

Lecture 7: Methods for Meeting Lamb Market Specifications and Marketing

Geoff Casburn, Chris Shands, Brent McLeod

Learning objectives

- Improve your knowledge and skills in producing lambs and sheep to market specifications
- Have skills in describing live weight and fat score of the live animal and how they meet a market specification
- Be able to calculate dressing percentage of sheep and lambs
- Understand how improving quality assurance in production systems increases the number of sheep and lambs meeting market specifications

Key terms and concepts

Fat score; condition score; dressing percentage; marketing systems; on farm quality assurance

Introduction

The previous lecture described the different market specifications for lamb. In this lecture methods for assessing lambs to ensure they meet these specifications will be discussed. Different methods for marketing these lambs will also be outlined.

7.1 Live assessment of lambs and sheep for sale

When assessing sheep and lambs for sale the aim should be to select those animals within the required carcass weight and fat score specifications. More accurate appraisal of the live animal helps the producer and agent to target specific markets.

The traditional approach of visually assessing sheep as a mob or while they are running through the drafting race often results in drafts of lambs or sheep with a 5-8 kg carcass weight range and a wide variation in fat scores.

The successful marketing of even lots of sheep requires a professional approach. Being a good assessor means being able to accurately estimate the eventual carcass weight, fat score and skin quality. These skills can be improved by experience and regular abattoir feedback. It is also greatly aided by the use of live weight scales and a good fat scoring technique.

7.2 Fat scoring sheep and lambs

Fat scoring is a skill that is best learnt by practice and from feedback on the carcass performance of lambs. It is also of great benefit in managing the flock when feeding and managing sheep and lamb flocks.

NB. Fat scores are based on actual soft tissue depth at the GR site. The GR Site is 110 mm from the midline over the 12th rib (Figure 7.1). The best site to feel when assessing fatness is over the long ribs where the GR site is measured on the carcass in the abattoir. Fat scores vary from score 1 (leanest) to score 5 (fattest) (Table 7.1).

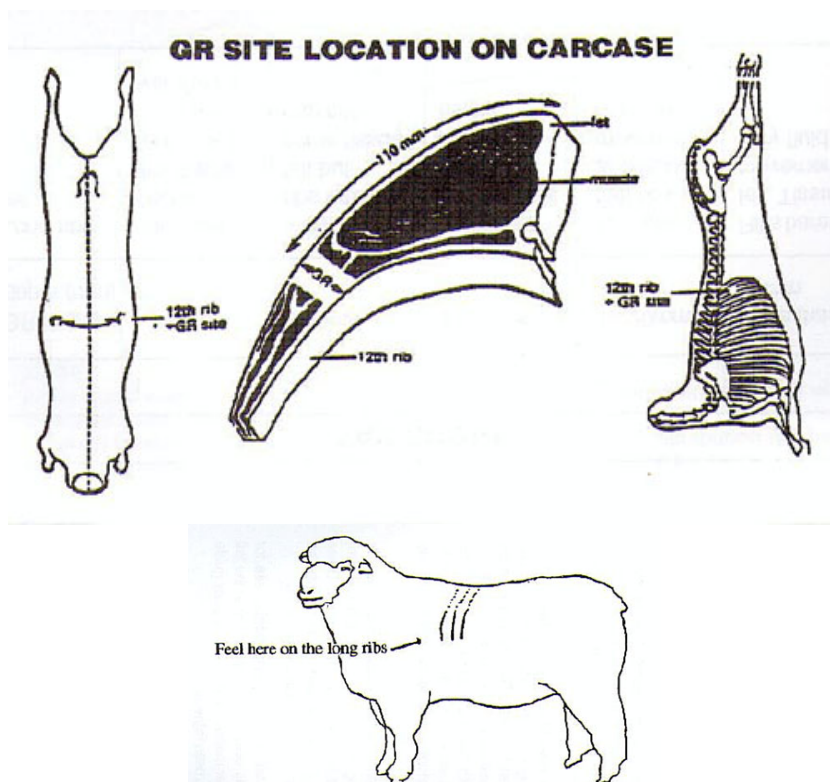


Figure 7.1: GR site location on carcass (Making More From Sheep Module 3, Tool 3.3 2008).

Table 7.1: Fat score table (Shands *et al.* 2009).

	Fat Score				
	1	2	3	4	5
GR tissue Depth in mm	0-5	6-10	11-15	15-20	21 and over
Long ribs	Individual ribs felt very 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 can't be felt. Tissue movement very fluid.

In WA this assessment method is known as 'condition scoring' and is different in that assessment is made over the short ribs and backbone of the animal as shown in table 7.2.

Table 7.2 : Condition score table (Suiter 1994).

Score	Backbone	Short Ribs	Eye Muscle
1	Prominent and sharp	Ends are sharp and easy to press between, over and around	Thin, the surface tending to feel hollow
2	Prominent but smooth	Smooth well-rounded ends, can feel between, over and around each smoothly	Reasonable depth with the surface tending to feel flat
3	Can be felt but smooth and rounded	Ends are smooth and well covered, firm pressure necessary to feel under and between short ribs	Full and rounded
4	Detectable with pressure on the thumb	Individual short ribs can only be felt with firm pressure	Full with a covering layer of fat
5	Can be felt with firm pressure	Cannot be felt even with firm pressure	Muscle cannot be felt due to a thick layer of fat

To achieve a reliable score, have the animal standing in a relaxed state, preferably in a race or liveweight scales. The sheep will not be bruised if assessed in the correct manner by gentle palpation with the fingertips and thumb. The assessor must work fingers through the wool to skin level before

feeling for fat cover over the ribs. Generally, at the same weight ewe lambs will be fatter than wether lambs. In young lambs (suckers) on a steady plane of nutrition the fat distribution will be fairly even. In older lambs and sheep, fat distribution may not be as even.

7.3 Estimating carcass weight and dressing percentage

The guide to carcass weight is liveweight adjusted by an estimated dressing percentage.

For example:

$$\begin{aligned} \text{Carcass weight} &= \text{live weight} \times \text{dressing percentage} \\ \text{eg} &= 40 \text{ kg} \times 46\% \\ &= 18.4 \text{ kg} \end{aligned}$$

Liveweight can be accurately and quickly measured using a modern set of lamb weighing scales as shown in Figure 7.2. Most people underestimate lamb weights by 10 to 25% when simply guessing.

Factors affecting dressing percentage

Although Australian lambs have an average dressing percentage of around 45 to 48%, they vary considerably, from as high as 54% to as low as 40% depending on a wide range of conditions including:

- Fatness
- Time off feed and water prior to live weighing
- Feed conditions
- Weaned or unweaned
- Sex
- Breed
- Skin weight - Length of wool
 - Wet or dry
- Carcass definition.



Figure 7.2: Example of weigh scales. Source: http://www.tru-test.com/new/sheep_crate_details.asp?pid=2378
Retrieved: 22/06/2011

Dressing percentage guidelines

For lambs

- 2nd Cross Lamb (Dorset Ram x BL/Merino Ewe)
- 2 – 3 hours off feed
- 50mm (2") wool
- Weaned.

Table 7.3: Dressing percentages of lambs and sheep (MLA Live Assessment Yard Book – Sheep and Lamb)

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

Breed: The breeding of the sheep can affect fat cover and muscling and hence, dressing percentage. Merino cross and Merino lambs tend to have lower dressing percentages than second cross lambs by about 1.5 to 3.5%. Wether lambs dress out about 1.5% lower than ewe lambs.

Time off feed: Add to the dressing percentage figures above the values in Table 7.4 according to how long the lambs or sheep have been off feed.

Table 7.4: Effects of time off feed on dressing percentage (McLeod 2003).

Time off feed	Addition to dressing %
0 – 3 hrs	0
4 – 5 hrs	+ 1%
6 – 8 hrs	+ 2%
9 – 12 hrs	+ 2.5 – 3%
13 – 24 hrs	+ 3.5 – 4.5%

Seasonal variation: Fluctuation of up to + 3% can occur because of season.

Carcase definition: This varies with the carcasses trimmed to the Aus-meat “standard trim” which is hot standard carcase weight by having removed the thick skirts, kidneys, kidney knob, channel, udder and cod fat. These will have a dressing percentage about 1.5 – 2% lower than if these trimmings are left in. Chilled ‘cold’ lamb carcase weights are around 2 – 3% less than hot carcase weight.

Try to weigh lambs 2 – 3 hours off feed each time to maintain consistency between consignments.

- For a non-standard trim (kidney/kidney knobs retained) add up to 4% to the dressed weight
- For domestic mutton add 3% for non standard carcase trim
- Chilled cold carcase weights are around 3% less than hot weights.

Skin weight adjustment: This varies according to wool length with short wool and freshly shorn lambs and sheep have a higher dressing percentage than woolly sheep.

7.4 Marketing systems

Australian lamb producers will be more efficient if the principles of supply chain management are applied at each step of their production and marketing system. Choose a marketing system that rewards you for the extra effort you have put into producing your lambs to market specifications. To assist with marketing your lambs, ensure that your stock agent, coordinator and yourself all have the skills to accurately assess and describe your product. They will need skills in live lamb assessment and the ability to estimate carcase weight and fat score. With adequate training you can expect mobs of assessed lambs to reach 90% compliance to specifications.

Producer marketing groups

Producer marketing groups are useful for specialist lamb producers who have the skills in live assessment and nutritional management, or whose agent or group coordinator has these skills. These groups are suited to producers who wish to provide lambs to a known specification for a known reward.

If you are involved in a group you should be constantly monitoring your lambs to make sure they will meet specifications. The success of a group often depends entirely on the skills of the assessor/coordinator – in many cases an accredited agent. Producer groups usually attempt to establish an alliance with an end-user, providing consistent supply to a specification in return for an agreed price. Advantages of producer groups include:

- price premiums for meeting specifications set by end-users
- a forum for mutual learning
- better knowledge of customer requirements
- ability to form a mutually advantageous alliance with an end user
- ability to negotiate for forward contracts.

Lamb producer groups can play a vital role in improving the consistency of supply of quality lamb to specifications by coordinating supply throughout the year.

Over the hook (OTH) trading

Most processors will purchase lambs over the hook, paying a cents per kilogram price for the carcase. The skins may be tendered on your account. The advantage of this system is that you are paid for what you produce. Each carcase is weighed and fat scored and you should receive feedback.

Most domestic processors and wholesalers will provide you with a price over the phone so you know what price you will receive before your lambs leave the property. You also receive feedback on your ability to meet weight and fat specifications. A disadvantage of this system is that processors often do not pay high prices to new producers until they know that they can deliver to specification.

Direct transport to the works keeps handling and stress on lambs to a minimum, reducing the risk of problems in carcase and eating quality. Use a reputable trucking company that is committed to quality assurance.

When selling lambs over the hook, ownership changes at the abattoir scales. Condemned lambs are rare but if they do occur you will be not paid for them.

Variations when selling lambs 'over the hooks' are:

- OTH cents/kg (flat price with no penalties)
- OTH grids (cents/kg penalties for outside of specification)
- Forward contracts (usually based on grids).

OTH price grids

Price grids provide a differentiation in price for lambs, based on carcase weight and fatness (see Table 7.4 for an example). They show the value to the processor of each carcase according to the weight and fat specifications preferred by the processor or other end-user.

Some producers are discouraged by the lower price for missing the specifications although the price for meeting specification is generally higher than other marketing methods. By developing good live lamb assessment skills it is possible to only send those lambs that meet the preferred specifications. Lambs that fall outside the specification can then be further fed or sold through another marketing method.

Research has shown that it costs processors in the form of lost profits for each fat score outside their specification. The cost of trimming and the waste it creates can be considerable. For retailers this loss is generally doubled. The losses are channelled back to producers through lower prices paid.

Table 7.5: OTH Pricing Grid (sample only) (Chris Shands and NSW DPI Colleagues 2006).

Hot standard carcase weight	Fat score				
	1	2	3	4	5
18.1- 20 kg	2.50	3.00	3.00	3.00	2.50
20.1- 22 kg	2.50	3.25	3.25	3.25	2.50
22.1- 24 kg	2.50	3.50	3.50	3.25	2.50
24.1- 26 kg	2.50	3.50	3.50	3.25	2.50
26.1- 28 kg	2.50	3.50	3.50	3.25	2.50
28.1- 30 kg	2.50	3.20	3.20	3.25	2.50
30.1 + kg	2.50	3.20	3.20	3.20	2.50

Comparing grids

For producers not involved in a marketing alliance with a processor or wholesaler it is still worth comparing returns from a number of processors. Direct comparison is difficult because many grids have different factors as their basis and differing levels of trim.

The information needed about each processor is:

- weight preference
- fat score preference
- price (cents/kg) and penalties for outside the specification if selling on a grid
- carcase trim used eg. AUSMEAT trim hot standard carcase weight or fats-in for some domestic abattoirs
- hot or cold carcase weight basis
- what level of shrink (drying out of the carcase in the chiller) is assumed if payment is made on cold weight, it is usual to assume 3% shrink however it will vary from 2.5 – 3.5%
- date and time of delivery (most abattoirs require stock to be at the plant the day prior to slaughter)
- transaction levy (producers will normally have 2% deducted from payment)
- estimated skin value (producers need to be able to assess skins for seed and length etc)
- transport cost to abattoir (normally producers will pay delivery to abattoir)
- payment terms (7 – 21 days, cheque or direct into a producers account).

Forward contracts

To secure a supply of suitable lambs for the export markets, progressive meat companies use forward contracts. This method helps ensure producers do not sell their lambs at lighter weights on the trade market.

- Producers benefit by knowing what price they will receive for their lambs some months in advance
- Processors benefit from a more controlled supply and less fluctuation in their purchase price.

Most forward contracts are traded on a Price Grid based on carcase value for lambs of various weights and fat scores.

AuctionsPlus

'AuctionsPlus', formerly known as 'CALM', computer aided livestock marketing, also offers an auction type system where buyers and sellers bid on previously assessed lambs. You may sell your lambs on a \$/head or c/kg basis. This method of selling involves an accredited assessor weighing and fat scoring a random percentage of the lambs. The assessment sheet is available to buyers who bid without seeing the lambs. The lambs do not leave the farm if the reserve price is not reached. Feedback is available in this system when the lambs are sold on a c/kg basis.

VIAscan®

The VIAscan® Sheep Carcase System is a fully automated system that records a video image of each carcase and evaluates it through a computer program and predicts its lean meat yield. The equipment is located on the slaughter floor.

A series of linear measurements and reflected light components are processed to determine the proportional dimensions and density and distribution of fat for each image.

These elements are used to determine a VIAscan® predicted Lean Meat Yield. The information on individual carcasses is presented as a percentage with Lean Meat Yields of 51% or better being considered acceptable. This type of feedback is valuable for producers to consider their genetic and nutritional management of the flock.

High yielding carcasses improve the efficiency for all participants in the supply chain.

Meat quality through a yield based system must not be overlooked with the system having the capacity to identify carcasses of poor conformation and insufficient fat.

Paddock sales

Paddock sales are also a common method of marketing lambs.

The advantages are that you can:

- assess lambs prior to them leaving the property
- market stock on days other than sale days
- negotiate price and delivery arrangements
- sell large numbers of lambs without the extra cost and stress involved in transport to saleyards.

The value of this system depends on your relationship with your agent and the buyers. Some buyers provide detailed feedback whereas others provide no comment at all.

Saleyards

Saleyards provide a clearing house for lambs and in particular small lots. During periods of short supply, saleyards can provide unpredictably high prices.

Saleyards may be convenient to sellers and sometimes to buyers, but they can lead to:

- bruised or damaged product
- price based on averaging over good or poor quality lambs
- no objective feedback.

Carcase quality feedback

The value of feedback to the producer on product quality, live animal assessment and butcher acceptability of the consignment is extremely valuable. A feedback sheet is produced by the abattoir once the stock have been processed and it includes information on:

- The number of lambs processed
- Carcase weight
- Carcase fat (GR)
- Muscle grade (if recorded)
- Price for each lamb
- Skin price and value for the lot
- Animal health status - condemnations, evidence of various diseases
- Details on lambs that have not met the processors specification.

7.5 On farm quality assurance

Customers all over the world demand food products that are of consistent quality and free of chemical residues and other contamination. Australian lamb producers can demonstrate their commitment to quality assurance by adopting Flockcare™.

The following table (Table 7.5) lists some key points that should be considered to assist the production and delivery of a quality product to the consumer. Check with your buyer or end-user as to what is required.

Table 7.6: Meat Quality Assurance (Chris Shands and NSW DPI Colleagues 2006).

Quality Assurance Procedure	Control Point
<p>Breeding: Use only high performance LAMBPLAN tested meat breed rams that are faster growing, leaner and more heavily muscled than average. That is rams that have a LAMBPLAN Carcase Plus Index of at least 137%.</p>	Record LAMBPLAN figures and monitor yearly purchases
<p>Marking and Vaccination: Mark lambs between 3 – 6 weeks of age. Hygienically vaccinate lambs high up behind the head to minimise carcase and pelt damage.</p>	Vaccinate only on the head or neck. Record date, volume and vaccine type used
<p>Pastures: Graze lambs on high quality mixed pastures to achieve target growth rates from birth to sale. This will enable lambs to reach slaughter weights for domestic or export markets in about six months. Try to maintain constant growth rates in lambs.</p>	Weigh a sample of lambs at marking, weaning and prior to sale
<p>Fodder crops: Remove lambs from Brassica crops eg. turnips, fodder rape, canola or green canola stubbles, three weeks before slaughter to avoid flavour taints</p>	Record the date when lambs were removed from Brassica fodder crops
<p>Management: Draft lambs into similar weight ranges so the growth rates of different mobs can be monitored. Mobs approaching sale weight and fat score need only be assessed.</p>	Record weaning weights and segregation dates
<p>Supplementary Feeding: Do not feed more than 20 % lupin grain as a component of the total diet in the finishing period. Ensure that any supplement has not been treated with chemicals that could leave an undesirable carcase residue.</p>	Record ration components, length of feeding and adhere to withholding periods
<p>Mustering: Avoid excessive stress on lambs, such as extensive chasing by dogs of lambs that break away from a mob. Move lambs slowly in hot weather. Muzzle all dogs.</p>	Watch the weather Use well trained dogs
<p>Assessment for Sale: Fat score all lambs at the GR site. Identify and draft off those lambs that meet the target specification. Weigh all lambs between 2 or 3 hours off feed and use an estimated dressing percentage to calculate the carcase weight.</p> <p>Do not pull or lift lambs by the wool as this causes bruising and skin damage. Identify lambs consigned for market on the head or nose only. Ensure National Vendor Declarations are completed and accompany each consignment of lambs.</p>	Record all live weights and fat scores of sale lots. Supply to processor if requested. Compare it to slaughter feedback sheets.
<p>Drenches, Dips and Antibiotics: Observe the correct withholding period for any drenches, dips or antibiotics used. Some markets will not accept lambs treated with antibiotics.</p>	Keep records of all treatments, dates and application rates. Supply record to processor if requested.

<p>Crutching and Shearing: Ensure that lambs destined for market are free of faeces and stain. Do not over crutch as this reduces the value of the skin, bung hole crutch only. Crutch at least four days before sale to avoid stress. Do not send lambs to market with unhealed or infected wounds</p>	Record dates of crutching and shearing
<p>Loading: Move lambs quietly to avoid stress. Muzzle all dogs. Do not pull or lift lambs by the wool. Keep lambs off feed and water for at least 12 hours prior to trucking. Do not use electric prodders. Observe recommended trucking density and loading procedures.</p>	Watch the weather Use accredited carriers Agree to a loading time
<p>Marketing: Use market coordinators or agents to trade lambs on a Hot Standard Carcase Weight basis, preferably within a marketing alliance and to a target specification. Use a method of direct sale that supplies feedback.</p>	Demand a professional approach to marketing

7.6 Quality assurance to produce mutton to processor specifications

To maximise mutton return, four main quality assurance areas need to be addressed.

Carcase quality

Grass seeds and Cheesy Gland infections (*Caseous lymphadenitis* or CLA) are the two main quality assurance problems facing mutton processing. They can result in major trimming or condemnation of the whole carcase.

Grass seeds - pierce the skin and can lodge in the muscle. Mutton products contaminated by grass seed are unsaleable on the export market, which results in heavy trimming of carcasses at the abattoir.

Grass seed is such a serious problem at certain times of the year that processors will avoid purchasing sheep from districts with heavy infestations of grass seed. Price discounts are likely.

Where possible, sheep identified for sale should not be grazed in paddocks with grass seed. However if this is not possible the following management strategies will help to reduce the problems caused by grass seed:

- Increase grazing pressure before seed set to reduce the quantity of seed produced
- Spell cleaner paddocks ready for grazing during seed fall
- Consider pasture topping or slashing
- Shearing before seed set reduces seed pick up
- Do not allow grass to set seed in high traffic areas around yards and troughs.

Cheesy gland – is a bacterial disease of sheep that is responsible for the majority of sheep carcase condemnations in Australian abattoirs. The disease causes abscesses containing a “cheesy” fluid in the lymph nodes, lungs and other internal organs.

The average prevalence of CLA appears to have decreased in Australian sheep carcasses in the past 20 years, however it can be an important source of loss to the processor and producer.

Less than 1% of carcasses are condemned for CLA. However, CLA lesions are now trimmed from the carcase to pass animal health inspection regulations. Substantial trimming and loss is incurred in a mob with high levels of CLA infection.

Trimming occurs before the scales, so producers marketing sheep direct to the works are not paid for any trim. Processors also keep note of producers supplying lines of sheep with CLA and grass seed contamination. Some buyers factor in a price reduction of up to 15% to sheep from unknown and unreliable sources to cover possible CLA losses.

Eating quality

The main outcomes for producers from the lamb and sheepmeat eating quality research include:

- Weight loss in the weeks before slaughter will cause meat quality problems
- For maximum eating quality, minimise stress during curfew, transport and lairage

- Stress prior to slaughter, including temperature extremes and the use of dogs in yards can reduce levels of muscle glycogen, increase muscle pH and cause dark cutting meat, which may also be tough
- Merinos require more careful pre-slaughter management than other breeds to reduce the effects associated with stress
- The ideal time between mustering and slaughter should be between 12 to 36 hours. This is subject to slaughter requirements set by your processor
- Access to water during on-farm curfew and lairage will be beneficial for both carcass yield and quality.

Skin quality

Meeting specifications for

- wool length
- grass-seed contamination
- crutch area
- spray markers
- external parasites
- curfew times
- vaccination.

As discussed in lecture 6.3 Lamb and Sheep Skins.

Offal quality

Offal is generally regarded as the lowest value product coming from mutton. Yields of quality offal are a result of effective health and flock management on farm.

Cheesy gland

Is caused by a bacterium in sheep and goats and is spread by infected material from lung abscesses onto open wounds of other animals. Dipping, shearing and yarding can spread the disease. Prevent by vaccination with 6 in 1 at marking then weaning and an annual booster. Shearing older sheep last during the shearing period will help reduce the spread of CLA.

Table 7.7: A survey of mutton processors identified a range of diseases which impacted on the value of offal (Chris Shands and NSW DPI Colleagues 2006).

Disease/ Condition	% of hogget/mutton affected	Offal and co-products affected
Cheesy gland	14	Liver, lungs, heart, kidneys
Chronic liver damage	16	Liver, lungs, heart
Pleurisy	7	Liver, lungs, heart and skirt

Chronic liver damage

Causes liver to be smaller and firmer than normal. Damage often occurs as a result of liver fluke, poisoning eg. heliotrope, lupinosis.

Pleurisy (lung disease)

May result from viruses, bacteria, fungi, internal parasites, grass seed, allergic reactions or stress. Lambs in feedlots or after severe weather events are more susceptible than adult sheep. Symptoms include: coughing, nasal discharge, off feed.

Nodule worm

One processor reported that 9% of approximately one million 'runners' (small intestines exported for sausage casings) were condemned in the first half of 2002 because of 'pimply gut'. The problem seems mainly to be in sheep from Western Queensland and northern west NSW. Nodule worm was once a significant sheep worm in summer rainfall areas – second only to Barber's Pole Worm in importance.

Chemical withholding period

A withholding period is the period following treatment when sheep or lambs are unsuitable for processing. The slaughter WHP is the minimum time period that must elapse between the treatment of livestock with a veterinary treatment and the delivery of livestock for slaughter. WHPs are set to ensure that residues resulting from the treatment fall to levels below the Australian and international maximum residue limits. After using drenches, dips, backliners and antibiotics it is essential to observe the correct withholding periods. It must be noted that some chemicals have WHP of more than six months.

Readings

1. Making more from sheep Module 3: Market Focused Lamb and Sheepmeat Production.
<http://www.makingmorefromsheep.com.au/market-focussed-lamb-and-sheepmeat-production/index.htm>
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