardless of the date of birth. Sale of any sheep or goats requires a National Vendor Declaration.

The sheep identification requirements are designed to enhance the previous state regulations, and to improve the speed and accuracy of traceback and traceforward of sheep and goats.

**The National Residue Survey**

The National Residue Survey is an Australian Government program that monitors agricultural products and meat producing animals for residues of agricultural and veterinary chemicals, as well as some environmental and industrial contaminants.

The general purpose of residue monitoring is to confirm that residues in products are within internationally accepted limits and to alert responsible authorities when limits are exceeded so that corrective action can be taken, and affected product removed from the food chain.

The survey is designed to confirm Australia’s status as a producer of clean meat. Abide by withholding periods for a range of chemicals to avoid residues in sheep meat.

**Signposts**



**Read**

*Making the Most of Mutton*

*Winning against seeds*

*MLA Live Assessment Yard Book - Sheep and lamb*

*MLA Tips & Tools - MSA Sheepmeat Information Kit*

Order any of these MLA publications by:

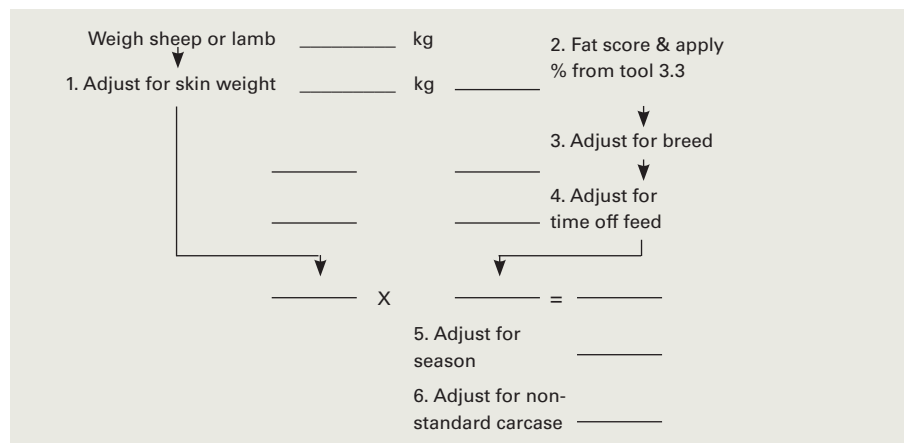
- Calling: 1800 675 717
- Emailing: publications@mlla.com.au
- Ordering on-line: <http://www.mlla.com.au/publications>

**View**

**MLA Livestock Quality Systems (LQS):** certification and verification systems for meat sheep. Visit: <http://www.mlla.com.au/LivestockQualitySystems>

**National Livestock Identification System (NLIS) for sheep and goats.** Visit: [www.mlla.com.au/NLIS](http://www.mlla.com.au/NLIS)

**Figure 3.3**  
Converting live weight to carcass weight



## Procedure 3.3

Decide on the most profitable selling method



### Background information



Sheep producers use a range of methods to sell sheep and lambs. These include:

- Auction sales: stock are sold by open cry action on either a dollars per head basis or, if stock are weighed, on a cents/kg liveweight basis. Ownership is transferred at point of sale.
- Paddock sales: buyers inspect stock on the property with price negotiated on a dollars per head basis and ownership transferred at the farm gate.
- Over-the-hooks: price is negotiated on a cents/kg carcase weight basis with ownership usually transferred at the point of slaughter.
- Forward price contracts: can be either liveweight or carcase weight. Use a negotiated forward price contract to sell direct to processors.
- Electronic: on-line, web based "sale by description" for a range of livestock, such as AuctionsPlus.

Tool 3.8 provides a more detailed description of the selling options for sheep and lambs.

### Key decisions, critical actions and benchmarks

When determining the best method of selling sheep and lambs, it is essential to:

- Decide on the target market(s) at ram selection. Base selections on the genetic potential of your dam/sire mix and on the capability of pastures or intended feeding system to produce to specifications.
- Reassess market options at lamb marking (6–8 weeks). Weigh a 10% sample to assess liveweight, plan growth rate using tool 3.1 and estimate the sale date for a range of growth rates.
- Assess the benefits of weaning at 14 weeks of age and growing-on versus selling the lambs straight off their mothers.
- After weaning, segregate lambs into at least two (preferably three) liveweight groups and manage the grazing according to planned growth rates.
- If lambs need supplementary feeding, use grain or pellets. Introduce lambs onto food supplements before weaning. Feeding ewes and lambs for 3–7 days at 100g grain/head/day is usually sufficient for 'imprint' feeding.
- Consider the economics of including a finishing phase using fodder crops, supplementary or lot feeding (procedure 3.1). When pasture forage is the preferred system, consider targeting the lightweight domestic or the feeder lamb market.
- Determine the specifications of the lambs for sale by weighing and fat score assessment and calculate the carcase weight (figure 3.3 in procedure 3.2).

### AT A GLANCE



- Evaluate selling options early and reassess if conditions change.
- Assess the liveweight, carcase weight and fat score specifications of potential markets.
- Choose the most profitable selling method to manage risk of lower-than-budget prices.
- Develop alliances along the entire lamb and sheepmeat supply chain.
- Use market research and advice to assess the value of lambs and compare selling methods to select the best option.
- Determine whether the price to be paid when selling 'over the hooks' is equivalent to the estimated price for paddock sales or saleyard selling.
- Form close alliances along the sheep and lamb supply chain to encourage feedback on each sale lot so you can improve the efficiency of your production system and meet market specifications.

## Signposts



### Read

**Comparing lamb marketing methods:** a NSW DPI Agfact describing the factors that contribute to lamb value. Visit: <http://www.agric.nsw.gov.au/reader/sheep-meat>

**'Is it fit to load?'** A national guide to the selection of animals fit to transport'. Order from MLA by:

- Calling: 1800 675 717
- Emailing: [publications@mla.com.au](mailto:publications@mla.com.au)
- Ordering on-line: <http://www.mla.com.au/publications>

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Go to the Making More From Sheep website:

[www.makingmorefromsheep.com.au](http://www.makingmorefromsheep.com.au)

and follow the links to updated signposts



### Attend

The MLA EDGE<sup>network</sup>® program is coordinated nationally and has a range of courses to assist sheep producers. Contact can be made via:

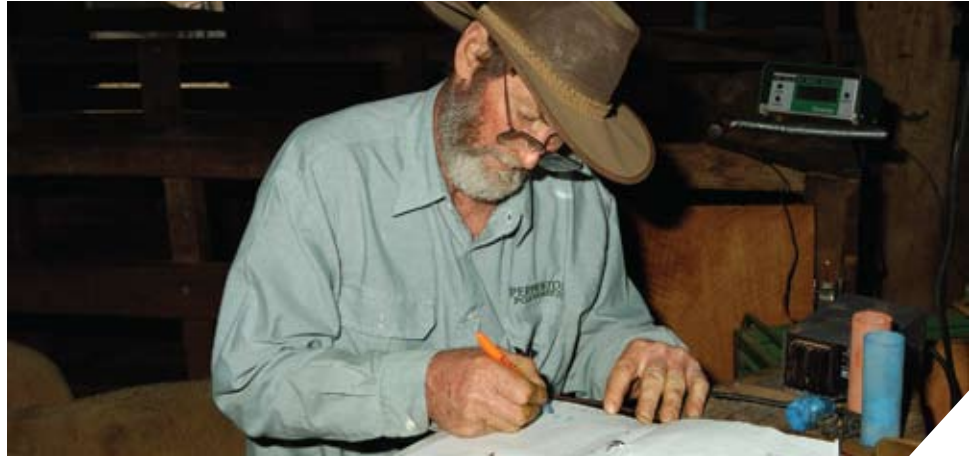
- Phone: 1800 993 343
- Email: [edgenetwork@mla.com.au](mailto:edgenetwork@mla.com.au)
- Website: [www.mla.com.au/edgenetwork](http://www.mla.com.au/edgenetwork)

**Form close alliances along the sheep and lamb supply chain to encourage feed back on each sale lot so you can improve the efficiency of your production system and meet market specifications**



## Procedure 3.4

Respond to short and long term price and market signals



### Background information



Enterprise management and marketing skills are important to better manage price risk and protect the profit margin of lamb enterprises.

Develop marketing skills that enable sound enterprise planning and business relationships to be established through marketing alliances with processors. Develop the knowledge and skills required to negotiate forward contracts and use risk management tools to better manage market volatility.

### Key decisions, critical actions and benchmarks

Ongoing production and market surveillance is necessary to position the lamb enterprise for the present and future.

- Aim to build business and enterprise management skills as part of the whole farm business plan.
- Invest time and financial resources in regular market reports: attend information field days, seminars and courses.
- Identify reliable sources of market information that suit the nature and structure of your sheepmeat enterprise and farming business.

### Undertake training

Adopt a continuous learning approach to develop lamb and sheepmeat production and marketing skills by undertaking accredited training courses such as those provided by MLA's *EDGEnetwork*<sup>®</sup> and NSW Department of Primary Industries' PROfarm short courses.

### AT A GLANCE ←

- Monitor a range of marketing news, reports and forecasts.
- Use market intelligence to implement a continuous improvement program.
- Participate in credible learning programs.

## Signposts

### Attend

The MLA EDGENetwork® program is coordinated nationally and has a range of courses to assist sheep producers. Contact can be made via:

- Phone: 1800 993 343
- Email: [edgenetwork@mla.com.au](mailto:edgenetwork@mla.com.au)
- Website: [www.mla.com.au/edgenetwork](http://www.mla.com.au/edgenetwork)

**PROfarm** is the training program developed by NSW DPI to meet the needs of farmers, primary industries, agribusiness and the community. NSW DPI PROfarm short courses are available by contacting:

- 1800 025 520 in northern NSW
- 1800 628 422 in southern NSW
- [www.profarm.com.au](http://www.profarm.com.au)

The PROfarm course most relevant to this procedure is: **Lamb Assessment and Marketing** – learn how to assess your lambs and understand markets and their specifications.

### View

**MLA Meat and Livestock Weekly:** a weekly guide to livestock sales nationally and events at retail and foodservice in key international markets. Free to MLA members online and via email subscription. Visit: [www.mla.com.au/Meatandlivestockweekly](http://www.mla.com.au/Meatandlivestockweekly)

**MLA web pages:** statistics and updates on activities in major international markets for lamb, particularly Japan, Korea and USA. Visit: [www.mla.com.au/RedMeatMarkets](http://www.mla.com.au/RedMeatMarkets)

**National Livestock Reporting Service (NLRS):** weekly livestock markets are reported on the day of sale nationally for major sales. Follow links on the right of the page at: <http://www.mla.com.au/nlrs>

**AuctionsPlus:** an electronic livestock selling system that allows reserve price setting and legal change of ownership without the seller, buyer or product having to come together physically at the time of sale. The website also provides weekly commentary on livestock sales including quotations for all livestock classes. Visit: <http://www.auctionsplus.com.au/>

A full summary of **MLA yearly market publications** can be found at:

- <http://www.mla.com.au/publications>

**MLA events program** for sheep producers, including:

- Meat Profit Days: [www.mla.com.au/events](http://www.mla.com.au/events)
- Prime Time: [www.mla.com.au/primetime](http://www.mla.com.au/primetime)

## Commonly used terms in this module

**Supply chain** – Term to describe the business units involved in getting lamb and sheep meat to the consumer

**GR Measurement** – Tissue depth (mm) over the 12th rib, used to estimate fatness

**Fat score** – Varies from 1 (lean) to 5 (very fat) and is a 5mm grouping of GR

**MLA** – Meat & Livestock Australia

**MSA** – Meat Standards Australia, a section of MLA

**Sheep CRC** – Australian Sheep Industry Cooperative Research Centre

**Glycogen** – Muscle sugar

**pH** – A measure of acidity and alkalinity

**NLRS** – National Livestock Reporting Service

**AUSMEAT** – The Australian company responsible for establishing and maintaining National Meat Industry standards

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and follow the links to updated signposts





## Tool 3.1

### Lamb growth planner

To plan the average lamb growth rate to point of sale:

1. Separate the mob into top, middle and bottom thirds to account for natural variation.
2. Complete the table for each mob.
3. Calculate the estimated average days to sale weight.
4. Calculate the growth rate required (grams per head per day) to achieve the target market.
5. Use this information to plan the utilisation of available forage (see procedure 8.3 in *Turn Pasture into Product*)

Growth planner	A Est. average lambing day no.1	B Est. day no.1 of sale	C= B-A Av. age at sale (days)	D Birth weight (kg)	E Est. live sale weight (kg) 3	G= E-D Growth (kg)	G/C Growth rate (g/head/ day)
First draft lambs				4 to 4.5 2			
Second draft lambs				4 to 4.5			
Carryover lambs				4 to 4.5			

- 1 Use day number eg, 1 August 2005 is day no. 213 - the 213th day in a year with 365 days
- 2 = 4.5kg if mainly singles and 4kg if about 20% multiples
- 3 Multiply by 1000 to convert to grams



## Tool 3.2

### Potential markets and specifications for sheepmeat

#### 1. Domestic lamb

Market segment	Carcase weight (kg)	Preferred MSA fat score	Comment
Supermarket lamb	18 to 22	2 and 3	Second cross preferred
Food service lamb	20 to 25	2 and 3	Lean and high yielding preferred
Other domestic lamb	Variable weights	2 to 4	Range of lamb types depending on end user requirements

Source: MLA 'The Lamb Guide'

## 2. Export lamb

Market segment	Carcase weight (kg)	Preferred MSA fat score	Comment
Heavy export	20 to 30	2 to 4	North America for prime cuts. Large volume markets for lower value cuts
Light export	10 to 16	2	Mainly Middle Eastern markets
'Haj' market	35 to 41 liveweight		Market is for lambs (6 to 12 months). Entire male animals with 'long' tail intact are preferred

**Source:** MLA 'The Lamb Guide'

## 3. Domestic sheepmeat markets

Market segment	Comment
Domestic manufacturing	17 to 21kg carcase weight, fat class 1 to 3, for manufactured meat products
Domestic retail	Hogget sold through meat retailers
Domestic food service	Cuts used in Asian and Middle Eastern style restaurants

**Source:** MLA 'Making the Most of Mutton' (Publication LPI061, free to MLA members)

## 4. Export sheepmeat

Market segment	Carcase weight (kg)	Preferred fat class	Comment
Heavy export	More than 20	2 to 4	Heavy carcase weights preferred
Light export	14 to 16	1 to 2	Lightweight, lean carcasses
Live sheep	NA	NA	Wethers more than 50 kg liveweight

**Source:** MLA 'Making the Most of Mutton' (Publication LPI061, free to MLA members)



## Tool 3.3

### Fat scoring lambs and sheep

Fat score (FS) is used for live animal assessment of slaughter animals. In New South Wales, fat score has also been adapted to assess the nutritional status of adult sheep, particularly in relation to flock reproduction targets.

#### GR measurement site

Scores are based on the tissue thickness (both fat and lean tissue) at the GR site. The GR measurement site is 110mm from the carcass midline over the 12th rib. This site is used as a reference point because it is easy to measure on both the live animal (by manual palpation) and the hot carcass and provides a good indication of the overall fatness (and yield) of the whole carcass.

For MSA sheepmeat processing, the fat score is also determined on the depth of tissue at the GR site.

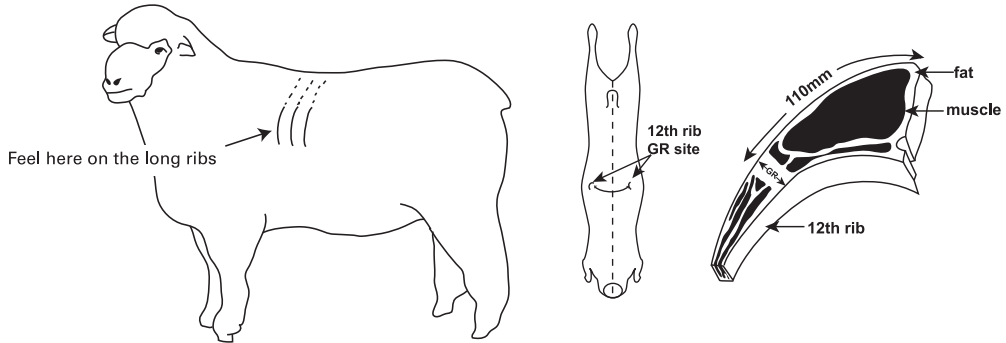
#### Fat scoring explained

The table describes the fat score, the coverage of tissue at the GR site and what you will feel over the long ribs during fat scoring. To achieve a reliable score, have the sheep or lamb standing in a race or on liveweight scales. The scorer must work fingers through the wool to skin level before feeling for fat cover over the rib bones.

#### Fat scoring guide:

Fat Score	1	2	3	4	5
GR tissue depth in mm	0 to 5 mm Not eligible for MSA	6 to 10 mm	11 to 15 mm	16 to 20 mm	20 mm and over
Feel at the 12th long rib	Individual ribs felt easily. Cannot feel any tissue over the ribs	Individual ribs easily felt but some tissue present	Individual ribs can still be felt. Can feel more tissue over the rib	Can only just feel ribs. There is fluid movement of tissue	Ribs cannot be felt. Tissue movement very fluid

**Locating the GR site on both the live animal and the carcass**



On the slaughter floor, GR is usually measured with a 'cut and measure' knife or AUS-MEAT probe.

**Recording the score**

Randomly score 25-50 sheep from the middle of the mob. Record the fat score of each sheep with an X on the chart. The middle score of the distribution is close to the average. In this example with 25 sheep, the median value is 3.0 but by using the chart you can see the average is just less than 3.0.

Fat score								
				X				
				X				
			X	X				
			X	X	X			
			X	X	X			
		X	X	X	X			
	X	X	X	X	X			
	X	X	X	X	X	X		
1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0

### Fat score recording sheet

Fat score								
1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0

### Fat score and dressing percentage

Higher fat score animals have a higher dressing percentage, as shown below:

#### Dressing percentages related to fat score

Fat score	Lambs		Sheep	
	Unweaned	Weaned	Wethers	Ewes
1	43%	41%	39%	38%
2	45%	43%	41%	40%
3	47%	45%	43%	42%
4	49%	47%	45%	44%
5	51%	49%	47%	46%

Source: MLA Live Assessment Yard Book – Sheep and Lamb

#### Time off feed:

When sheep are held off feed prior to sale, add the following to the dressing percentage figures above:

0-3 hours	0
4-5 hours	+1%
6-8 hours	+2%
9-12 hours	+2-3%
13-24 hours	+3.5-4.5%



## Tool 3.4

### Lamb production check list

Quality assurance procedure	Action
Breeding: use only high performance LAMBPLAN tested meat breed rams that are faster growing, leaner and heavier muscled than average. Source ewes of high genetic merit.	Record LAMBPLAN figures and monitor yearly purchases.
Marking and vaccination: mark lambs between 3 and 6 weeks of age. Minimise carcase and pelt damage by vaccinating behind the head or ear.	Vaccinate only on the head or neck. Record date, volume and vaccine used.
Pastures: graze lambs on high-quality pastures to achieve target growth rates from birth to sale. Manage stock to achieve constant growth rates in lambs	Weigh a sample of lambs at marking, weaning and prior to sale.
Management: draft lambs into three weight ranges so the growth rates of different mobs can be monitored. Assess mobs close to target sale weight and fat score.	Record weaning weights and segregation dates.
Mustering: avoid excessive stress on lambs and move them carefully in hot weather. Muzzle all dogs and use low stress stock handling methods (see procedure 11.5 in <i>Healthy and Contented Sheep</i> ).	Watch the weather. Use well trained dogs and adopt low stress stock handling techniques.
Assessment for sale: weigh all lambs 2-3 hours off feed and draft those meeting target specifications. Use an estimated dressing percentage to calculate carcase weight. Fat score about 20% of each weight category at the GR site. If the processor has a strict grid that rewards targeted GR ranges then fat score all lambs. Take care when forcing lambs, to avoid skin and pelt damage. Complete National Vendor Declarations for each consignment.	Record all liveweights, fat scores of sale lots and the estimated carcase weights. Make comparisons to feedback sheets. Do not use spray marks on the main body area.
Health treatments: observe the correct withholding periods for any drenches, dips or antibiotics used.	Keep a record of treatment dates and application rates. Supply records on request.
Crutching and shearing: ensure sale lambs are free of faeces and stain. Bung-hole crutch only to maximise skin value. Crutch at least four days before sale to avoid stress. Do not send lambs to market with unhealed or infected wounds.	Record dates of crutching and shearing.
Loading transport: move lambs quietly to avoid stress. Use muzzled dogs. Do not lift lambs by the wool. Keep lambs off feed and water for at least 12 hours prior to trucking. Observe recommended trucking densities.	Watch the weather. Use accredited livestock carriers. Agree to a loading time.
Marketing: use market coordinators or agents to trade lambs on a Hot Standard Carcase Weight basis, preferably within a marketing alliance or agreement. Seek feedback on each consignment.	Apply a professional approach to marketing and use feedback in a continuous improvement program.

**Source:** MLA 'The Lamb Guide'



## Tool 3.5

### MSA production guidelines for lamb and sheepmeat

Meat Standards Australia™ (MSA) lamb and sheepmeat is a supply chain management and assurance program designed to improve the eating quality of lamb, hogget, young mutton and mutton. The program began its commercialisation phase in 2006 by engaging with processors and is gaining significant momentum.

Lamb and sheep producers can register with MSA on-line at: [www.msagrading.com.au](http://www.msagrading.com.au) or by calling 1800 111 672 and obtain a 'producer pack' that includes tips and tools as well as updates as they become available. Registered beef producers are automatically registered for the lamb and sheepmeat program.

An additional publication 'Improving lamb and sheepmeat eating quality – a technical guide for the Australian sheepmeat supply chain' is also available to MLA members for \$30.

Call 1800 111 672 to order your copy.

#### MSA Sheepmeat Program carcass and supply standards

##### On farm requirements

---

- Minimum two weeks off shears (wool length  $\geq$  5mm)
- Fat score  $\geq$  2
- HSCW  $\geq$  16kg for Milk fed Lamb/ Young Lamb, HSCW  $\geq$  18kg for all weaned lambs, hogget and mutton
- Total time off feed not greater than 48 hours before slaughter
- Animals to have access to water at all times while not in transit
- Minimum of two weeks at consignment property before dispatch
- Maximum time in transit 24 hours
- National Vendor Declaration (Sheep and Lambs) and Waybill to be correctly filled out and accompany consignment to saleyards or processor

##### Recommended growth rates

---

- First and second cross - a minimum of 100g/day for 2 weeks prior to consignment
- Greater than 50% Merinos and pure Merinos at least 150g/day for 2 weeks prior to consignment

##### Selling methods

---

- Direct consignment – all categories eligible
- Saleyards – first cross and second cross accepted through saleyards
- Greater than 50% Merino or pure Merino accepted through saleyards providing processor can demonstrate that animals through this pathway meet pH/temperature window requirements and pH requirements as outlined in MSA Sheepmeat Standards Manual

**Carcase specifications**

<b>Category/ Cipher</b>	<b>Dentition</b>	<b>HSCW</b>	<b>Fat score</b>	<b>GR</b>
Milk fed Lamb as declared on NVD or Young Lamb *YL*	0 permanent incisor teeth 0 permanent incisor teeth No eruption of permanent upper molar teeth	≥ 16kg	≥ 2	≥ 6mm
Lamb *L*	0 permanent incisor teeth	≥ 18kg	≥ 2	≥ 6mm
Hogget *H*	1 but no more than 2 permanent incisor teeth	≥ 18kg	≥ 2	≥ 6mm
Mutton *M*, *W*, *E*	4 permanent incisor teeth	≥ 18kg	≥ 2	≥ 6mm



# Tool 3.6

## MSA Sheepmeat processing guide

# MEAT STANDARDS AUSTRALIA



## SHEEPMEAT PROCESSING GUIDE

### MINIMUM REQUIREMENTS

#### STEP 1

- RECOMMENDED GROWTH RATES**
- 1st and 2nd cross - a minimum of 100grams/day for 2 weeks prior to consignment.
  - Greater than 50% Merinos and pure Merinos at least 150grams/day for 2 weeks prior to consignment.

#### SUPPLY METHODS

- Direct consignment - All categories eligible.
- Saleryards - 1st and 2nd cross accepted through saleryards.
- Greater than 50% Merinos or pure Merinos accepted through saleryards providing processor can demonstrate that animals through this pathway meet pH-temp window requirements and pH requirements as outlined in MSA Sheepmeat Standards Manual.

#### PRE - SLAUGHTER

- Minimum 2 weeks off shears (wool length > 5mm).
- Fat score > 2.
- HSCW > 10kg for ewes (wilk fed lambs); HSCW > 15kg for all weaned lambs, hoggets and mutton.
- Total time off feed not greater than 48 hours before slaughter.
- Animals to have access to water at all times with not in transit.
- Minimum of 2 weeks at consignment property before dispatch.
- Maximum time in transit 24 hours.
- National Vendor Declaration (Sheep and Lambs) and Waybill to be correctly filled out and accompany consignment to saleryards or processor.

#### PROCESSING

- AUS-MEAT accreditation.
- Time spent in lairage yards at processing plant to be not greater than 24 hours with access to water.
- If livestock are held over in a holding paddock and fed at the processing plant, the processor must demonstrate that animals through this pathway meet pH-temp window requirements and pH requirements as outlined in MSA Sheepmeat Standards Manual.
- Head only electrical stunning.
- No sick or injured animals to be included.
- Excessively damaged carcasses to be excluded (leg removed from carcasses).
- Maintain carcass identification.

### CARCASS FAT CLASS

### STEP 2

Category / Ciphor or Young Lamb * YL *	HSCW	Fat Score	GR
Lambs (Mils fed) as declared on NVD	≥ 15kg	≥ 2	≥ 6mm
Lamb * L *	≥ 15kg	≥ 2	≥ 6mm
Hogget * H *	≥ 15kg	≥ 2	≥ 6mm
Mutton * M * , W * , E *	≥ 15kg	≥ 2	≥ 6mm

Heng Method	pH Temperature Window and Heng Options	
	Temperature @ pH 6	Minimum searing (before consumption / display / sale)
AT	18-25°C	5 days
AT	8-10°C	10 days
TS	8-20°C	5 days

### STEP 3

REFER: SHEEPMEAT PRIMAL CUTS CHART

### GR MEASUREMENT SITE

REPRODUCTION	DESCRIPTION	CATEGORY/CLASS
0	LAMB - female, castrate or adult male animal that has not reached sexual maturity	LAMB * L *
1-2	1st Fat Lamb (Ciphor MFL) Lamb that has not been weaned. Hogget from 8 weeks.	HOGGET * H * or YOUNG LAMB
1-8	MUTTON - female or castrate area animal that has not reached sexual maturity	MUTTON * M *
9-10	CASTRATE	CASTRATE
0	Carcass derived from female or castrate area animal that has not reached sexual maturity	YOUNG LAMB
1-2	Carcass derived from female or castrate area animal that has not reached sexual maturity	HOGGET * H * or YOUNG LAMB
1-8	Carcass derived from female area animal that has not reached sexual maturity	EWES MUTTON * E *
1-8	Carcass derived from castrate area animal that has not reached sexual maturity	WETHER MUTTON * W *

\* Chronological age at time of assessment only



## Tool 3.7

### Factors affecting carcass quality and value

#### Achieving satisfactory glycogen levels

Glycogen (animal sugar) is used as the primary energy source as muscle turns into meat. Glycogen is held in reserve for vigorous muscular activity or times of stress.

#### The muscle glycogen bucket



Good nutrition results in a high and normal concentration of glycogen in muscle tissue and reduces the risk of slaughter animals developing high pH meat.

A muscle glycogen bucket less than half full at slaughter leads to meat that has a high pH, poor flavour and poorer keeping quality. It is visually unattractive, tougher and takes longer to cook than low pH meat.

To ensure the glycogen bucket is full, aim for a weight gain of at least 100g/day for crossbred lambs and 150g/day for merinos. The other important factor in maintaining glycogen levels is management of animals for minimum stress. Merino sheep have a higher pre-slaughter growth target because they are more stress sensitive during the pre-slaughter period. Short term fasting has little effect on glycogen levels.

#### Managing pre-sale liveweight - carcass weight loss

Animals lose weight rapidly during the first 12 hours held off feed (there is a 5% and 7.5% decline in liveweight at 12 and 24 hours respectively) due mainly to emptying of the gut and faecal expulsion. Most processors require at least 24–36 hours off-feed before trucking (the on-farm feed curfew period) to reduce contamination of the truck with manure and associated soiling of animal pelts and likely processor discounts. Stock grown on green pasture, fodder crops, lucerne, legume stubbles or in a feedlot may require a longer curfew.

Carcass weight loss in lambs starts at 12 hours off-feed at a rate of 0.1%/hour for the next 36 hours. Reducing the total time off-feed in the pre-slaughter period from 48 to 36 hours will improve carcass weight by 0.24kg (for a starting carcass weight of 20kg ie,  $20 \times 0.001 \times 12 = 0.24$ ).

Dehydration in slaughter lambs is also an important consideration causing a reduction in both dressing percentage and carcass weight. If possible, train lambs to drink from the stock water systems used in the slaughter supply chain.

### Health management affecting carcase and offal quality

Healthy animals grow faster and are more efficient at converting pasture into product. Specific problems affecting carcase and offal quality and yield (especially in older sheep) are cheesy gland abscesses (see tool 11.12 in *Healthy and Contented Sheep*) and grass seed penetration into the wool, skin and carcase.

### Achieving fat scores

As a general rule, when finishing lambs on high energy diets, such as high-quality pasture or grain, in the 35–45kg liveweight range a gain of 7kg liveweight will increase the fat score by 1. Genetic merit for muscle and leanness of the breeding flock (see tool 9.9 in *Gain from Genetics*), sex and level of nutrition all have an influence.

### Managing skin quality and value

Skins can be a valuable product in the sheepmeat enterprise and can contribute from 5% to 20% of the value paid for lambs and sheep. A number of management factors affect skin quality and value. Applying best management practices in the production system improves skin quality and financial returns.

Skin quality concerns	Corrective action
Wool length	Match shearing to reduce grass seeds. Allow 10 weeks of wool growth after shearing and before slaughter to ensure commercial wool length
Wool quality	Dark fibres will reduce skin value. Hairy breeds and crosses have reduced value
Seeds and burrs	Manage grass seed load in paddocks and at shearing time
Grain strain	Do not handle sheep by holding the wool
Skin weight and area	Large lambs and sheep have a larger skin area and potentially more value
Misuse of brands and markers	If the dyes do not scour out they should be applied to the wig/head area
Over-crutching	A bung whole crutch is all that is needed to ensure easy dressing during processing
Vaccination abscess	Vaccinate near the edge of the pelt, behind the ear
Disease	Control fly strike, fleece rot, lumpy wool and lice to minimize wool matting



## Tool 3.8

### Selling options for sheep and lambs

Regardless of the selling method, the buyer will either pay on an estimated or actual weight of carcase with a skin value added. As a general rule, the less information the buyer has available, and the more variable the livestock, the more conservative (and lower) the estimated value.

Where live animal assessment skills and weight and fat score information are available, present this as highest and lowest and proportions of weight ranges and fat scores. For example, 60% over a weight or under a fat score; 50% in the weight or fat score range; or 10% below a weight or fat score.

#### **Auction sales**

Auction sales generally offer wider competition and convenience with the price established at the point of sale. They provide immediate sale with all stock types and lots of any size accepted. Prices can be compared and no marketing skills are required. However, transport costs and saleyard dues add to the cost of production. Competition depends on the number of buyers bidding and sheep producers rarely receive carcase feedback.

#### **Paddock sales**

This method has the advantage of minimum costs for selling, handling and transport. Limited marketing skills are required and risks are lower than other options. On the negative side, competition is limited and sheep producers rarely receive carcase feedback. Buyers prefer large numbers and an assessment of weight and fat score range is an advantage in price negotiations. Paddock sales are favoured for store stock trading.

#### **Over-the-hooks sales**

Sheep producers receive clear market and price signals for carcase and skin quality. Feedback is available to assist in future management decisions and to perfect assessment skills. Costs for selling, handling and transport are minimal. A flat rate or grid is used to determine price. Lambs can be sold at the optimum time in terms of market readiness and pasture use efficiency. This strategy also reduces exposure to market volatility and helps avoid holding onto lambs while waiting for the market to improve (which compromises pasture use efficiency and weaning percentages in the next lambing - two most important profit drivers). Stock must be accurately assessed for sale to avoid price penalties.

#### **Forward price contracts**

Forward price contracts take much of the risk and uncertainty out of marketing. Sheep producers receive clear market and price signals for carcase and skin quality. Feedback is available to improve the production system and costs for selling, transport and handling are minimal. Lambs can be sold at the optimum time in terms of market readiness and pasture use efficiency.

#### **AuctionsPlus**

AuctionsPlus is an electronic on-line web based "sale by description" system for a range of livestock. It allows commodity transaction, reserve price setting and legal change of ownership without the seller, buyer or product having to come together physically at the time of the sale. Sheep producers retain full control of their stock and are assured of market value or better when protected by the reserve price set with delivery on property.

#### **New selling options**

A payment system based on lean meat yield is available as a selling option in two Australian and eight New Zealand processing plants. Lean meat yield is the actual weight of meat contained in the carcase. This figure is influenced by carcase weight, muscling and fatness. These characteristics can be measured using carcase imaging technologies such as Viascan™. Marketing on lean meat yields rewards those sheep producers who carefully manage for optimum weight, muscle and fatness of their slaughter lambs.



## Tool 3.9

### Selecting the appropriate marketing option

Choose the most appropriate marketing method by placing a ✓ or ✗ in the columns beside the features listed for each option.

Review the assessment against the number and estimate of the carcase specifications for each sale lot to identify the most profitable selling method.

Important feature	Live sales			Over-the-hooks		
	Saleyards	\$/head on-farm	\$/head at Auctions-Plus	c/kg on Auctions-Plus	c/kg * (L/Agent)	c/kg * (no L/Agent)
Competition at auction						
Price comparison						
Price negotiation						
Live assess, CW & Fat by assessor						
Feedback sheets						
Specific target market						
Guaranteed payment						
Minimise stress						
Price indication on-farm						

\* AUSmeat accredited works  
 CW = carcase weight



## Tool 3.10

### MLA market information

Meat & Livestock Australia (MLA) provides an independent source of livestock market data, collected directly from major prime and store markets through its National Livestock Reporting Service (NLRS). It is free to MLA members. Visit: [www.mla.com.au/Meatandlivestockweekly](http://www.mla.com.au/Meatandlivestockweekly)

NLRS livestock market officers attend physical markets each week, producing detailed and summary reports for each market.

The signposts in procedure 3.4 list the key MLA websites for the latest marketing news, reports on markets and forecasts. Information is available on:

- Sheep and lamb markets: NLRS provides accurate and timely market information for sheep producers. Livestock Market Officers attend 30 sheep and lamb markets throughout Australia each week – collecting, collating and analysing market data.
- Prime sheep sales: MLA's NLRS provides detailed weekly reporting of prices and yardings for individual stock categories sold at major sheep sales. Reports include 'on the ground' commentary explaining local market trends.
- Store sheep markets: NLRS reports on a wide range of regular store markets and seasonal weaner sales.
- Over the hooks (OTH) sales: OTH sheep reports are published weekly providing information on key components of the sheepmeat trade and a description of market conditions. Information is provided as a table that summarises the weekly results.

Grade	Fat Score	Fat Depth	Price Range	Average	Trend
Trade Lamb					
Export Lamb					
Sheep					

- Summary reports: provide an overview of market trends and key indicator prices. They are freely available and are published in rural papers.
- Detailed reports: are available as downloadable information. These reports contain an analysis of market trends and comprehensive prices. MLA members are entitled to 100 free reports each year. Non-members must subscribe before viewing these reports.



For the most up-to-date Making More from Sheep information, including web signposts, products, publications and events, visit [www.makingmorefromsheep.com.au](http://www.makingmorefromsheep.com.au)

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