

Targeted feeding expected to lift profits by up to \$65,000

Implementing the Lifetime Wool Project principles — primarily maintaining appropriate ewe condition scores year-round — is the key to maximising lifetime wool production per head and per hectare. This case study shows how Western Australian Merino producers Philip and Jenny Gardiner are benefiting from the project.

Farm information



Farmers

Philip and Jenny Gardiner; stud and stock managers Stephen Bullock and William Smith

Location

Moora, Western Australia

Property size

3504ha

Enterprises

Superfine and medium-fine wool Merino studs and commercial Merino flocks, prime lambs, canola, wheat, Kaspera field peas, oats, lupin

Annual rainfall

410mm

Soil type

Clay loam 65%; Coomberdale Chert 14%; loam 12%; yellow sand and loamy sand 7%; sandy gravel 2%

Soil pH

4.3–7.6 calcium chloride (average 5.2)



Photos: Philip and Jenny Gardiner

Merino producers Philip and Jenny Gardiner, Moora, Western Australia, have implemented the principles of the Lifetime Wool Project and are reaping the benefits of higher sheep numbers with the animals maintaining condition scores year-round for improved performance.

As they continue to implement and fine-tune the findings of the Lifetime Wool Project, they anticipate increasing sheep numbers and stocking rates to nine dry sheep equivalents (DSE) per winter-grazed hectare (wgha) by May 2006. This has potential to boost their sheep enterprise contribution to owners' overhead and profit by \$22,000–\$65,500 per year.

Based on a five-year average full gross margin (including labour costs) of about \$29/wgha, the full gross margin could increase to \$65/wgha with a \$51,000 best estimate added contribution.

Philip and Jenny believe such a significant increase in stock numbers is achievable as a result of their new rigour in regularly and objectively assessing ewe condition scores and being quicker to respond to the ewes' feed requirements, either through manipulation of paddock and overall stocking rates or supplementary feeding.

Condition scoring

The Gardiners became involved in the Lifetime Wool Project during 2003 when they hosted a trial on their property. They started implementing outcomes from the research commercially from 2004.

Before Lifetime Wool, the Gardiners were focused on pushing stocking rates to the maximum limit of the season and pasture growth on the understanding this was the main driver of wool profitability.

Lifetime Wool Project research, carried out by the Department of Primary Industries Victoria, Department of Agriculture WA and southern Australian wool producers, showed adopting a 'measure to manage' ethic and achievement of condition score targets was a key to maximising lifetime wool production per head and per hectare.

Maintaining condition

The research found that achieving appropriate ewe condition scores year-round ensured the ewe did not become undernourished during pregnancy, a common problem in Mediterranean climates when ewes are pregnant during dry summers.

It added to previous knowledge that appropriate nutrition during different phases of the ewe's annual physiological cycle would set up excellent primary and secondary follicle development in lambs by providing guidelines on the levels of feeding required. This is especially crucial from day 80 for secondary follicles, which produce most of the wool and are finer.

Lifetime Wool Project results showed progeny from ewes fed to maintain condition

by **Melissa Williams,**
KONDININ GROUP

Moora, Western Australia, stud Merino breeders and mixed farmers Philip and Jenny Gardiner expect to lift sheep numbers significantly and boost profits by \$22,000–\$65,500 a year as a result of participating in the Lifetime Wool Project.

The basis of this project is to feed ewes to meet targeted condition scores, avoiding undernourishment during late pregnancy and early lactation and overfeeding during other parts of the year.

This is achieved by knowing available paddock food-on-offer (FOO) and pasture growth rates and then manipulating paddock stocking rates or supplementary feeding to meet their animal needs.

The Gardiners run a winter-grazed sheep flock of 8850 adult sheep split into superfine and medium-fine stud Merino flocks; superfine and medium-fine commercial Merino wool flocks; and a prime lamb flock.

At a glance

Western Australian stud Merino breeders Philip and Jenny Gardiner expect that implementing the Lifetime Wool Project principles on their property will:

- Increase profits by up to \$65,500 annually.
- Increase the stocking rate from 7.7 dry sheep equivalents per winter-grazed hectare to 9DSE.
- Improve ewe wool production and the number of lambs weaned per hectare.
- Achieve a secondary to primary wool follicle ratio (S:P) in lambs of 40:1 to improve their lifetime wool production and quality.

score 3.0 between joining and lambing produced 0.2 kilograms more clean wool that was about 0.3–0.4 micron (μm) finer at hogget shearing than lambs from ewes that lost about 0.7 of a condition score during pregnancy.

These effects were still evident at the second and subsequent shearings of the progeny.

Breeding objectives

For the Gardiners, increasing fleece weights and reducing wool fibre diameter are key breeding objectives in their stud and commercial flocks.

Breeding practice is strictly by pedigree and objectives for the superfine stud are to reduce fibre diameter from a current adult average of $17.3\mu\text{m}$ to $16\mu\text{m}$ and to increase adult greasy fleece weight from a current 4.1kg/head to 4.5kg/head in the next 5–7 years.

At the same time, they are aiming to improve early maturity to achieve progeny liveweights of 50kg at 18 months of age. Other breeding objectives are high fertility, loose skins, sound conformation, worm resistance and elite spinning wool.

For the medium-fine stud, objectives are to reduce average fibre diameter of adult sheep from $19.2\mu\text{m}$ at present to $18\mu\text{m}$ and lift greasy fleece weight from a current 6.2kg to 6.8kg/head.

At the same time they aim to improve the early maturity of progeny to reach 42kg at six



Philip Gardiner condition scores ewes on his Edale property at Moora, Western Australia, during July 2005.

months with low fat levels and to aim for wools with low-frequency crimp, which improves processing performance.

In the superfine stud there is a breeding line for low-frequency crimp (for suiting) and a breeding line for high-frequency crimp (for knitters).

Meeting crimp targets

To meet these crimp frequency objectives, the aim is to achieve a secondary to primary wool follicle ratio (S:P) in lambs of 40 (that is, 40 secondary follicles for every one primary follicle), having started at 25:1 during 1989.

Philip said it was these wool follicle objectives that initially attracted him to the Lifetime Wool Project. He said the project pinpointed the times when nutrition was needed in the ewe to achieve the best genetic expression for primary and secondary follicles.

Generally, having a higher S:P ratio would result in lower wool fibre diameter and higher wool weights. Complementary to this, and most important, was having the primary fibres finer than the secondary fibres.

Ewe management

For the Gardiners, ewe management is now centred on achieving target condition scores in the crucial times of primary and secondary follicle development in foetal lambs and immediately post-birth. Before joining the Lifetime Wool Project, the focus was on pushing stocking rates, which peaked at 11.4DSE/wgha during the late 1990s.

A series of four tough feed years from 2000–2003 placed significant stress on this system, either because of late starts, dry winters or poor finishes and stocking rates came back to as low as 7.6DSE/wgha.

Philip said lambs from these four bad years now made up the basis of his flock and this had led to a slight reversal in breeding

objective results at the last shearings of both the medium and superfine sheep.

A crucial change

A shift in thinking was needed to overcome the risks of running high stocking rates in poor seasons.

The Gardiners made a crucial management change to set ewe condition score targets and use these to determine stocking rates. Achieving the condition score targets also ensured the lamb's wool follicle structure was set up well for life.

Stock are now sold as necessary, based on specific decision rules related to condition score targets and rainfall incidence and to this end a proportion of the flock is kept 'dry'.

The objective is to run ewes at condition score 2.5–2.7 in early gestation, rising to a condition score of 3–3.2 for the last few weeks of pregnancy.

Ewes are then allowed to drop to condition score 2.5 after lambing and are brought back up to condition score 3 for mating.

These condition score targets mean that the Gardiners are starting to increase stocking rates again to 7.7DSE/wgha at May 2005 and an expected 9.0DSE/wgha by May 2006.

The aim is still to reach the highest possible stocking rate but this is now pegged on condition score. The Gardiners objectively condition score their ewes 6–10 times a year.

Providing the model

The Lifetime Wool Project has provided the Gardiners with condition score training and a model for calibrating condition score used by all project participants.

Before joining the project, the Gardiners undertook irregular body weighing of stud sheep. With new rigorous condition score goals in place, they do not see a need for body weighing except for sale sheep and stud sheep to generate data for measuring genetic progress toward earlier maturity.

The Lifetime Wool Project has prompted the Gardiners to ultrasound scan all their stud and commercial ewes to check for twins and single lambs. Before involvement in the project, they scanned only the stud ewes.

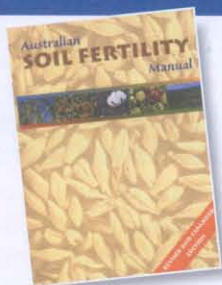
Now, it is a more in-depth scanning process that can also assess whether twins occurred in the first or second cycle. This is carried out to ensure a supplementary feed of barley can be given to ewes precisely during the final 7–10 days of gestation to stimulate colostrum production.

Scanning, carried out by New Zealand expert Mike Pittaway, is performed 40 days after rams are removed from ewe paddocks and costs 65 cents/head.

Feeding strategies

During gestation, single lamb-bearing ewes receive a supplementary feed of a 75:25 oat and lupin mix if paddock feed levels and pasture growth rates are inadequate to meet

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condition score targets. Ewes carrying twins are given the oat and lupin mix ad lib.

Before joining the Lifetime Wool Project, the Gardiners used pasture growth rate and FOO information from the Pastures from Space programme (see *Farming Ahead* No. 112, page 51) combined with visual assessment of sheep condition scores to set stocking rates.

Silage and pasture

The couple have always produced silage on-farm to cater for tough years and with the Lifetime Wool Project this continues to be a critical part of the ewe feeding system.

Pasture is now being deferred from mid-autumn and allowed to get away at the seasonal break while sheep are maintained on silage and agisted on nearby properties.

April-drop stud lactating ewes and lambs are put onto deferred pasture paddocks, where FOO levels are kept at 500–750kg/ha by manipulating stocking rates.

The June–July drop lambs and ewes from the commercial flock go onto paddocks with FOO levels of about 1300–1500kg/ha.

Planning ahead

During September, the Gardiners compile a summer feed budget, using FOO information, to plan the number of grazing days of dry pasture feed available until the next winter break and determine stock



Stephen Bullock

Philip and Jenny Gardiner regularly make pasture assessments visually and using satellite imagery on their Moora, WA, property.

numbers. This also allows them to plan more specifically the amount of lupin and oats to retain at harvest for supplementary feed.

The Gardiners sow a large proportion of their property to Dalkeith clover, balansa, bisserula and other pasture legumes and these are manipulated with stock and herbicides to reduce wool vegetable matter during late spring.

Philip said the pasture mix had not changed since they joined the Lifetime Wool Project but sowing strategies had improved to boost germination and there was now more intense pasture management.

Management strategies

Philip also expects Lifetime Wool Project management strategies will improve ewe and lamb wool production per head and per hectare, wool quality, number of lambs weaned, twinning rates, stocking rates and fertility.

With ewes being mated in higher condition scores, Phillip expects improved conception rates, and with better nutrition during gestation he is also banking on higher lamb birthweights.

The Gardiners are not anticipating any large increases in variable costs of production from switching to Lifetime Wool Project principles.

But they have noticed that the fibres appeared more dense on the skin and the wool quality was impressive, especially in crimp definition and lustre.

Philip and Jenny believe there are no major practical or economical hurdles facing farmers wanting to adopt these principles as it is a simple approach to ewe management.

For information on the Lifetime Wool Project contact national co-ordinator Andrew Thompson via andrew.thompson@dpi.vic.gov.au or phone (03) 5573 0949. 