# SHEEP

Ovis aries

## Breeds and uses

The majority (80%) of the 100 million sheep in Australia are Merinos, farmed mainly for wool. Through cross-breeding and selection over many years, several different Merino strains have been developed. For example, Saxon Merinos from the Tasmanian highlands produce ultrafine wool suitable for use in fine Italian suits, while South Australian Merinos (bred for their ability to thrive in fairly adverse grazing conditions) tend to cut 'coarse' wool of thicker fibre diameter.

The remaining 20% of Australia's sheep include part-Merinos such as the dual purpose 'Corriedale', farmed for both meat and wool. Specialised meat breeds include the 'cross ewes' (Merino X Border Leicester or Merino X Romney) used to mother prime lambs.

Other breeds including Lincoln, the Cheviot, and the South Suffolk are less prevalent in commercial enterprises, but each has characteristics of value to 'boutique' or hobby farmers.

The basic management practices outlined in this document apply to both meat and wool sheep.

## Physical Characteristics

* **Weight at birth:** 2.5 - 5.0 kg (depending on breed and many other factors such as the dam's nutritional status)
* **Weaning age:** 4-5 months
* **Age of adulthood:** 24 months
* **Adult size:** 600-950mm at the shoulder (depending on breed)
* **Adult weight:** 35-90kg (up to 150kg for breeding rams)
* **Breeding age:** Ewes: from 18 months (as long as they have reached an appropriate bodyweight and condition score); Rams: from 15-18 months
* **Expected life span:** 6-11 years
* **Gestation length:** 147-153 days
* **Number of offspring:** normally single, with some breeds (e.g. Romney) predisposed to producing twins
* **Body temperature:** 38.9˚C (+/- 0.5˚ C)
* **Heart rate:** 50-80 beats/minute (average 75 beats/min)
* **Respiration rate:** 15-40 breaths/minute (at rest)

## Environment

Although sheep have evolved in open pasture-based systems, some of the climatic extremes to which they are exposed in Australian conditions mean that special attention must be paid to the provision of shelter, especially for:

* recently shorn sheep, particularly in the first 2-3 days after shearing
* lambing ewes. Newborn lambs are at greatly increased risk of death by exposure to cold, wind or rain (or any combination of these)
* ill animals or those in poor body condition (e.g. after prolonged drought)

Types of shelter can include windbreaks, shelter belts of trees and bushes, natural undulations in paddock, or purpose built structures such as sheds. The Department of Environment and Primary Industries can assist with further information (see 'Guidelines for the Provision of Shelter for Sheep).

Provision of shelter, together with the establishment and maintenance of good fencing, also assists in protecting sheep from predation by foxes and dogs.

It is possible to house sheep intensively (e.g. in pens) if permission has been granted by VSAEC. In such cases, the following guidelines apply:

* pens should hold no more than four animals and should be cleaned daily
* at least 2.25 m2 of space must be provided per sheep
* appropriate bedding (e.g. straw) must be provided and changed regularly
* feed bins should be off the ground and cleaned regularly
* automatic waterers supplying clean potable water ad lib must be checked and cleaned daily
* if possible, pens should have slatted floors allowing urine and faeces to drop through
* adequate sub-floor and room ventilation must be maintained (with special attention paid to temperature fluctuations, humidity and ammonia levels).

## Food and water

Sheep have evolved to survive and thrive in pasture-based systems – ideally of good quality, and of a mix between grasses and legumes (e.g. sub-clover). Care should be taken when letting sheep onto pastures with high legume content as bloat may occur. It is normal for sheep to graze for an average of 8-9 hours per day, alternating periods of grazing with periods of rest where they lie down and ruminate (chew cud).

However, if feed supply is limited, they may graze up to 14 hours per day in an attempt to meet basic energy requirements. Beyond this point, the energy expended grazing will not be matched by intake and sheep will lose condition. It is thus better to be conservative with stocking rate, especially in times of drought.

DSE ('dry sheep equivalent') is the standard unit used to compare feed requirements of classes of livestock and to assess the carrying capacity of a farm or paddock. The standard DSE is the amount of feed required by a 2 year old 45 kg Merino sheep (wether or non-lactating, non-pregnant ewe) to maintain its weight. Energy requirements differ across classes of stock. For example, during late pregnancy and early lactation the nutritional needs of ewes are much higher than at other times of the year – such animals may be rated between 2.4 – 3.6 DSE. DSE ratings for various stock types are available at [DELWP](https://www2.delwp.vic.gov.au/) and may assist in flock feed management.

In order to ascertain whether sheep require additional feed beyond what is provided by pasture, it is essential to monitor the condition of the mob. Note that it is not possible to estimate body condition visually in any sheep other than those which have been freshly shorn. The most convenient way to estimate body condition (e.g. amount of muscle and fat on sheep) across the mob is by direct palpation and condition scoring. This information can be combined with measurement of live bodyweight on a set of scales inserted into the race.

If energy requirements cannot be met from pasture alone, sheep must be offered supplementary feed, e.g. hay, grain and/or concentrate mixes. In Victoria, this is often required in the periods February to April and July to August. When commencing supplementary feeding, introduce new foods gradually. Feed plenty of high quality roughage (e.g. hay) at regular intervals. Avoid the sudden introduction of large quantities of simple carbohydrates such as grain, which may cause 'grain overload' or lactic acidosis.

Some soils (and subsequently, the pastures growing on them) may be deficient in trace elements. This may lead to health problems in your flock. Consult local veterinarians or Department of Primary Industries officers regarding the need for supplementation with trace elements in your area.

Fresh, clean water must be readily accessible so that animals can help themselves 'ad lib'. The moisture content of the available feed will determine the amount of potable water required by sheep, as will the weather and age and condition of the animal. Expect water requirements to increase by 30% or more during summer.

In situations where lambs are not able to be mothered naturally (e.g., due to illness or death of the dam), it may be necessary to hand rear lambs. This takes considerable time and effort. Ensure that the lamb receives colostrum (which contains vital antibodies and nutrients) within 18 hours of birth, or else chances of survival will be greatly diminished.

Ensure an appropriate milk replacer and feeding frequency is selected. Maintain strict hygiene when reconstituting milk replacer in order to minimise contamination. Monitor lamb weight gains frequently. If scouring or other signs of illness occur, seek veterinary advice.

## Handling and movement of the flock

It is possible to move sheep through facilities such as yards and raceways in a low stress fashion by working with the animals' natural behaviour and instincts. This is known as 'low stress stock handling' or 'natural stockmanship', and requires an understanding of what sheep 'want' and why they behave the way they do.

Sheep have evolved as a prey species, surviving by sticking together. As social animals, they require the presence of at least 4-5 neighbouring sheep whilst grazing to maintain a visual link to each other, and tend to become agitated if separated from the group in any way. Natural stockmanship seeks to work with, rather than against, this tendency for strong flocking and following behaviour. For example, handlers will take care not to isolate individual sheep by encircling them in a predatory manner in the paddock.

Another technique of natural stockmanship is to make use of the 'flight zone,' which may be thought of as an animal's 'personal space'. Sheep ranging over large properties with little human contact will have large flight zones. Tame or pet sheep will have smaller or negligible flight zones with respect to familiar people. By alternately penetrating and withdrawing from the animal's flight zone, a handler may induce a sheep to move.

Collectively, a mob of sheep will also have its own flight zone. Entering this zone initiates flock movement. Approach should be slow so as to initiate a gentle flight reaction, with sheep moving slowly away from the handler/s.

When close to sheep, handlers may also make use of the 'point of balance.' From the side view, this is a line drawn through the animal just behind its shoulder. The handler's position relative to this point will determine the animal's direction of movement. If the handler moves beyond this point towards the rear of the sheep, (essentially, out of visual range), the animal will move forward. When the handler moves to the front of the animal, the animal will move backward or turn away.

From in front, the animal's point of balance is the centre of its head. The handler can deflect sheep movement to the left or right by moving to either side of an imaginary line drawn through the length of the animal.

Utilisation of these rules of position and movement, together with the other low stress stock handling techniques described above, results in a 'win-win' scenario for both sheep and their handlers. Improved animal welfare outcomes are accompanied by a reduced risk of injury to handlers, a reduction in time taken to perform routine husbandry procedures, and better production gains and economic return.

## Use of yards and raceways

Handling of sheep is made much easier if a set of solid yards (preferably with drafting race) is available. Many routine husbandry procedures e.g. hand jetting with insecticides may be performed while animals are in the raceway. Ideally these facilities will allow for the natural behaviour of sheep to occur, which aids in movement of the animals through the yards.

For example, sheep rounded up in the paddock and driven up the laneway will stay calmer and be easier to move and handle if:

* handlers move equipment (eg gates) slowly and steadily
* animals can clearly see where they are meant to go
* they can see other sheep within touching distance
* noise (especially high pitched machinery noise) is minimised
* non-slip flooring is provided
* pressure on uncomfortable parts of the animal's body is avoided

## One-on-one handling

Some procedures necessitate the restraint of individual sheep. Sheep should not be caught or restrained by holding the wool as this may damage fleece or even cause bruising at skin level. In order to restrain a sheep:

* draft it into a holding pen (smaller pens work better than larger ones)
* straddle the sheep, one leg on each side at the shoulders, facing forwards
* elevate the sheep's head from under the bony part of the jaw (not around the throat) with an open hand
* keeping the head elevated above the back line, back the sheep against the wall or into a corner to keep it in one spot

Rams should only be handled by experienced personnel, as they are heavier and potentially aggressive, especially in breeding season.

## Taming and gentling

Unlike dogs, sheep have no innate desire to please human handlers and respond best to direct reward (or the promise of one). Motivational training (positive reinforcement of behaviour with food or touch) is less stressful for animals and has been shown to work better than negative reinforcement (i.e. admonishment).

Sheep kept in schools and colleges tend to learn routines quickly. This has the effect of reducing the flight zones of individual animals and makes mustering and handling easier. However, the same principles of calm and careful handling still apply.

## Transport

Movement of sheep on public roads must comply with the relevant legislation (e.g. the Code of Accepted Farming Practice for the Welfare of Animals during Transportation) and is also subject to other protocols and restrictions (e.g. waybills/National Vendor Declaration forms). Contact the Department of Environment and Primary Industries for advice prior to transport.

When transporting stock (e.g. to and from saleyards) ensure that:

* there are no protrusions/sharp edges in vehicle or ramps which could injure stock
* non-slip flooring is provided (including on ramps)
* different classes and types of stock are not mixed together during transport
* stock are inspected regularly throughout the journey
* tethers (if used) are not too long (causing entanglement) or too short (forcing animals into an unnatural stance)
* special care is taken with pregnant ewes, especially in inclement weather
* adequate shade/shelter is provided

## Disease prevention

Effective disease prevention involves regular preventative health measures such as vaccination and drenching (worming), as well as careful monitoring of both existing and incoming stock. In order to maintain your flock's health status, care should be taken when purchasing replacement ewes, wethers or rams. This will reduce the risk of introducing easily transmissible diseases such as footrot, sheep lice and Ovine Johne's Disease into the existing flock.

Sometimes managers of small flocks experience difficulty in sourcing smaller volumes of products such as vaccines and drenches, where minimum pack sizes may be 250-500 pieces. Local veterinarians or stock agents may be able to assist in supplying smaller amounts, or else schools could consider sharing packs with neighbouring properties.

Local contractors may be useful in providing services such as shearing and foot inspection and paring for schools where personnel experienced in these particular aspects of sheep husbandry are not available. A list of such contractors may be available from the local Department of Environment and Primary Industries office or veterinary clinic.

Note: All actions taken as part of a disease prevention programme should be documented in the appropriate flock health records.

## Worming

Worm counts can easily build up in small flocks, especially if paddock rotation is limited. Internal parasite control programmes should be developed in consultation with veterinarians or the Department of Environment and Primary Industries. In addition to regular scheduled administration of worming drenches (e.g. to all sheep in the mob over summer), extra treatments may be required if signs of scouring or wasting and/or high worm egg counts occur.

## Vaccinations

Local veterinarians or Department of Environment and Primary Industries officers will be able to provide advice on vaccination regimes appropriate to the age and class of sheep. For example, pregnant ewes are usually vaccinated 3-6 weeks before lambing to help protect the unborn lamb from disease in the first few weeks of life.

The '5-in-1' vaccine (providing coverage against five clostridial diseases) is commonly used as a core vaccine. Ensure that vaccines are correctly transported and stored (e.g. at or below 4˚C) in order to maintain product efficacy.

## Crutching and shearing

Sheep with more than 12 months' wool growth are susceptible to flystrike, lice infestations, and possibly even restriction of vision and movement. All sheep on the property should therefore be sheared annually by an experienced shearer and an 'off shears' backline lice treatment applied. Shelter should be provided after shearing if it is cold, wet and/or windy, or very hot.

Some animals require crutching (removal of wool from the breech area) in between annual shearing sessions (e.g. ewes prior to lambing).

## Flystrike prevention

Flystrike can be a problem even in small school or hobby flocks, especially if the flock is located less than 2km from a mainstream grazing area. Flock managers must be able to recognise when sheep need crutching and if they are flystruck, and organise treatment.

Spray on preventative products are available that provide protection from flystrike over the warmer months. These may be augmented by insect growth regulators applied immediately after shearing ('off shears'). Regular worming will also reduce the incidence of flystrike through the prevention of scouring and staining of the breech area. Veterinarians or local Department of Environment and Primary Industries officers will be able to assist with product advice.

## Footrot prevention

This is best achieved by inspection and isolation of incoming stock, together with regular inspection and foot maintenance of existing stock (e.g. hoof paring and bathing in compounds to eliminate spread of bacteria).

## Signs of illness

Flock health should be monitored at least daily. Young lambs require even more frequent monitoring as they can dehydrate quickly if unable to feed (e.g. due to illness or injury).

The first sign of ill health is often a change in the demeanour or normal posture of the animal. Sick animals may stand apart from the mob or fall behind when driven. On closer examination, animals may display some of the following signs:

* changes in body temperature outside the normal range
* evidence of gastrointestinal disturbance such as diarrhoea
* discharge from eyes, ears, nose, vulva (and/or navel in lambs)
* compromised respiratory function such as panting, coughing or gasping
* excessive scratching or rubbing and/or 'pulled' wool
* lameness, stiff gait and/or swollen joints
* Over the longer term, a failure to grow or thrive is also a sign of illness.

Common conditions include excessive internal or external parasite burdens, bloat, lactic acidosis ('grain overload'), pneumonia, diarrhoea ('scours') and metabolic diseases such as hypocalcaemia and pregnancy toxaemia.

Pregnant and lactating ewes are especially at risk of metabolic diseases such as hypocalcaemia and pregnancy toxaemia. These are associated with a period of food restriction plus exercise or other movement stress (e.g. yarding for vaccination). So to ensure optimal health in ewes:

* provide a rising plane of nutrition in the last 6 weeks of pregnancy (without overfeeding, as this may also cause problems)
* handle pregnant ewes gently and avoid stressors such as mustering, prolonged yarding and/or road transport other than for essential husbandry procedures

Note: If the cause of ill-health cannot be identified and corrected, veterinary assistance must be sought. Any illnesses or injuries, together with treatments administered, should be documented in the appropriate records.

## Euthanasia

In the case of sheep becoming sick or injured to the extent that recovery is unlikely or undesirable, euthanasia on human grounds must be arranged with a veterinarian or person competent in the technique for sheep.

## Fate planning

Sheep can be sold privately, at auction or consigned to an abattoir. Carcasses must be disposed of in accordance with local council regulations.

## More information

* Relevant legislation available at the [Department of Environment, Land, Water and Planning](https://www2.delwp.vic.gov.au/)
* [Code of Accepted Farming Practice for the Welfare of Sheep (Victoria)](http://agriculture.vic.gov.au/agriculture/animal-health-and-welfare/animal-welfare/animal-welfare-legislation/victorian-codes-of-practice-for-animal-welfare/code-of-accepted-farming-practice-for-the-welfare-of-sheep-victoria-revision-number-2)
* [Sustainable Carrying Capacity – Monitoring Tools](http://agriculture.vic.gov.au/agriculture/farm-management/business-management/ems-in-victorian-agriculture/environmental-monitoring-tools/sustainable-carrying-capacity)