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Document ID:	SheepCRC_32_7
Title:	Sheep - the simple guide to making more money with less work - WA Zone
Author:	Bob Hall (JRL Hall & Co); Mark Ferguson, Mandy Curnow, Andrew Thompson (Department of Agriculture & Food, WA)
Key words:	sheep; sheep enterprise; labour efficiency;

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Bob Hall – JRL Hall & Co; Mark Ferguson, Mandy Curnow, Andrew Thompson - Department of Agriculture & Food, WA (2011) – *Sheep - the simple guide to making more money with less work – WA Zone*



Sheep – the simple guide to making
more money with less work

Sheep

— the simple guide to making more money with less work

Western Australia

Authors

Bob Hall, JRL Hall & Co

Mark Ferguson, Department of Agriculture and Food Western Australia

Mandy Curnow, Department of Agriculture and Food Western Australia

Andrew Thompson, Department of Agriculture and Food Western Australia



Department of
Agriculture and Food



Sheep —
the simple
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National Library of Australia Cataloguing-in-Publication entry

Title: Sheep : the simple guide to making more money with less work / Bob Hall ... [et al.]

ISBN: 9780987147905 (pbk.)

Notes: Includes index.

Subjects: Sheep industry--Australia--Management.

Sheep industry--Economic aspects--Australia.

Other Authors/Contributors: Hall, Bob.

Cooperative Research Centre for Sheep Industry Innovation.

Western Australia. Dept. of Agriculture and Food.

Dewey Number: 338.17630994

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Production information

Production editor: Lucy Kealey, Kealey Clark P/L

Graphic design: Victoria Griffin, Griffin Graphics

Printing: West Print Management

Disclaimer

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Sheep —
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making more
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Foreword

The national sheep flock is a mere 40% of the size it was at its peak in the early 1990s. Some would say that it is on the verge of losing its critical mass for survival into the future. Others would see it already as a niche market industry, especially in regards to wool.

Farmers in a recent survey gave two key reasons for either quitting sheep or reducing the flock size: “sheep do not pay” or “the work involved in sheep is unacceptable”.

We believe that sheep *do* pay — and they *don't* have to be hard work.

The sheep enterprise on a farm may not always compare favourably in income with alternative enterprises, notably cropping, but sheep simply do not have a negative income. More importantly, as the percentage of the farm in crop increases over 60–70%, overall farm profits tend to decline. More to the point, for many farm businesses sheep are needed for reasons other than profit — risk management and grazing management to name a couple.

Many farmers view the work associated with sheep as a major disincentive to keeping sheep. The work is physically hard, dusty, repetitive, boring and seen as inappropriate but it simply need not be like that. There are many ways to make the job of running sheep much more producer-friendly.

This guide is designed to assist you in the thought processes required to improve labour efficiency associated with your sheep enterprise.

We trust you will find this guide useful.



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The why, what & how of sheep

Why sheep?

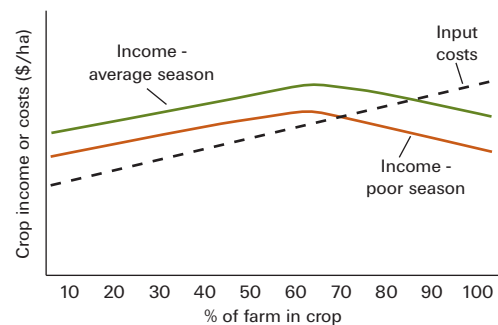
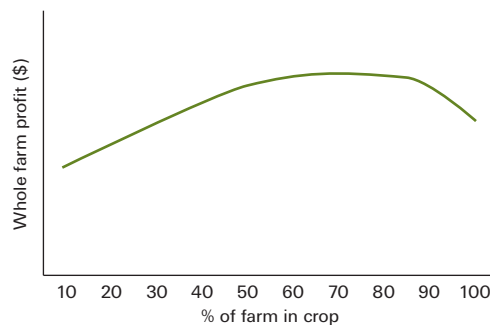
The equation is not sheep versus crop... but sheep & crop

Sheep pay...sometimes even better than crop. With good management, sheep need not be labour intensive. In fact, there are many valid reasons to keep sheep in a cropping business.

Risk management

Sheep provide some measure of diversification and are often an opportunity to spread risk. When cropping exceeds 60–75% of the farm area, overall profit often does not increase with more crop. More crop equals more risk. The growing costs of a crop increase in almost a straight line with increased crop area, and the business becomes more vulnerable to a poor or failed crop.

More crop equals more risk



As the proportion of the farm in crop increases over 60–75% (and the area of pasture decreases) whole farm profit and crop income per hectare decrease, despite input costs continuing to increase.

Source: JRL Hall & Co

Fail safe

Sheep are pretty fail safe. They do not get frosted, rusted or hail damaged. Sheep are generally a non-depreciating asset.

Synergy with crop

Sheep provide good synergy with cropping operations and an opportunity to make overall farm operations more efficient. Sheep can:

- provide low-cost weed control without herbicide resistance problems
- provide a profitable break crop producing free nitrogen
- use less-productive, non-arable or saline land
- smooth out labour use over a year.

Intangible value

Sheep can add value to the farm in ways other than profit, through:

- higher property value — imagine a cropped-out farm with no livestock infrastructure
- more local employment over the year
- the challenge of 'high tech' management.

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With good management, sheep need not be labour intensive.

What makes a sheep business tick?

Paradoxically, it is not things such as wool cut per head, wool price or sheep prices that you have to get right in a sheep business. The big ticket items are measures of business efficiency and performance, rather than measures of sheep performance alone.

There are a few big ticket items you must get right

The *key performance indicators* for a sheep business are:

- stocking rate
- profit from livestock trading
- cost structure
- gross margin
- cost of production.

All five KPIs listed above can be improved over time. Ask around, find out what others are doing, and work out what is possible. Remember that these are the things that have the big impacts on profitability (the 20:80 rule).

Stocking rate

Business success relies on efficient use of the feed you grow. Commonly there is at least 50% wastage. The message is: *use it or lose it!*

Flexibility, strategies and tactics are required for dealing with the variability of seasons but management should be such that there are no surprises. Failure to react to the season or not using the feed you grow, will have serious consequences on livestock trading profit.

Profit

Profit from livestock trading is the difference between the opening inventory (the numbers and value at the start, plus purchases and natural increase) and closing inventory (the numbers and value at the end, plus sales, deaths and rations).

Profit is a compound efficiency factor, it accounts for:

- price paid for livestock
- price received (but beware of feed costs)
- weaning percentage
- death percentage.

As meat prices rise, profit from livestock trading becomes more important — it is highly variable between enterprises.

Cost structure

Sheep businesses tend not to stand high costs. They can and should be a low cost system. Not only low variable input costs, especially hand feeding, but low operating costs (such as fuel, repairs, administration and depreciation) are possible. Clearly, scale is important to spread the costs over more area.

The 20:80 rule — 20% of the figures give 80% of any difference.

Gross margin

Gross margin is a calculated figure that can be related to the most scarce factor of production, it is the compound efficiency factor. Gross margin analysis demonstrates the technical efficiency of the enterprise. It allows comparison with others businesses, and displays strengths and weaknesses to work on.

Gross margins can be analysed in a variety of ways, but commonly as gross margin per:

- dry sheep equivalent (DSE)
- hectares used for sheep
- hectares used for sheep per 100 mm of rainfall.

Gross margin is not influenced by past investments in the business or by factors of size; 200 ha of sheep can be compared with 2000 ha.

Gross margin gives nothing away on the general state of your business and therefore can commonly be discussed among your peers without causing the slightest embarrassment.

How is a gross margin calculated?

Gross margin = income — variable costs

Ball park figures for 2010: around \$20/DSE (range \$10–30/DSE)

Income

- Livestock trading — that is opening value of livestock plus purchases subtracted from the closing value (at the same value per head as the opening which caters for a run down or increase of stock numbers)
- Wool sales

Variable costs

- Shearing, crutching, lamb marking, pregnancy testing, casual labour
- Dip, drench, vet products, woolpacks, dog costs, freight on sheep and wool
- Purchased and farm-produced hay and grain
- Pasture costs and fertiliser, haymaking, cost of growing any forage crops

Cost of production

Cost of production is a useful indicator for comparing business performance. Be sure when you are making comparisons that you compare like with like, and that other producers use the same calculation system.

Cost of production should be apportioned to each commodity produced — generally wool and meat; and it is usually quoted in proportion to the gross output (sales) of each commodity.

Wool sales should include a valuation of any wool unsold at the end of any period.

Livestock trading profit should be used rather than merely sales. In other words take into account the difference between the opening and closing stock inventory.

Cost of production can be taken to many levels. That is, 'output' less various levels of costs. From income one can deduct:

- merely variable costs
- variable costs and overheads
- costs, overheads and an allowance for family labour
- depreciation of plant for the sheep enterprise
- lease and interest costs.

Remember all of life is benchmarking for good reason — it indicates possibilities. We are benchmarking when we set and aspire to particular golf handicaps, school grades, fuel economy or race times!



**Calculating cost of production need not be difficult
but you may need some help.**

Further information

- www.makingmorefromsheep.com.au, tool 1.16, for cost of production information, for wool or dual purpose enterprise

Better performance isn't more work

Benchmarking is an important part of your sheep business — of any business for that matter.

Benchmarking will help you answer the following questions:

- do you have an efficient sheep business
- what do you do well
- where are the opportunities for improvement?

The really good news is that sheep enterprise performance is extremely variable from one business to the next. And that illustrates a road map to improvement.

From your farm business figures you can prepare a future action plan then check your progress against that plan. All good managers have figures.

Records are simple. Apart from the farm accounts, you will need:

- sheep numbers — start and finish
- feed used — home grown and purchased
- total area of pasture, forage crops and cash crop.

Compare your enterprise against others. How do you compare with:

- your neighbours
- others in the district
- others elsewhere
- the experts?

What business attributes do you compare against:

- gross margin
- cost of production?



Manage for ease & success

Ten points of a good manager

Good
management
saves time
& money

Good management means that a job will be more than half done before you step outside.

The first six points of a good manager are needed before performing the task; and with good management, labour will be efficient and problems will be ironed out before you start.

A good manager will:

1. have a plan — they will insist on one
2. organise the work to fit the plan — could include some modification
3. check that things are in place and functional before starting a task:
 - logistics (materials)
 - resources
 - labour
 - facilities
 - machinery
4. engage outside service providers
5. ensure all involved understand — communicates to others:
 - what there is to do
 - why it is to be done
 - what their responsibilities are
6. implement the plan
7. perform the tasks *on time*
8. keep appropriate records
9. accept responsibility and improve future plans
10. deal with unforeseen events and make good tactical responses.

Manage the risk – the back door

Things don't always go to plan. When they don't, an appropriate exit strategy will save much heartache and effort.

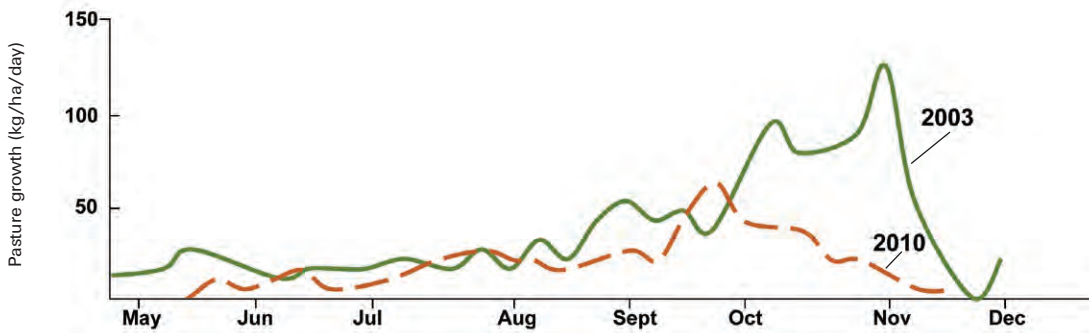
Sometimes you have to exit...

One reason people get out of sheep is because of the problems encountered in adverse seasons, notably the late break. Dead sheep lead to much stress. This risk needs to be managed.

As the year progresses without a break, the feed available for the year will be less. An exceptional spring will very rarely make up for a poor start. Timely decisions are a must!

If you are bomb-proof against a lack of feed in a late break, you are missing out on potential profits for the rest of the time. It is better to stock to a more normal seasonal break, and then make appropriate and planned decisions if the rain doesn't arrive.

Pasture growth rates in the Cranbrook Shire, 2003 and 2010



In 2003 there was an early break, 5 April, and total pasture production for the season was 8.97 t/ha. In 2010 the break was much later, 12 May, and total pasture production was significantly less, 3.56 t/ha.

Source: Pastures from space www.pasturesfromspace.csiro.au

Have a *plan of action* – this is a written plan of sequential actions linked to dates so when the rain comes late, actions are planned to kick in. For the wool belt these dates are two weeks post average break, four weeks post average break, and so on, e.g. May 14, May 30, June 7, June 14 and June 21.

A plan of action for a late break

Weeks past average break	Potential action
2	<ul style="list-style-type: none"> check feed supplies
4	<ul style="list-style-type: none"> buy 10% extra hand feed sell dry ewes and cull sheep
6	<ul style="list-style-type: none"> sell wethers and seek agistment do not crop good pasture paddocks this year defer graze and rotationally graze

Pre-emptive actions

There is so much that can be done to be prepared for a bad season. Yes, most actions have a cost in the bad years but that cost will be repaid several-fold in the good seasons. Pre-emptive actions could include:

- lambing later
- always pregnancy testing
- sowing cereals on early rains before the normal break
- storing cheap food
- having a flock mix that allows sales throughout the year
- being prepared to grow ewe hoggets slowly and not mate for another year.

A late break year

In the event of a late break, use the actions below to give you the best approach when feed is tight.

Reduce stocking rate:

- identify which sheep to sell first — this is an important part of planning
- sell dry ewes, wethers and old sheep first.

Supplementary feeding:

- feed the tail of the mob (bottom 20%) preferentially
- look after twinning ewes better
- buy extra feed early — cheaper
- drench at the start — don't feed worms.

Increase feed availability:

- put in less crop
- encourage ryegrass with nitrogen
- use confinement feeding to defer grazing
- bring feed forward with gibberellic acid
- graze cereals
- do not seed good pasture paddocks
- rotationally graze
- use saline areas.

When do sheep need work?

Good planning is about taking into account what is factual — planning for what you know: feed supply, labour, husbandry and marketing.

Have a plan in place that covers the whole year and all the work needed for good sheep production — the sheep calendar.

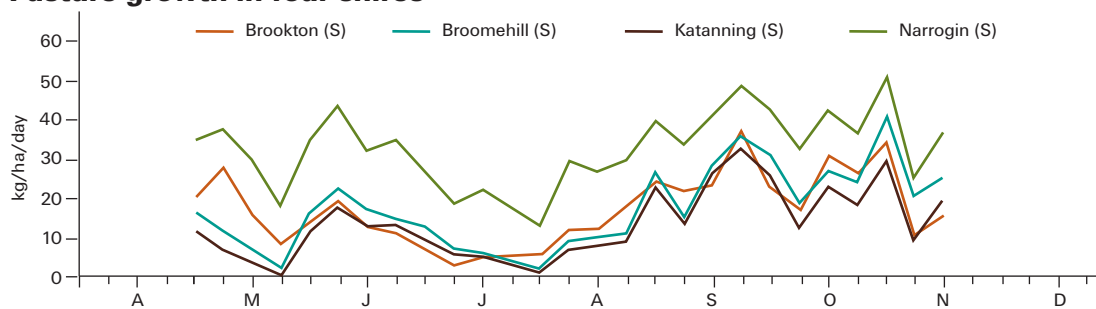
Feed availability & requirements

Pasture growth in most climates is predictable. The total quantity will vary with the season but the growth pattern is always the same. The graph below shows the pasture growth rates for four shires in 2008 (www.pasturesfromspace.csiro.au).

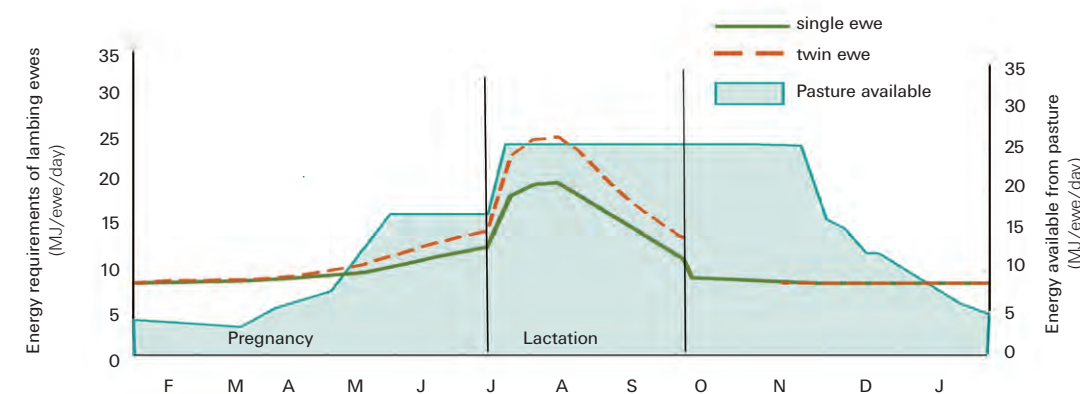
Energy requirements of the ewe vary through pregnancy and lactation. The cheapest and most easily fed sheep food is pasture. Logic dictates therefore that the requirements of the sheep should match the availability of that pasture feed, as closely as possible. This is a major factor in saving labour and feed costs without any compromise to husbandry.

Biological & labour efficiency come from timing the big things right

Pasture growth in four shires



Matching feed requirements of lambing ewes and pasture availability



This graph shows how pasture can meet the energy requirements of winter/spring lambing ewes (50 kg). The data is based on a set stocked paddock of 8 DSE.

Further information

- www.lifetimewool.com.au for feed budgeting tools
- The Lambing Planner from DAFWA
- www.pasturesfromspace.csiro.au for detailed and current pasture growth information

Labour availability

For the mixed farm it is important that sheep work avoids the pressure times of seeding and harvest. Plan to have the sheep work out of those seasons. The wise operator will also include holidays in the 'no go' zone of labour planning.

Timely and reliable labour is required for major sheep work:

- shearing
- crutching
- lamb marking
- blowflies.

These tasks in particular should be timed to avoid peak periods of other work.

Timing of the big things

The four big things on the sheep calendar are lambing, shearing, crutching and jetting. Good systems get the timing of the big things right. This improves the efficiency of the whole farm operation.

Lambing — after the break and onto green feed — try and avoid the need for hand feeding over seeding.

Shearing — in spring between seeding and harvest, or in summer after harvest and holidays. Either times have problems with wool quality; and late summer shearing can also cause problems if there is summer rain and an associated fly wave.

Crutching — August–September or February–March, depending on shearing time. Crutching can be combined with jetting.

Jetting — jet and forget August–October for sure; and sometimes March–April for the occasional May fly wave.

Plan for the market

Feeding and husbandry must be planned so wool or stock can be ready for sale at the time *you choose*, which should coincide with a specific market point.

Wool — the choice is between staple strength (spring shearing) and vegetable matter contamination (late summer shearing). Match your system with your discount.

Shippers — Ramadan is a driver of price — but careful, it is a moving feast, having sheep ready to go could require adjustment to key tasks such as shearing and lambing.

Prime lambs — understand the price cycle — can you turn off lambs in the right grid at the right time? Feedlotting is labour intensive and must be done efficiently to make it pay.

Smart use of labour

Labour, even your own, is expensive and often under pressure. However 10,000 to 15,000 DSE per labour unit, plus some cropping, is possible and efficient.

Smart use of labour is the answer to efficient management of high DSEs per labour unit. A well-planned system, time-efficient husbandry, good facilities and well-managed staff make high DSEs per person achievable.

Time is money...
use labour efficiently

System planning

- Match sheep to available feed.
- Match sheep work time to available labour.
- Minimise the need for feeding.
- Have the sheep in big mobs, work is proportional to mob number.

Work culling

- Try and eliminate going 'round the sheep.
- Alter and improve water systems — checking water is a big time waster.
- Invest in a large feed trailer — saves time with less journeys.
- Feed lupins rather than cereals or hay — less regular feeding required.
- Box-ups of mobs are a real waste of time — see to the fencing! Large mobs take less time per head — less droving, less start and stop.

Work amalgamation

Plan all sheep work so more than one job can be done at a time.

Two examples

Mulesing and drenching ewes are examples of jobs that can be done at the same time as several other jobs.

Mulesing

- Crutch the ewes
- Mark the dry and cull ewes
- Draft off dry ewes
- Vaccinate/ear tag/mark/scratch
- Cull lambs on wrinkle

Drenching ewes in April/May

- Pregnancy test
- Draft dry and twin bearing ewes
- Condition score sheep and draft out lows
- Rams out
- Booster vaccine

The worst combination for profit and efficiency in the sheep-wheat belt is spring shearing and autumn lambing.
The best is summer shearing and winter lambing.

Facilities

Have the big three time-savers operational:

- laneways
- functional yards and out yards
- efficient handling machines (probably mobile).

Staff

Team work is more efficient per labour hour than single operators. Single operators should contemplate:

- syndicated work with neighbours
- employment of casual labour and sheep services
- a large feed trailer to save time and make less journeys .



Smart use of labour is the answer to efficient management of high DSEs. Equipment such as large feed trailers save time and travel when feeding out.



Less droving, more driving

Laneways

Move you
& your sheep
efficiently
around the
farm



With sheep, laneways are the greatest *labour-saving device*.

There are two great reasons for installing laneways on your farm. In and out of the ute at every gate encourages you not to visit furthestmost paddocks; and returning sheep to far paddocks can be done without droving.

Other good reasons for laneways include:

- quicker mustering
- less boxing of mobs
- quicker feeding out.

Laneways can be multi-purpose. They can:

- incorporate a roadway
- incorporate a firebreak
- be grazed from the end paddock
- be used in conjunction with portable yards or out-yards.

Laneways are not costly because one fence is there already and they can be a multi-use area. Look at the benefits not the cost.

Tips for laneways

1. Make them wide — 20 metres minimum, 30 metres or more is better. Narrow laneways give problems with sheep movement.
2. Design laneways such that most paddocks are served.
3. Make laneways part of overall farm planning.
4. Go to the expense of piped culverts and cement crossings.
5. Make a proper roadway with blue metal if the lane is subject to erosion.

Take the work to the sheep

Moving sheep from all over the property to one set of main yards can be time consuming and inefficient. There are alternatives.

Portable yards

With apologies to some very smart manufacturers, portable yards should be regarded as *temporary only* — and for that purpose, they are excellent.

But the reality is that portable yards take time to set up and take down — an excuse for leaving that job for another time. They are often left erected because they may be needed later, and next they are found rusted *in situ* and no longer portable.

Mostly, portable yards do not have good functionality for:

- drafting
- handling (especially)
- storage of sheep (limited).

Worst of all, parts of portable yards get taken for other uses and end up all over the farm.

Simple out-yards

Certainly use portable yards if distance or fragmentation is the problem but there is a better way — simple out-yards. These give greater labour saving and more efficiency.

Have a series of permanent, simple, low cost bugles at strategic points. Make cheap storage areas around these bugles:

- double fenced mini-paddocks
- use an adjacent laneway.

Have single purpose *mobile* sheep machines that will 'plug into' these bugles with portable handling equipment that is easily moved and quick to set up and dismantle, such as:

- V machines
- handling races
- crutching cradles
- jetting outfits
- mulesing platforms.

Perform tasks
efficiently &
on time



Grab your brain — save labour
(while performing the task more efficiently and on time).

Less driving,
more driving

Big mobs save time

It's all about
labour
efficiency!

Man days of work is proportional to the number of mobs rather than the number of sheep.

Reasons for small mobs

Some farmers have good reasons for small mobs:

- breeding rams
- progeny testing
- single sire matings.

But the usual reasons for small mobs are not valid.

Ear tag year-colours are really great, and properly and wisely used in Western Australia. However, to keep mobs to tag year colour is counterproductive to labour efficiency and general management.

With ewes there is no good reason to keep age groups separate other than in the year when they will be culled for age. In fact there *are good reasons* to box age groups of sheep :

- maidens seem to lamb better when with older ewes (do they learn more quickly?)
- mob of tail-enders for preferential feeding
- twin-bearing ewes of any age for special feeding
- culls and non-rearers as marked at crutching — no point scattering them around the farm
- dry ewes at scanning — these can be given less food than pregnant ewes over critical times.

Grazing will be more efficient with smaller mobs is the general rule. However, some paddocks will be under-stocked and others over-stocked. Small mobs tend to indicate that the whole farm is stocked at less than its potential.

Reasons for big mobs

The number of days used in sheep work are proportional to the number of mobs in the business, rather than the number of sheep in total.

Less mobs, less work. Less mobs of sheep mean:

- less droving
- less starting and stopping (this takes time)
- less waiting between mobs
- more incentive to get the job finished by a certain time — speed is dictated by the time available to do a job
- a better labour force (casual or contractor) — it is easier to justify and use better labour for more efficiency.



Sheep —
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Big mobs save time. Less mobs but big mobs can also save time through:

- less feed stops
- less gates to open and close
- easier observation (if you must go *'round the sheep*)
- better numbers recording (the death watch).

Plan to benefit from big mobs. Large paddocks suit big mobs. Large paddocks are the modern way of saving on fencing and water, and better for cropping.

Big mobs are essential for rotational grazing.

Efficient labour can be planned with a big mob. So it is important to have the mob the right size for a day's work, or to have the work organised to suit the mob.



For example

Let's take marking and crutching ewes at the same time.

The marking team can do 1000 lambs per day — that could mean a mob of 1200 ewes. To crutch the ewes at the same time needs two cradles at 600 per day or three at 400.

A slower pace might allow other jobs to be carried out at the same time. There is a need to match the capacity of the facilities to be used with the size of the mob so that mobs can be effectively dealt with.

Work amalgamation

Do as many jobs as possible on the same day

Plan as many jobs as possible when sheep are in the yards for time-critical operations. This minimises droving and yarding for a start.

An example

Plan the work around a system (*for July lambing ewes that are shorn in February*)

Critical operation		Other work at the same time
Crutching (late August)	Lambs	<ul style="list-style-type: none"> • Mark/mules, vaccinate, tag and scratch • Score and mark lambs for breech wrinkle
	Ewes	<ul style="list-style-type: none"> • Jet • Drench (only on test) • Mark non-rearing ewes and put aside • Condition score some ewes • Separate tail of the mob for special treatment?
Weaning (late October)	Lambs	<ul style="list-style-type: none"> • Second vaccination • Crutch and wig • Drench • Jet
	Ewes	<ul style="list-style-type: none"> • Sort culls and sale sheep • Condition score some ewes • Separate tail of the mob for special treatment?
Shearing (February)	Young sheep	<ul style="list-style-type: none"> • Drench (only on test)
	Young sheep & ewes	<ul style="list-style-type: none"> • Treat for lice • Condition score a sample • Separate tail of the mob for special treatment • Sort any more sale sheep
	Ewes	<ul style="list-style-type: none"> • Possibly rams in
Pregnancy scanning (April–May)	Ewes	<ul style="list-style-type: none"> • Drench — the refugia late-summer drench • Annual booster of vaccine • Dry ewes out • Twinning ewes out • Condition score some ewes • Separate tail of the mob for special treatment • Rams out

Pretty well everything that has to be done to a ewe can be done in four critical operations and still be done at the right time.



Headache-free husbandry

Shearing sheds

A shearing shed has equal importance to harvesting machinery

Most farmers will not tolerate clapped out tractors or headers. It is strange that an inefficient or dilapidated shearing shed is accepted on the same farm.

A shearing shed has equal importance to harvesting machinery. The modern shearing shed not only saves labour but a good shed is a display of professionalism and a correct attitude towards the sheep enterprise and the importance of shearing to all concerned.

The modern shearing shed

The modern shearing shed will appear professional and lead to attitudinal change, it should provide:

- a well-lit, pleasant, clean, safe working environment
- first aid kits and circuit breakers to ensure safety
- a dedicated mess area with a functional fridge
- hot water on tap with sinks
- toilets (hire one if necessary) and possibly showers.

A modern shearing shed has the following important features:

- well-maintained structure, especially grating, boards and pen doors
- back aids correctly secured (a bit of wire will not do)
- an efficient self-pinning wool press
- undercover storage for loose wool (good bins) and baled wool
- a storage cupboard for stationery, bale hooks, stencils, ink, wool packs and bale fasteners.



No shed or a falling-down shed

For those with no shearing shed, an inefficient shed or a falling-down shed, there are two options.

Build a new shed. This can be expensive, approximately \$20,000 or more per stand. Therefore a five stand shed could be over \$100,000 but then that is only the price of a small tractor!

Alter and refurbish an existing shed. Renovations to an existing shed would include:

- more efficient pen filling
- better sheep exit
- raised board
- good floors.



The main thing is to raise efficiency, and therefore reduce the cost of shearing. The aim should be 150–200 sheep shorn per day for one shed staff (other than shearers). Have the staff working smarter, not harder and having the time to pay attention to clip preparation.

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Sheep yards

Well designed yards can be operated by one person and a dog.

Sheep yards need to be able to handle a variety of tasks: holding sheep, moving sheep around, drafting and sorting sheep, handling sheep for work and loading sheep for transport.

Assemble and hold

- Small mini-paddocks surrounding the yards are best and cheapest.
- Strong conventional fencing or double wire is needed.
- More mini-paddocks are better than less.

Move sheep around

- Lanes/runs based on circles and curves are the best.
- Bugle design most common. If the yards are associated with the shearing shed, orientate the bugle so that sheep are not affected by noise from the shed.
- Be prepared to alter the design until you have got it right.

Draft and sort

- A three-way draft works the best.
- With a two-way draft, at least have the ability to remove the odd sheep.
- Most people prefer short drafts: 2–3 metres.

Handle sheep to perform work (the handling race)

- A slatted floor to the handling race works best.
- Adjustable sides are a good option.
- Have the ability to draft off at the end of the race.
- Double race useful (even treble on occasion).
- A roof provides shade and shelter.
- Good access for dogs and people.
- Be able to lift the exit gate from a distance.
- Spend on this area — *sheep husbandry happens here*.

As an alternative to a fixed handling race, have a permanent bugle and draft used in conjunction with specialist mobile machinery. The bugle can be compared to an electrical circuit into which the machinery is plugged. Spread the cost of good machinery.

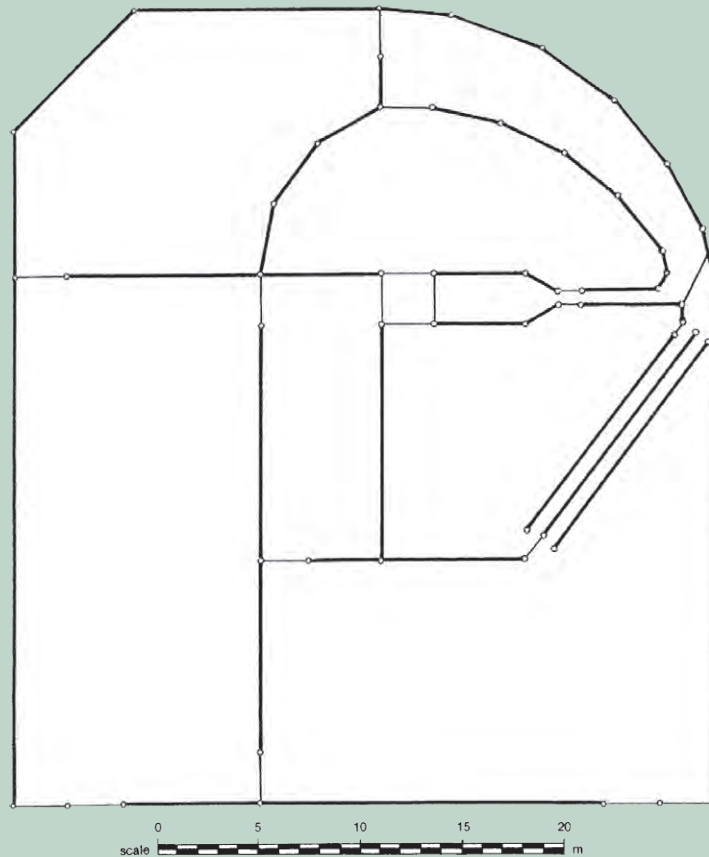
Load for transport (the ramp)

- If sheep are not loaded out of the shearing shed, a good permanent ramp is important.
- Good truck access is important.
- Adjustable height is important.
- The ramp should be of solid construction unless it is portable.

The heart of the sheep operation



An example of Y bugle sheep yard design



A major advantage of circular yards is the continuous flow of sheep through the main handling area. The design uses the natural circling instinct of sheep to encourage them to keep moving. The bugle entry takes advantage of this and the operator uses less labour moving about the yards. The curve of the bugle and the placement of the drafting and working races allow the operator to be close to the sheep at all times.

Image and text courtesy of NSW DPI.

Further information

There are many designs, visit some shearing sheds and talk to the owners, and talk to some experts.

- Kondinin Group book *Shear Sense*
- www.wool.com — Shearing Shed Guidelines
- *Sheep Yard and Shearing Shed Design* edited by Fiona Conroy & Peter Hanrahan, ISBN 9780730641865
- www.dpi.nsw.gov.au for shed designs

Sheep machinery

Remove the stress, strain and drudgery of sheep work with carefully selected items of machinery.

There are three main types of useful equipment for the yards but design and the skill level required to use it varies. Buying the gadget is only the start. Then you need to learn how to use it. Get together with someone who uses it efficiently and learn the tricks of the trade. Work with them for a day or half a day. Get all the tips and tricks. A very good investment of your time and they will appreciate some assistance!

What do you buy and how do you use it?

The crutching cradle

- Many and varied in design.
- The Harrington most common.
- Usually 2-4 in series and mobile.
- Need a team — syndicate or casual labour/contract to operate.
- Huge throughput — 500-800 per stand/day.
- Semi-skilled operator required.
- Can do other work at the same time (a bit slower but can be worth it) such as identifying culls, wet and dry ewes, checking udders, drenching and vaccinating.
- Big cost saving because less wool taken off but in the right place.
- At least \$1.00 per head saved in wool not being degraded for stain.
- Timely work, also see the sheep one at a time — better inspection.

The sheep handler

- Many and varied.
- V machine perhaps the most common.
- The Elfin is now considered the “Rolls Royce”.
- Usually need a team, again syndicate or contract/casual labour.
- Removes the strain from repetitive sheep work.
- There are many single tipping sheep crushes that some will find useful.

Jetting machines

- Quite a range from simple to sophisticated.
- Harrington is common.
- Electro-dip is a newcomer that is gaining popularity (not recommended for lice but has worked well for flies).
- Throughput is the go, allows timely application of chemical.



Cost

The cost of recommended sheep machinery, including shearing heads, wool press and marking cradle, is under \$100,000 for the lot. Really, the cost of a modest tractor!

Try before you buy

You may have seen the machine working well at a show. They always seem to work well there! Sheep at shows have a different attitude and there are always those in the audience who will assist to get the sheep moving. How often at clearing sales do you see sheep machinery in almost new condition, hardly used, because the operator could not master the process?

Tips on how to use sheep machinery

- Make sure the sheep run reasonably. If not, alter the set up until they do. There is usually a way.
- Good dogs help but the machines should work anyway.
- Always run the sheep the same way round. They get used to it and move better.
- Mini feeder lanes assist in sheep movement and prevent them turning around.
- Covered main working areas help (not only the sheep!), they need not be expensive.
- Early morning is a good time for working (muster the evening before).



Healthy sheep save time

Healthy sheep require less labour

Do it once,
do it well,
save labour

Sheep health is important and sheep deaths are far too high. They are sufficiently high that we will not mention the size of the problem here.

At one time sheep were not worth much but these days any loss is of great significance and to be avoided if possible.

Understand that you tend not to find dead sheep — they have simply gone. Blame sheep stealing or lupinosis if you must, but it is seldom that. Along with correct and efficient feeding levels, basic parasite and disease control (worms, flies, lice and clostridial diseases like pulpy kidney) is essential for healthy, profitable sheep.

Good, high level control of parasites and disease is the best long-term strategy for healthy sheep. Along with good health management, pay close attention to *biosecurity* when buying sheep or moving sheep around different properties. This will minimise the risk of introducing parasites and diseases to your flock, and save time and money in the long run.



Strategic management of parasites and diseases, and close attention to biosecurity are essential for healthy, profitable sheep.

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Managing to minimise disease will reduce labour requirements and enhance flock productivity.

Vaccinate to reduce disease

Pulpy kidney and other clostridial diseases are unnecessary killers of sheep. The risk of death by disease can be largely prevented by the correct use of vaccines.

Clostridial organisms are everywhere and most of the time they cause no problems. However, every now and again, when conditions are favourable, the population explodes and they produce powerful toxins. These toxins are usually fatal to sheep and can kill rapidly.

There are several vaccines on the market, so examine your problem and then vaccinate appropriately to reduce deaths. Many products also contain selenium as a trace element and at the miniscule extra cost — why not?

Deaths from disease can be reduced *but only with correct vaccination*.

The vaccination plan should be:

- first vaccination at lamb marking
- a booster for lambs at weaning
- an annual booster for all rams and ewes — preferably pre-lambing for ewes as there is a level of protection provided to newborn lambs via colostrum.

With vaccinating it is:

- all or nothing
- small cost
- big savings
- peace of mind
- humane sheep management.

Prevent
disease &
death with
vaccines

Blowfly control

Save labour
& save sheep

There can be no worse job than *chasing flies*. The task is a frustrating *labour killer*, not to mention the dead sheep!

Jet and forget

There is a good range of effective chemicals available to deal with blowflies. Use them.

- Cyromazine products, such as Vetrazin®, and their derivatives still work. Properly applied they will give protection for 8–12 weeks.
- Dicyclanil products, such as Klik®, are effective for a period of 20 weeks but are more expensive than Vetrazin.
- Ivermectin products like Coopers Fly and Lice® are good for instant kill of maggots and lasts for 12 weeks.
- Vetrazin and Klik do not kill existing maggots until they move from one growth stage to another, so they tend to be slow acting.
- Products containing spinosyn, such as Extinosad®, last for up to five weeks but have no wool withholding period.
- A knock down product, such as diazinon, needs to be added to Vetrazin and Klik to treat struck sheep.

Withholding periods

Check the label as chemicals have a range of withholding periods for wool and meat and often the export slaughter interval can be quite long. It is better to choose the right chemical well before hand than treat at the last minute and not meet withholding periods.

Application

There is no doubt that hand jetting is the best method of application but it is quite labour intensive. There is much evidence to show that jetting machines perform a satisfactory job and provide sufficient protection provided that the sheep are well wetted and the appropriate quantity of chemical is applied to each sheep.

The wet season of 2008 illustrated that very heavy rain or rain over a long period tended to reduce the effectiveness and longevity of application, especially if not hand jetted. There is a need to be cautious under such weather conditions and possibly think of a second treatment provided there is no problem with withholding periods.

Pre-emptive action

Sheep can be bred that have much less of a problem with flystrike — start now for this takes time (see page 56–62 for more details).

Further information

- FlyBoss for control options — www.flyboss.org.au
- Flystrike Chemical Planner — hand held tool for chemical withholding and protection periods available from DAFWA Offices
- Managing Breech Flystrike — AWI publication available from www.wool.com

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Control or eradicate lice

Control is a short-term option to minimise wool damage and manage sheep welfare but eradication is your goal.

Lice are very costly in terms of the labour required for treatment, the downgrading of wool and the impact on sheep welfare. Lice require vigilant monitoring, correct chemical choice and application, and farm biosecurity (refer to page 33).

Control is simple, eradication is difficult. Remove management practices that foster lice:

- split shearings
- bad musters
- untreated sale sheep left on farm
- poor fencing
- shorn ewes with lambs at foot.

Issues that make lice treatment more difficult:

- synthetic pyrethroid resistance 20 years ago
- IGRs can no longer be trusted due to increasing resistance
- no chemicals with long protective periods
- banning of diazinon (other than Eureka Gold).

Options for lice treatment

Wool growth stage	Treatment	
Off shears	Dip (plunge or shower) n.b. check for wetting	Assassin® or Wham® (temephos), Extinosad® (spinosad), Flockmaster II® (magnesium fluorosilicate)
		Avenge® (imidocloprid)
	Pour on	Extinosad® (spinosad)
		Eureka Gold® (diazinon)
The future	Cage dipping	
Long wool	Mostly hand treatment options	Coopers Blowfly and Lice®, Zinjet® (ivermectin)
		Extinosad Backline — especially handy close to shearing due to no residual

There is no
excuse for lice
– eradication
is your goal



Have a plan — take advice. There is no excuse for lice.

Further information

- Lice Boss for control options — www.liceboss.com.au

Worms – a new drenching protocol

Refugia without tears

Worm resistance is widespread. The challenge is to make effective drenches last as long as possible in our Mediterranean environment.

Whites and clears, and even combinations, are virtually redundant (only use them if you have tested for effectiveness). The macrocyclic lactones are on the way out, especially Ivomec®. Abamectin is of declining usefulness. Cydectin® is still the best out of this group. Test for drench resistance and use an effective drench. Not many sheep producers do it but it's important to know what works for you.

The good news is that there are new groups of drenches in the offering.

The new protocol – refugia without tears

A new drenching protocol has been developed by Department of Agriculture and Food, Western Australia (DAFWA) for Mediterranean environments that will:

- reduce drenching frequency, therefore save *labour* and cost
- delay the onset of resistance, without reducing sheep productivity.

The practice of refugia ensures there is a high proportion of non-drench resistant worms in the overall population. Worms tend not to survive over summer in the paddocks of southern Australia. They survive by immature worms essentially hibernating in sheep. Towards the end of summer these worms mature and produce eggs.

The old *two summer drenches* protocol was too effective! Only worms resistant to the drenches carried over to the next year – resulting in a rapid build-up of resistance.

Late summer drenching

The trick is to *not drench* until late summer, by which time, non-resistant eggs have contaminated the pasture and thus maintained a non-resistant population.

Adult sheep appear not to be affected by the immature worm burden over summer but a late summer drench lowers the burden, with the effect normally lasting until the next year. Lambs and hoggets are susceptible to worms over summer and do require the traditional application of appropriate summer drenches.

Recommendations for Mediterranean environments

- Do not drench adults until late summer through to late March–April.
- Always use an effective drench. Do a resistance test to make sure.
- At other times of the year, if in doubt, test before you drench.
- Drench lambs and hoggets as previously.

The new recommendations are simple and easy. Implementation will save money and labour, all without loss of production. Much too good to miss!



Further information

- WormBoss for control options – www.wormboss.com.au
- Latest WA recommendations - www.agric.wa.gov.au/parasites

Biosecurity

If you are serious, pay close attention to biosecurity. It will minimise the risk of the introduction of parasites and diseases to your property and save time and money in the long run.

Biosecurity can be as formal as requesting statements of sheep health before purchase, and it can be as practical as fencing and mob management. Biosecurity goes hand in hand with managing animal health with vaccines and drenches.

Keep out wandering sheep — stock proof the farm boundary to prevent potentially diseased sheep straying onto your property. In the long run this will be a big labour saving.

Quarantine newly arrived sheep and observe them carefully for the first two weeks for any signs of disease.

Buy stock directly from the farm rather than through the sale yards.

Clean agistment — ensure that any agistment properties you use have the same health status as yours.

National Sheep Health Statement

Whenever buying sheep, *insist* on the provision of a National Sheep Health Statement (NSHS).

This statement is *the* biosecurity tool for those taking the topic seriously. It is vendor provided and should be requested by the purchaser. This costs them nothing unless they have something to hide.

The NSHS is not a widely used tool at the moment but it should be. It is the flock owner's safeguard when purchasing sheep. Wider use of this tool will create better attitudes towards the biosecurity associated with purchasing sheep.

There are two key diseases that will cost you time and money: ovine Johnes disease (OJD) and foot rot. Brucellosis is also becoming more prevalent. These three diseases are described in more detail on the next page.

Save time
& money in
the long run



Further information

- www.agric.wa.gov.au — search on *biosecurity* and *sheep and lamb diseases*

Ovine Johnes disease

Ovine Johnes disease (OJD) is a wasting disease of sheep leading to higher than normal adult deaths (up to 7% has been reported). It is present in all sheep-producing states of Australia. Ovine Johnes disease is difficult to test for, so the true prevalence is not known, however it is predicted that eventually over 80% of sheep flocks will have some stock with OJD. Its impact on the rate of deaths in adult sheep on a particular farm is variable but appears to be made worse by environmental stress. Ovine Johnes disease is likely to happen to your flock at some time in the future.

If OJD is diagnosed on your property it is recommended that you start vaccinating sooner rather than later, and walk the vaccine in with the lambs. Do **not** wait until the death rate spikes! The vaccine is effective, albeit quite expensive, approximately \$2.20 for a dose but it does last a life time. The vaccine should be given to all ewe lambs and any wethers that are likely to remain on the property past 12 months of age. Prime lambs that are sold early can be excluded. Ram producers should seriously consider vaccinating as mandatory as they are most at risk to a decline in business.

Foot rot

Foot rot in sheep is a very serious problem. It is highly contagious and difficult to eradicate. It is a lower risk these days but there are still sporadic outbreaks and it is well worth ensuring adequate biosecurity to prevent its occurrence in your flock. An outbreak involves a huge workload. All sheep on the property have to be individually inspected several times and infected sheep slaughtered, until finally the flock is declared free of foot rot. This process can take a long time and a lot of labour. An alternative solution is to destock, leave the pasture without sheep for a period and then contemplate restocking. Both solutions have serious financial consequences and can involve much labour.

Brucellosis in rams

More and more frequently rams are being diagnosed with ovine brucellosis. Once thought a disease of 'British breed' rams, it is becoming more common in Merino rams. The effect of the disease is reduced lamb marking percentage, extended lambing period and a high ram culling rate but is hard to diagnose in affected rams. Buyers should check the brucellosis status of the flock (recorded on the NSHS) or buy from an accredited free flock.



Well-fed sheep

Condition score matters

No extra work for better sheep management

Understanding the shape your sheep are in is basic good management. The condition score of ewes affects the lambing percentage and ewe mortality — two key losses in a sheep enterprise.

Condition scoring is quick and simple. Although body weight is important, few farms have scales or use them. Condition scoring has the advantage as it is independent of:

- frame size
- time off feed
- pregnancy status and wool growth.

Get your hands on your sheep. Condition score is estimated by feeling the amount of muscle and fat over the back bone and short ribs, just behind the long ribs, and giving a score between 1.0 (thin) and 5.0 (fat). Often half scores are used.

Condition score 25–50 sheep at random, write the scores down and calculate the average. Do it whenever the sheep are yarded. It does not take long, and it gives you valuable information about how your sheep will perform.

Also understand that if the average of the mob is say condition score 2.0, that there will be many sheep in the mob at condition score 1.5 or less. These sheep are in danger and should be drafted off as the tail of the mob for special treatment (feeding).



Correct positioning of the hand for condition scoring, with thumb on the backbone and fingers on the short ribs.






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Further information

- www.lifetimewool.com.au or www.agric.wa.gov.au/sheep for condition scoring charts and resources and “how to” video

Condition scoring

Condition score	x-section of backbone	Description
1		No fat and very little muscle on the backbone and ribs Seriously low body condition. Quite unacceptable — prone to disease and at risk of death.
2		A small amount of muscle along the backbone but no fat The least acceptable condition for thrift. Perhaps acceptable for dry sheep when the feed is short but a clear indication that nutrition requires attention.
3		Good level of fat and muscle with rounded ends of ribs and top of backbone A good level for Merino ewes and an ideal condition for young sheep for local slaughter.
4		Over-round across backbone — lots of muscle and fat Tending towards over-fat. Good for shipping.
5		Can't feel the backbone or ribs Definitely over-fat. Too fat for slaughter.

Pregnancy scanning — it's a *must do*

Pregnancy scanning is an investment in systems efficiency

Pregnancy scanning is a time critical operation in the sheep enterprise.

The benefits of pregnancy scanning are delivered by better and more accurate feed allocation to sheep. Knowing the pregnancy status of the ewe flock allows an accurate determination of its energy needs and a feed budget to be developed.

Twin bearing ewes are identified

- Twin bearing ewes *do* need more feed.
- Better feeding should lead to more and heavier lambs.
- Best results for preferential feeding are seen in a hard year.
- Preferential feeding must be matched with good husbandry.

Dry ewes are identified

- This is most useful in maiden mobs.
- Dry ewes can be run harder in their own mob.
- Dry ewes can be sold to reduce stocking rates in a poor start to the season — the late break.
- Dry ewes can be sold routinely after scanning, and a higher stocking rate of wet ewes can be run after selling.

Pregnancy scanning should not be seen as a cost but more as an investment. The savings in feed allocation by identifying and separating ewes of different pregnancy status more than pay for the scanning job. Plan to do it routinely rather than only when the season goes wrong. By that time it is too late, and it is difficult to find an operator.

Labour savings can be made when other tasks are combined with pregnancy scanning.

Pregnancy scanning is done by ultrasound and needs a skilled operator for accuracy. It should be completed 42–62 days after the rams come out, assuming a five-week mating.

Cost depends on throughput and the job. It costs approximately 40–60 cents per ewe for pregnancy checking, and more than 60 cents per ewe if checking for multiples. However the cost is trivial and is readily recouped due to feed savings.

Pregnancy scanning is an indication of top management — it is a *must do*.

Further information

- www.sheepcrc.org.au for information on benefits, contractor contacts, and how to successfully scan sheep

Protect the future – manage your weaners

Weaner management is about good planning

Managing weaners is important. Dropping the ball on this one can result in high mortality and big economic losses.

The key actions for good weaner management are set out as follows.

Wean early

Weaning should take place by 12 weeks from the start of lambing ... maximum. This is especially important when the season has been poor.

Early weaning helps the ewes get back into shape for next year and it helps the lambs get growing ready for turnoff or keeping over the summer. Weaners must have good nutrition to meet their growing needs.

Provide good feed

Feed quality is particularly important for weaners, especially high protein feed. That means 12–15% protein and highly digestible (>75%) feed that gives 12–15 MJ/kg DM. Feed requirements can be met by:

- good quality pasture (not tall and rank)
- green forage crops
- dry standing crops in summer
- good quality grain (particularly lupins).

Aim for growth

Healthy Merino weaners dropped in winter should be condition score 2+ and reach the following weight targets in their first year:

- weaning – 18 kg plus
- start of summer – 20–25 kg (45% of adult weight)
- break of season – 28–30 kg.

To meet these targets, the weaners have to grow over summer, not just maintain weight. This requires a growth rate of 50-100 grams per head per day.

Healthy cross bred or meat weaners will need to grow at higher rates (150-250 grams per head per day) to reach a weight suitable to go onto a feedlot or to be retained and mated.

Preferentially feed the tail of the mob

Deaths are proportional to weight. Lighter lambs, usually twins or late drop, need to be fed preferentially. Separate out the lighter lambs (up to 20% of the mob) at weaning to provide them with improved nutrition so they make the grade.

Unfortunately, high rates of weaners 'missing' are too common. It is seldom sheep stealing, sometimes lupinosis, but usually poor feeding.....that is bad management!

Ensure good health

Good husbandry is critical for good health. You need to:

- drench effectively at weaning and/or early summer
- vaccinate at marking and weaning
- provide selenium and/or vitamin E over summer
- wig/jet if appropriate
- provide access to fresh, clean and cool water.

Monitor progress

Good management of weaners means knowing their weights and condition scores. Check a small sample when the weaners are in the yards. Monitoring reduces reliance on luck.

Aim to have low deaths

Losses of weaners cost money! Aim for no more than 3–5% weaner deaths from marking to one-year old.

For 100 lambs at weaning:

- 5% loss at \$60/head = \$300 therefore adds \$3.10/head to the cost of survivors
- 5% loss at \$100/head = \$500 therefore adds \$5.15/head to the cost of survivors.

Grazing standing crops — summer forage for weaners

Standing crops in summer for weaners solve the problem in a *very labour saving manner*. These provide an easy-to-eat feed source that doesn't rely on feed carts, a clean paddock for the weaners to graze, and a low grass seed environment.

These crops can be:

- oats (dwarf preferably) — safe and cheap to grow and feed — fail safe
- peas — excellent for fattening sheep but not so good for growing
- lupins — good tucker but be aware of lupinosis
- vetch — much waste as sheep cannot 'harvest' them
- mixtures of the above can be good but are more complex to grow.

It is better to feed a standing crop than to harvest and feed it back. Apart from the cost, experiments have shown better utilisation and liveweight gain from a standing crop. Also the massive early intake 'makes' good sheep even out of the late-drop lambs.

Standing oats is the most reliable and possibly the cheapest crop to use and the system works. For each tonne in the paddock you should be able to graze at least 10 lambs for the whole of the summer, that is from just before all the crop is ripe (the best time to

Further information

- www.sheepcrc.org.au for more details on targets and feeding for weaners and the High Performance Weaner course

introduce sheep) until the break of the season. Dwarf oats tend to keep much of the grain in the head and provide a magic feed for the weaners. If summer rain causes germination, the green pick will only last a short time. After that they might get thin but will not tend to die! Peas can be added for better feed value but they tend to fail every second year because of frost, pea weevil, native bud worms or black stem rot.

Other tips

- Dwarf oats have more palatable straw and do not spook the sheep as much, they can see around and use the whole paddock.
- With a tall crop, make roads through to water etc — drag a log.
- A low cost crop can be a bit 'dirty' especially if the paddock is going back to pasture.
- A forage crop can be used to undersow pastures.
- There appears to be no strong evidence for saving some of the paddock until later on. No evidence of better liveweights at the end of summer.

Reduce grazing pressure on the whole farm. With all lambs held on a standing crop for the summer, the remainder of the sheep, usually ewes, will be less heavily stocked over the rest of the farm. Typically, grazing pressure of the adults is reduced by one third. So the ewes are fed better, which is excellent for improving their potential reproductive performance in the following year. It also reduces grazing pressure on fragile soils — a conservation benefit.

Use areas of low productivity. Many paddocks, particularly in the wheat belt have areas of low productivity. These areas seldom repay the inputs given to them. They may be sandy, rocky, wet and low lying. One way of using these areas to good effect is to scratch in oats, in the dry, not for harvest but to enhance the grazing value of the stubble of those areas. Observation indicates that such grazing and recycling of nutrients improves the fertility of those areas and the forage crops or pastures improve over the years each time forage is sown.

Check list for weaners when grazing standing crops

- Give booster vaccinations before putting lambs in crop.
- Wig and jet the sheep before putting them in (watch withholding period for jet).
- Start monitoring weights or condition scores toward the end of summer and if needed, start feeding.
- Fresh, clean and cool water is essential.
- Add selenium, minerals and Vitamin E — selenium is the most important.
- Towards the end of summer, if you can find any grain there is plenty, the sheep have all day to find it.
- Check regularly — once a week minimum.

Lifetime ewe management

Healthy well-fed sheep make money

Lifetime ewe management is about having ewes in the right condition at the right time.

Getting stocking rate right is a key strategy for feeding ewes well. Whatever your stocking rate (high or low), having ewes in the right condition at the right time is the most effective use of feed and grain. Having ewes too thin when it is important, is more of a waste than having ewes fat at times that aren't important.

Joining and lambing are the two most important times to have ewe condition right.

- Ewes in better condition at joining conceive more lambs.
- Ewes in better condition at lambing will increase lamb survival and wool production, as well as improving their own survival at lambing.
- Twin bearing ewes are the most important to look after and are most affected by lack of feed.

Weaning time gives you the best time to get ewes back into good nick for the next joining. Maintain them from when they get to peak condition (early to mid-summer) until the end of joining to maximise conception rates. Remember it takes more feed to hand feed ewes back to target condition than maintaining them at target condition all along. Use green pasture to put on condition and then maintain them with grain if you need to.

Make sure ewes are condition score 3.0 (twinning ewes condition score 3.3) by lambing and have good feed in the lambing paddock to encourage them to stay on the birth site longer.

Condition score targets at lambing — sheep-wheat zone Western Australia

Lambing time	Condition score target
Lambing on green feed	CS 3.0 at joining
	Allow moderate condition loss (0.3 CS) from joining to day 90, provided the condition can be regained prior to lambing on green feed
Lambing on dry feed	CS 3.0 at joining
	Maintain or allow moderate loss in condition from joining to day 90
	Maintain condition from day 90 to lambing

Further information

- Check out the targets for your area at www.lifetimewool.com.au

To join a Lifetime Ewe Management group

- visit www.sheepcrc.org.au or RIST on Telephone 03 5573 0943

Sheep — the simple guide to making more money with less work

Feed budgeting saves stress, time & money

How much pasture *do* you have? How much pasture *will* you have?
How much do you *need*?

Regular feed budgets are a part of running an efficient sheep business. In the pasture growing phase it requires knowledge of *feed on offer (FOO)*, current or expected *pasture growth rates* and the *feed requirements* of stock. This allows stocking rates to be determined, growth and liveweight change to be predicted, and if necessary hand feeding to start *before* animals start to slip.

Feed on offer (FOO)

Feed on offer is an estimate of the pasture available to grazing sheep, measured in kilograms of dry matter per hectare — kg DM/ha. Estimating FOO is an important skill for sheep managers, it can be learned from experienced advisors or from pasture photo guides. Using these pasture photos (www.lifetimewool.com.au) will help calibrate your assessments as pastures mature.

In autumn and winter, the emphasis is on increasing FOO, while in spring it can be about ensuring FOO does not get too high. In a poor season FOO will need to be managed so that it doesn't get too low and affects the growth rate. In a good season, control of FOO will require management, and it provides an ideal opportunity for:

- pasture topping either chemical or mechanical
- hay freezing *in situ*
- fodder conservation — hay or silage.

Sheep managers need to estimate paddock FOO levels to ensure that their stock are properly provided for. *Learn your trade*. Once learned, estimation is quick and simple.

Pasture growth rate

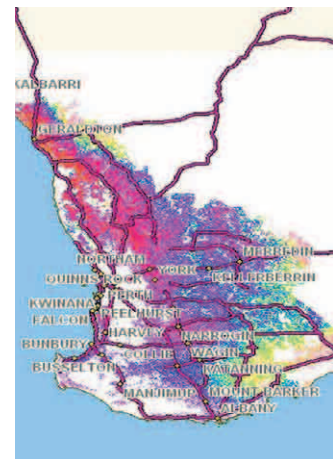
Pasture growth rates which can be read as feed availability, will depend on the season and in particular the time of the break. Check rates for your district at www.pasturesfromspace.csiro.au

Pasture growth rate is the amount of dry matter in kilograms that grows each day. The rate varies over the season. It can be under 10 kg DM/ha/day in the cold, wet, cloudy, short daylight hour days of winter. In contrast it can be as high as 80 kg DM/ha/day or more in the peak spring growing period.

- With an *early break* there is rapid early growth and the creation of an autumn feed wedge that will last through winter as extra available feed.
- With a *late break* there will be slow early growth, less winter feed and less total feed for the year. The total growth of a late break year will never be as much as an early break year.

These feed patterns will happen — it is guaranteed. Accept it and manage accordingly. Work with nature not against it.

FOO is
important —
learn your
trade, learn
how to
estimate FOO



Feed requirements of sheep

The daily energy requirements of sheep are known but it varies considerably with class of stock and stage of reproduction.

Daily energy requirements to maintain a ewe at condition score 3.0

day of pregnancy	Energy requirements (MJ/ewe/day)			
	Medium frame ewe		Large frame ewe	
	single	twin	single	twin
dry	8.3	8.3	9.9	9.9
50	8.6	8.7	10.0	10.2
70	8.9	9.1	10.4	10.7
100	9.7	10.7	11.4	12.5
130	11.6	13.4	13.5	15.8
lambing	12.8	14.7	14.9	17.1
day of lactation				
10	19.2	24.0	22.4	28.1
30	20.8	26.5	24.4	30.0
50	17.2	21.2	20.1	24.9

Feed budgeting

Grazing management boils down to good feed budgeting. Completing a feed budget involves working out:

- how much energy sheep are likely to be getting from the pasture. This can be worked out with sufficient accuracy by assessing FOO, estimating quality and finding out pasture growth rates
- how much energy sheep need - see table above for energy requirements for ewes.

If there is excess energy sheep will be gaining liveweight, if there is a shortfall sheep will be losing weight and depending on the class of stock and severity of the shortfall extra feeding may be required.

Further information

- Feed on offer (FOO) information and photos — www.lifetimewool.com.au
- Pasture growth rates — quoted on ABC radio in the morning in WA over the growing season or on www.pasturesfromspace.csiro.au
- Handy feed budgeting tools — www.lifetimewool.com.au

Feed out efficiently

Don't make
feeding a
chore

Feeding should always be based on a feed budget that takes into account the existing condition of the sheep, the target condition of the sheep, what's in the paddock and therefore how much extra feed is required to meet the condition target.

Focus should also be given to stock that need feed the most, i.e.:

- the tail of the mob
- twinning ewes
- growing sheep.

Lupins — little packages of energy & protein that save labour

Lupins often seem relatively expensive compared with other grains, on technical feed value, *but* in practice they punch well above their weight and perform better than other grains in a paddock situation. *Also* lupins are nicely packaged so there is less waste in feeding them.

The major advantage of lupins is in saving labour. They can be fed out infrequently as long as the same total quantity of feed is presented to the stock over the same time. This is because lupins do not contain starch and therefore they do not cause digestive upsets. The time between feeding lupins can be as long as three weeks, but usually once a week is best. Cereals need to be fed at least twice a week and preferably three times a week. What a difference in labour, vehicle running, opening gates, etc!

Provided your paddocks will stand it, the best way to feed sheep is to spin the lupins out over the paddock. Otherwise pour out a very thin trail. These feeding out techniques mean:

- less bullying and rushing the feed
- the tail (shy feeders) get their share
- the feed seems to last longer.

Lupins give Western Australian sheep-men and women the edge over their eastern states counterparts. Use it to advantage!

Other grains & pellets

Other grains and pellets can do the job but it must be realised that many grains such as oats vary a lot in their quality, so get them tested and remember that starchy grains must be introduced very slowly to avoid acidosis.

Grains and pellets can also be spun out in the paddock to good effect. Grains and pellets can also be made available to stock through lick feeders.



Licks & blocks

Licks and blocks are popular, particularly in the dry season as they can be left out in the paddock, but be wary about their value in both dollars and need. They are not a complete food — energy is usually what sheep need in the dry; and claims of production and profitability are seldom scientifically substantiated.

Confinement feeding

Feedlots or 'droughtlots' require grain feeding. Feedlots do require a bit of extra work but the energy is used efficiently and the rest of the farm is protected from overgrazing. The main benefits of feedlots are:

- energy saving for sheep, i.e. less walking
- less paddock degradation
- good for deferring the grazing at the break of season giving more paddock feed later.



Lick feeders

Lick feeders are a relatively new phenomenon in Western Australia. They have gained popularity because they feed out in a controlled fashion, giving confidence that the mob will get what they need. Lick feeders attempt to regulate intake of supplement by requiring sheep to actively 'lick' feed from restricted areas within the feeder. Lick feeders can restrict the access of pellets but not as much as anticipated when dry feed is low.

There is less wastage with lick feeders from either spillage or spoilage compared with about 20% loss with other types of self feeders, and some claim a 25% reduction in wastage of supplement compared with trail feeding on the ground.

Some producers have found lick feeders reduce the labour and time to feed sheep in summer and autumn, as feeding out can be reduced to once every 5 to 7 days.

Remember — check rates, number per mob, introduce the grain slowly and don't forget to fill the feeders up!

Final tip

If you are feeding out, *get a big feed trailer*. So often you see small trailers and the requirement for many trips. The fuel and wear and tear on the vehicle alone will be likely to pay for the cost never mind the labour saving. Most farm utes cost 40–50 cents per kilometre in depreciation and running costs. Also it can be just one more instance where a little investment will save a lot of time with sheep.

Hand feeding uses labour — but the labour required can be reduced substantially with better feeding strategies.

Further information

- Managing drought feedlots Australian Wool Innovation - www.wool.com
- National guidelines for feedlotting sheep - www.productivenutrition.com.au/COPlambfinishing/index.html



Money grows in paddocks

Grazing management

Make the
pasture work
for you

The best grazing strategy will depend on the type of pasture, the season, type of stock, labour available and management preferences.

Set stocking saves labour

Set stocking is seemingly a very simple grazing system but understand it should not just be a case of putting some sheep in a paddock and leaving them there. Set stocking can be a big labour saver but it still requires sensible application of feed budgeting and management to ensure that neither the sheep nor the pastures nor the bank balance suffer.

You need to:

- know what the paddock normally carries
- know the current pasture growth rates
- regularly monitor FOO at the start and throughout the season
- do regular feed budgets taking into account the class of stock
- understand that adding fertiliser increases growth
- be flexible and apply stock to feed available in the individual paddock.

Remember, that the time of the autumn break is critical for determining the year's potential stocking rate especially over winter. If the break is one week each side of normal it can alter the stocking rate by up to 10% per week. That is, up with early breaks and down with late breaks. This will vary across regions so get advice for your particular area and farm.

General feed targets for annual pastures

Break of season — defer until 200–400 kg DM/ha FOO (average break) or 500–800 FOO (late break). Don't defer in an early break.

Winter — aim to enter winter with feed close to 1000 kg DM/ha FOO.

Spring — manage pastures to maximise seed set and manipulate composition for next year.

Summer — manage grazing to prevent wind and water erosion (no less than 500 kg DM/ha FOO anchored).

Rotational grazing — more work but more control

Rotational grazing is a requirement for the proper management of most perennial pastures. However it can also be applied successfully to annual pastures.

The benefits of rotational grazing include:

- protection of perennials for longevity
- easier to control and manage FOO
- bigger mobs can be managed
- greater productivity — if not in overall stocking rate there is evidence of greater individual animal production at the same grazing pressure
- possibly useful for worm control by resting paddocks
- handy for conservation of surplus feed in the spring — take paddocks out of the sequence for fodder conservation.



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less work

The things to be aware of:

- more labour
- elevated level of management — constant attention
- more investment in infrastructure may be required — fencing, water
- initial deferment of grazing until first paddock is 500–800 kg FOO/ha — a possible feed cost
- difficult to manage for lambing ewes
- it takes three years or more to become good at it.

Tips for rotational grazing

- Graze paddocks for 2–5 days — no more.
- The stock will tell you when it is time to move (vocalising).
- Plan the sequence of paddock use carefully.
- Alter gateways to where the stock wish to move between paddocks.
- Mix annual and perennial pasture paddocks in winter.
- Defer grazing until feed target has been reached (500–800 kg/ha). Use a feedlot or stubble in the meantime.
- Be prepared to leave some ewes behind at lambing and collect them later, even the next time round.



Two paddocks at different stages of a rotational grazing system.

Further information

- www.makingmorefromsheep.com.au — see Tool 7.5 on grazing strategies
- www.agric.wa.gov.au/sheep for grazing strategies and tools

Annual pastures

Sub-clover
is great
for labour
efficiency

Sub-clover annual pastures respond well to set stocking and hard grazing. They can be very labour-efficient and stock on them do well.

On appropriate soil types, sub-clover should last forever as permanent pasture. Sub-clover is not well suited to sands, and where serradella is a more suitable option. If the cropping rotation is short (one or two years) sub-clover will not need to be reseeded when the paddock goes back into the pasture phase. If the rotation is longer, there are more suitable pasture legumes for ley farming (e.g. biserrula). Alternatively, for phase farming, the re-seeding of pasture legumes (for e.g. French serradella) at the start of the pasture phase can be an option.

50% sub-clover is ideal

Aim for 50% sub-clover in the pasture on duplex or gravelly soils. A higher percentage will have poor early-season growth and a lower percentage will not be fixing sufficient nitrogen and setting enough seed for a good establishment the following year. A suitable cultivar of annual ryegrass is an ideal companion.

Other species that will be present in a sub-clover pasture are volunteer grasses such as annual ryegrass and brome, winter grasses like silver grass and barley grass, and broadleaf volunteers such as capeweed and geranium. It is not desirable to have silver grass, barley grass or geranium more than 10% of the pasture.

Achieving the ideal pasture

Getting the right amount of sub-clover in pasture can be done by a combination of herbicide application and grazing pressure. This need not be expensive nor require huge labour inputs. The thing is that if competition from other species is removed, sub-clover will increase.

Get good advice on using herbicides to increase clover content and control problem species. Generally:

- barley grass — spray top
- silver grass — winter clean (simazine)
- geranium — spray (gramoxone)
- capeweed — spray graze (use MCPA then graze and stock will eat the capeweed preferentially and reduce its content).

In addition to herbicide treatments, grazing pressure can be adjusted to encourage clover and discourage grass. Maintaining high grazing pressure in the growing season will reduce excess grass. However, the pasture should not be overgrazed so as to risk soil erosion or insufficient feed for sheep. Its important to ensure that dead plant material from the previous year is mostly gone by the time the break comes to optimise sub-clover germination.

As the soil fertility improves through fertilisation, grass will become more dominant, thus it is important to increase the stocking rate as fertility improves. It is desirable to keep FOO to no more than 2500 kg DM/ha, other than at the end of the season. Excess feed can be controlled by some spray-topping to control problem growth in certain paddocks.

Manage it. Do not just watch it! 5000+ FOO is, frankly, out of control and the sub-clover content will decline.

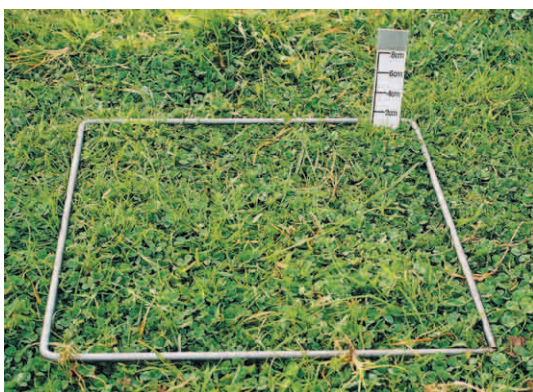
Reseeding

After a long cropping cycle, reseeded sub-clover, or other pasture legumes depending on the aim of the rotation (ley or phase) and soil type adaptability, is appropriate.

Lack of early growth is a problem with reseeded, so plan the task in early seasons when feed is at less of a premium. Also add either some ryegrass (1 kg/ha) if not present already and if it does not impact on future crops, or a light seeding of cereals for early grazing. Possibly sow a mixture of sub-clover and some upright clovers, such as balansa, for first year early growth.

Sow shallow into a firm, fine seedbed.

It is important to graze quite heavily approximately six weeks after seeding to encourage the sub-clover. Then remove the stock at early flowering to encourage seed set of the clover.



This spring pasture, at 1600 kg DM/ha FOO, is at an excellent level for grazing and sustainability.



This spring pasture, at 3500 kg DM/ha FOO, is undergrazed and a wasted resource.

Further information

- www.agric.wa.gov.au/pastures for management of clover pastures and information on cultivars

Perennial pastures

Potential in a well-managed system

Experience shows perennial pastures are costly to establish and they generally present more management challenges than annual pastures.

When planning perennial pastures, monitoring and rotational grazing are 'a must', in most cases. So perennial pastures can have higher labour requirements compared with annual pastures. One exception is kikuyu, which can be continuously grazed.

Perennial pastures are expensive to establish because:

- seed tends to be expensive
- for autumn sowings, it can take up to a whole year before there is useable production
- failures can occur due to inexperience or seasonal problems.

Perennial pastures require an elevated standard of management to achieve successful establishment and to manage stock rotations, as grazing may have to be deferred at times. They also require smaller paddocks to be managed effectively.

Benefits of perennials

- Excellent for soil conservation on difficult soil types, especially sands.
- The promise of higher production — if not in higher stocking rate some evidence of higher productivity per head.
- Utilisation of out of season rainfall and reduced use of feed supplements.
- Can lower watertables or prevent further rise.
- There are some good salt tolerant perennials.
- Annuals are boring!

Best bets for perennials

- Deep sands (ex blue lupin country) for tagasaste, as autumn feed gap but must be cut each year.
- Sands for sub-tropical perennial species, north of Perth.
- Coastal sands north and south for most perennials.
- Most areas for lucerne, excluding acid and waterlogged soils.
- High rainfall country with summer rain and/or long growing seasons.

Further information

- www.agric.wa.gov.au/pastures for perennial pasture species and 'rules of thumb' for choosing the right species

Using unproductive land

Unproductive land usually requires *investment and labour* to extract value, particularly saline and/or waterlogged areas. But the land need not be a waste; it can be a valuable asset.

With some research and planning, the investment and labour that goes into otherwise unproductive land can be very worthwhile.

What is needed?

- Fencing off.
- Possible drainage: 'W' drain (cheap) or ditch (expensive).
- Seeding — the land has to grow something. Species may include:
 - balansa and other salt tolerant clovers
 - tall wheat grass
 - puccinellia
 - salt bush
 - *Acacia saligna*
- Fertiliser — the plants listed all grow even better with some fertiliser.

When can it be used?

Pasture established on difficult land can be grazed:

- at the break of the season
- as a feedlot, virtually, for deferment of other pastures.

The pasture will provide very good feed for a number of days, but may need supplementation with grain or hay. Unproductive land sown to suitable species can in fact be a valuable asset in saving other feed.

Rehabilitation

Using the unproductive area will slowly lead to its rehabilitation. Groundcover, as opposed to bare salt scalds, will:

- drop the watertable
- add to soil fertility when grazed
- reduce further evaporation leading to more salinity.

Most importantly, rehabilitation of the land makes it look better, makes it more useful, and adds value to the property. There are often grants available for assisting with the work.

Silk purse
from a
sow's ear



You can get a gold star for conservation!
Plus, it can pay!

Grazing winter crops

Have your
cake and
eat it too!

Crops sown prior to, or at the break, can provide an alternative winter feed option with little or no penalty to crop yield.

Winter crops can be grazed to fill the autumn–winter feed gap, improving animal performance and allowing pastures to be deferred.

In the case of an early break, grazing can be used to retard development of early sown crops, reducing the impact of premature crop maturation. Both cereal and canola crops can be grazed before stem elongation without affecting yield.

The key actions for grazing crops are:

- ensure a weed free paddock to achieve best yield results from grazed crops
- use varieties with good early growth rates and that suit the area
- sow as early as possible with some nitrogen as well as phosphorus
- adhere to withholding periods for any crop treatments applied prior to grazing
- start grazing once the crop is anchored – the twist and pull test will tell you this
- graze at an appropriately high stocking rate to ensure even grazing
- do not graze past the white line in cereals – leaving some leaf will improve recovery
- to minimise yield loss, do not graze once the stem elongation process commences in cereals (growth stage 30) or after bud formation in canola.

Graze crops with animals that have been vaccinated against pulpy kidney, and ensure gut fill prior to introduction. Roughage should be provided as lush fast growing crops are low in fibre. Provide salt, calcium and magnesium as supplements to sheep before and during grazing cereals to minimise grass tetany and hypocalcaemia. Above all, monitor the animals and act accordingly.

Winter varieties may produce less biomass than spring varieties when planted later in the season (i.e. not an early break) and may also run out of time to reach their potential yield in areas with a shorter season and lower rainfall.

Grazing crops can help avoid the effects of frost and disease and reduce the level of risk in a cropping system. Stock numbers and/or crop area can be increased on a farm, as there is less reliance on early pasture in a grazing crop system.

When grazing winter crops, the key is to graze with the sheep that most need the feed.

Further information

- www.mingenew-irwin.asn.au for a list of varieties and their quality



Breeding labour-friendly sheep

Save labour: have easy-care sheep

It's more than just plain sheep: it's low maintenance with high productivity

Easy-care sheep may seem all about having plain sheep that don't get fly struck but there is much more to them than that.

Historically, sheep have been regarded as hard work, and often proven to be hard work. Perhaps the old fashioned Merino with all its work was acceptable at one time, or still is with small operations or those still prepared to do the hard yards. But the majority of people want sheep that are easier to manage.

The modern easy-care sheep has a range of attributes, apart from a plain body that reduces flystrike. Features of easy-care Merino sheep that still provide a high fleece value are:

- **robustness** — they require less feed and are less likely to crash when feed is limited
- **polled** — horns cause injuries to other sheep and their owners, they also cause poll strike, they are not required in any modern sheep enterprise
- **plain-bodied** — usually means less wrinkle in the breech area as well
- **wool-free legs** and a natural bare area around the anus
- **white bright wool** — less prone to body strike
- **higher body weight**
- **quick early growth** — better weights at weaning and do better post-weaning
- **more fertile** — conception rates higher
- **more fecund** — have more lambs
- **clean heads** — do not need to be wigged, do not have problems with grass seeds, ewes with woolly faces have less lambs
- **less drenching** — genetically resistant to worms
- **less dags** — which are caused by scouring, and can be reduced genetically
- **get struck less often**
- **more profitable** all round.



There are potential downsides to having easy-care sheep. It was traditional to find that the plain-bodied Merinos cut less wool. This can be true if the sheep are traditionally bred, but there are many studs that successfully breed plain sheep with good, if not better, wool cut and quality. Always remember — dead sheep cut no wool at all!

If you wish to have easy-care sheep and retain wool cut and productivity:

- make sure you buy rams from breeders with genetic information, i.e. Australian Sheep Breeding Values (ASBVs), and have a breeding objective that fits your needs
- apply modern genetic selection techniques — use ASBVs to select your rams
- balance modern selection techniques with physical requirements, do not go overboard either way.

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Save labour now and in the future
with easy-care sheep.

No wool, no work?

Since 1996, when the first embryos of Damara and Dorper sheep were imported from Africa, there has been growing interest in Australia in fleece-shedding sheep breeds.

These include later African imports, the van Rooy, Africaner and Namaqua breeds, and the Wiltshire Horn (imported in 1952 from England) and Wiltipoll (developed in Australia from 1996).

The primary reason for the popularity of these breeds is their supposed easy-care attributes, mainly because they shed their fleeces annually. It is claimed that they do not require shearing, crutching, mulesing, and lice or fly treatments and that they are not troubled by grass seeds.

In addition, the African breeds, in particular, are claimed to use available food more efficiently and to survive, grow and reproduce on poor quality feed and in hot, dry environments. The only saleable product from these sheep is their meat and skins. There will be no wool cheque.

It is true that flystrike and lice infestation are very rare, and grass seeds will not trouble them. Shearing and crutching are not required, but some, especially part-breds, might warrant shearing because of some wool on their backs.

The claim that these sheep use poor quality feed more efficiently than Merinos appears to have some factual basis. More research is required however to clarify this claim and, if true, determine how it is achieved.

There is no evidence that any of these breeds, on average, are more resistant than Australian Merinos to worms or other common infectious diseases.

Some of these fleece-shedding breeds behave differently, in a variety of ways, from Merino sheep. In particular, compared with Merinos, some may be more inclined to escape and others might be quite different to work with, especially to muster, yard and load. This different behaviour might result in more work, not less, especially when first learning to understand the sheep.

Since there will be no wool, the main driver of profitability of the fleece-shedding breeds is their ability to consistently conceive and rear to sale a large number of lambs. At least 100% lambs sold per year should be achieved. The flock will also need to have a high lifetime productivity, which requires early puberty and a reasonably long, productive life. Different systems of mating and grazing management may be required to achieve these high levels of productivity.

If there is to be no wool, lifetime productivity must be high



The genetic solution to mulesing

You have
been warned
— mulesing
will go!

Surgical mulesing will go, either through bans or economic pressure. It is only a matter of time.

But that is not all bad news. In fact, in the long run, non-mulesing will be *labour efficient and good for productivity*. Breeding sheep that do not require mulesing is possible and is effective at reducing the incidence of flystrike, similar to the mules operation.

Three opportunities occur for selection of plain-bodied sheep, in your own flock.... now.

Wrinkle-free bodies, especially in the breech area

- Breech wrinkle score 1 animals seldom get struck, score 5 animals often do.
- Easiest time to select against breech wrinkle is at lamb marking.
- Get rid of the highest scores first to allow a percentage of culling on wrinkle.
- Improvement in the flock can be rapid especially if your ram source is on the same lines of selection and you are careful when selecting rams.
- You need not lose wool cut — use Australian Sheep Breeding Values (ASBVs).
- Every little bit helps and is permanent — start now.

Naturally bare breeched animals

- Animals that have less breech cover (bare breech) do occur naturally.
- Animals with a greater bare area do get struck less often in winter rainfall areas.
- It is not as important as breech wrinkle in terms of propensity to get fly struck.
- Genetic progress for reducing breech cover is possible albeit slower than for breech wrinkle.
- Every little bit helps — start now.

Freedom from the dreaded dags

- In winter rainfall environments, dags are the biggest cause of breech strike in sheep.
- Dags are moderately heritable ...progress is possible but slow.

The imperative and incentive for selecting for plain-bodied sheep is all associated with mulesing. The rewards will tend to come from labour saving and easier management, i.e. no mulesing, less dags, easier crutching, less flystrike, higher lamb growth post-marking and possibly less chemical application.

Selecting for plain-bodied Merinos also has many additional benefits including improved reproduction and less body strike. Continue to select for fleece cut and quality along with plain bodied traits to achieve a valuable fleece sheep that doesn't cost in extra care.

Sheep that are genetically less prone to flystrike are the sheep of the future, it need not be the distant future if the woolgrower pays attention to selection.



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Further information

- www.flyboss.org.au and www.agric.gov.au/mulesing for information on management of unmulesed sheep, chemical options for flystrike and breeding recommendations

Selecting rams – buying your future

With a self-replacing flock the important decisions are what do I want my sheep to be like in the future and what do I have to do to get them there?

Any alteration/improvement will be by a combination of selection among the sheep that you have and the use of rams, either your own or purchased. It is well worth discussing this with breeding experts.

Ram selection

Measurement

- Measurement and progeny testing are important in order to establish breeding values.
- Breeding values are available and published by Sheep Genetics as breeding values or more accurately and able to be compared with others as ASBVs.
- These breeding values indicate what can be expected in terms of progeny performance when using the particular ram.
- You are flying blind without the actual figures for a ram: its performance index and breeding values.
- At the same time visual appearance and conformation are important as background features to measurement.



Rams selected using measurement and progeny testing will provide good levels of improvement for your flock.



Visual

- Visual appraisal is seldom accurate as it tends to display how the rams have been fed and reared rather than their genetic superiority, that is what they can pass on to their progeny.
- Visual reflects environment not genetic value.
- Show winners have seldom performed in an outstanding manner when progeny tested.

Improvement

If you buy consistently from a particular ram source, your flock will improve at the same rate as that of your ram source flock (but slightly behind).

- Make sure that your ram breeder has similar aims for flock improvement to your own.
- Ensure that proof of excellence is backed up by measurement, breeding values and visual attributes.
- Figures mean more than price or showmanship and show preparation.
- Discuss fully the catalogue with your ram provider well before the sale and determine what you can pay for superior genetics.
- It is not a ram's actual figures that matter but his figures in fair comparison with others, that is its true breeding value.
- Breeding values refer to one trait. To have balance and move towards your future requirements you will need to combine breeding values for several traits into a breeding index. This will have improvement in all or most of them at once.

There are many indexes and you need to choose which you require for your wool or meat enterprise, possibly after discussions with an expert — contact www.sheepgenetics.org.au. The following table shows what can be expected from the use of an index applied to a breeding scheme in a self-replacing flock.

Applying a dual purpose 7% index for Merinos— the results after 10 years in the flock

Parameter	Change
clean fleece weight	+ 3%
micron	- 0.6
body weight	+ 5 kg
lambs weaned	+ 2.5%
worm egg count	- 2.5%
staple strength	slight improvement

ASBVs – the genetic lingo

Australian Sheep Breeding Values (ASBVs) are the genetic language of the Australian sheep industry. They tell you the genetic worth of an animal (compared with its peers around Australia) for a whole range of traits. The values are produced by Sheep Genetics and delivered through LAMBPLAN for maternal and terminal breeds, and MERINOSELECT for Merinos (www.sheepgenetics.org.au).

- Get to understand ASBVs – it's important!
- Only buy rams that have ASBVs and those ASBVs that suit the objective on your farm
- Encourage your ram supplier to step up and provide you with real information about the genetics they are selling you.
- ASBVs should be an integral part of your breeding plan.

ASBVs are calculated from information ram breeders have measured on their own sheep. The information is combined and compared with information on sheep all around Australia across a number of years, with some assistance from some serious computing grunt. The process uses genetic linkage (same ram used in different flocks and years) to compare animals on a level footing. The result is an ASBV for each trait that the ram breeder has measured, which gives the relative value for that trait compared with rams across the country.

ASBVs are an exceptionally powerful tool to help with sheep breeding, as ASBVs have sufficient accuracy to deliver what they say they will.

ASBVs are available for many easy-care traits, which will save labour, as well for production traits. Using these values rather than visual selection will speed up genetic change as there are things that you see in a sheep that are a result of its environment not its genetics. Without ASBVs you cannot tell the difference.

Many ram sale catalogues will have ASBV information for sires that have been registered with Sheep Genetics. Visiting the Sheep Genetics website will also show listings of rams that have information on their breeding performance. These tables can be difficult to read if you don't know your way around. Shown on the next page is a set of example ASBVs for wool traits from MERINOSELECT. There are meat trait ASBVs that are available for both flocks in MERINOSELECT and LAMBPLAN..

Fleece ASBVs estimate the genetic difference between animals for measurable wool characteristics and are available at three age stages: yearling (Y), hogget (H) and adult (A). The table below shows traits for yearling rams.

The abbreviations for the traits listed in this table are explained as follows:

- **CFW** — clean fleece weight (%). Rams with higher CFW ASBV produce progeny which will cut more wool.
- **FD** — fibre diameter (μm). Rams with more negative FD ASBV produce progeny which have finer wool.
- **FDCV** — fibre diameter coefficient of variation (%). Rams with lower FDCV ASBV will produce progeny with lower variation in fibre diameter.
- **SS** — staple strength (N/Ktex). Rams with more positive SS ASBV will produce progeny with stronger wool.
- **SL** — staple length (mm). Rams with more positive SL ASBV will produce progeny with longer fibre length.
- **Accuracy** — The accuracy percentage reflects the quality and amount of information available on the ram. An ASBV is the combination of the breeding value and the accuracy percentage.

An example of ASBVs for fleece traits for a ram and the expected results on its yearling age progeny

Trait	CFW (%)	FD (μm)	FDCV (%)	SS (N/Ktex)	SL (mm)
ASBV	18.0	-1.6	-1.0	4.0	8.6
Accuracy (%)	65	76	67	62	72
Compared to a ram with an ASBV of 0, this ram's progeny will have:	9% greater CFW at yearling age	0.8 μm finer at yearling age	0.5% less variation in micron at yearling age	2 N/Ktex stronger wool at yearling age	4.3 mm longer wool at yearling age

Further information

- www.sheepgenetics.org.au for all ASBVs and details of rams available



It can be done!

It can be done!

There are very profitable sheep farms with simple sheep programs

A history of labour efficiency is the key to many Western Australian farms keeping sheep over the last 50 years.

Data has been collected for a group of farms in the 500 mm Mediterranean climate of the sheep-wheat belt of WA as shown in the table below. Over time, the cleared area on the farms and the numbers of sheep have increased. Fifty percent of the farms have stayed in the same family, and the farms have required two full-time labour units. The top operators of the group are 50% above the averages shown in the table.

Average cleared land area and sheep numbers, 1960 to 2007

Year	Cleared land (ha)	Sheep (DSE)
1960	486	1800
1970	698	4956
1980	1231	9723
2000	1568	12,723
2007	1840 (537ha crop)	17,041

The crash time for these farms was 1970–1972 when more sheep were run on the same system, with the same facilities. A number of things were developed or improved to make the job possible, e.g. machines, yards, laneways and shearing sheds.

A typical farm

A family business of two or more generations. Four farm blocks with three modern shearing sheds (2 x 5 and 1 x 4 stands), five sets of excellent yards and laneways everywhere.

Year	Cleared land (ha)	Sheep (DSE)
1965	344	1351
2010	2536 (inc 744 ha crop)	17,877

The table below shows the cost of new sheep handling equipment. Good second hand equipment is often available at much less cost. Compare that with cropping machinery!

Approximate cost of new sheep handling equipment

Machinery	New cost
V Machine	\$28,000
Auto jetter	\$25,000
Crutching cradle (3 stand)	\$20,000
Mobile marking station	\$ 10,000+
Total	\$83,000

Sheep — the simple guide to making more money with less work

A relatively minor investment provides excellent labour efficiency.



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