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## Sheep Updates 2003 - Posters

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## Sheep production on annual stubbles/pastures vs lucerne

**Maxine Brown<sup>1</sup>, Gaye Krebs<sup>1</sup>, Diana Fedorenko<sup>2</sup> and Kathryn Egerton-Warburton**

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Meckering farmers, Robert and Vicki Beard, have established lucerne on ten per cent of their cropping land to prevent the spread of dryland salinity and improve the productivity of their farm. This study addresses the question: what impact will the introduction of lucerne into their traditional farming system (annual crops and pastures/sheep) have on live weight, and wool yield and quality of Merino ewes? On 27 December 2002, 180 ewe weaners were weighed and randomly allocated, on a stratified weight basis, to two groups. Since then, one group has been grazing rotationally on lucerne pastures, and the other on stubbles/volunteer annual pastures with supplementation as required (traditional system). Fortnightly, animals are being individually weighed and pastures sampled to determine dry matter availability and quality. Dye-banding is being done every six weeks to determine linear wool growth, and 10 x 10 cm mid-side patches are being taken every 12 weeks to determine wool yield and quality. Animals were scanned to determine eye muscle and fat depth. Preliminary results after 157 days of grazing showed that 90 % of ewes grazing on a traditional system gained 6-15 kg live weight, compared with 15-22 kg gained by those grazing on lucerne. Animals grazed on lucerne also showed improvement in market specifications for meat. The field measurements will be completed at shearing in September 2003.

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## The value chain of the Lake Grace livestock industry

**Evan Burt and Nazrul Islam**, Department of Agriculture Western Australia

A review of the Lake Grace Region livestock industry identified that some abattoirs had blacklisted sheep producers. Industry intelligence identified that the high damage and condemning rates to carcasses was brought about through poor animal husbandry techniques, for example vaccination technique. The cost to the farmers in region was significant.

There is a general shortage of sheep for meat processing; numbers from 2000/01 to 2001/02 were down 1.2 million approximately, this is expected to be down a further 360,000 (approximately) for the period 2002/03 (ABS Dept. of Agriculture). The shortage of sheep and the high commodity prices for all classes of sheep and sheep products, has meant producers have been able to 'push' their stock out of their farm system into alternate markets, such as store sheep sales.

Farmers and processors need to be more aware of the supply and value chains. Analysis of the value chain highlighted some gaps. One gap consisted of the ability to accurately measure the co-products. Abattoirs, it has been found, underestimate potential losses leading to measurement inaccuracies. Currently the estimated loss by the value chain stemming from the producer problem is substantial.

There is a clear message here, industries and segments need to be reviewed or provide greater feedback on a regular basis to ensure producers have access to the widest possible market base. Not only do producers need to be aware of the supply and value chains but so to does the industry and industry service providers.

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## Native pastures, Dorper sheep and the 2002 drought

**Roy Butler**, Department of Agriculture Western Australia, Merredin

Dorpers are meat sheep, selectively bred in South Africa since the 1930s to be productive in an arid environment. They performed well, with supplementation, on native grass pastures near Merredin in 2002, despite the very dry conditions.

Native perennial grasses have been growing in the eastern wheatbelt of Western Australia for thousands of years. They are well adapted to the area's soils and climatic conditions. Some of these grasses are suitable for pastures.

Merredin received 208 mm of rain for the year, compared with the long-term annual average of 327 mm.

The sheep were rotationally grazed over four permanent pasture paddocks, at an average stocking rate of 3.9 DSE/ha. The highest stocking rate was 5.8 DSE/ha in September.

Supplementary lupins were given at an average rate of 214 g/head/day.

Some lupins and hay were fed in every week of the year.

120% lambs were **sold** (early, at an average weight of 34.5 kg) from ewes weighing 40 kg or more when the ram was introduced on 26 January.

There were no health problems in the sheep.

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## Commercial sheep breeders can improve their sheep breeding program using wether trials

**L.G. Butler, S.R. Brown, D'Antuono, M.F. and J.C. Greeff**

Department of Agriculture Western Australia

The latest analysis of the combined linked wether trial data incorporates 308 teams of Merino, and one team of Rambouillet, wethers born in the years 1997 to 1999 and participating in 23 trials in Western Australia. Team sizes varied from 10 to 50 animals per team. Each trial site was linked through the inclusion of a common link team. This method allows commercial wool growers to make comparisons both within and across wether trial sites, and also across years.

The Western Australian linked wether trials have emerged as an effective and popular means of enthusing sheep producers to examine how they can most effectively improve their flock genetics. This benchmarking tool is one of the few genetic tools available to the commercial sheep breeder. As a follow up to their wether trial activities, many participants have benefited from attending extension activities, in particular Merino Breeding and Selection workshops, to assist them with the question "where to from here?". Recently farmers have been interested in extending the information gained to include information on reproduction, lamb growth and carcass quality in addition to wool traits and liveweight. Ewe trials have been designed to provide this information.

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### Linked ewe trials to benchmark wool traits and reproductive performance of Western Australian sheep flocks

**Ken Hart**, Department of Agriculture Western Australia, Narrogin

Many Western Australian sheep farmers have used linked Wether Trials to benchmark the genetic merit of the wool traits in their flock. However, wool production is not the sole objective of most sheep enterprises. In this regard Wether Trials are somewhat limited when considering the productivity of the entire sheep enterprise. To address this issue the Department of Agriculture Western Australia has initiated linked Ewe Trials in 1998. Ewe Trials move closer toward benchmarking all of the commercially important traits that contribute to the profitability of a commercial sheep enterprise. To achieve this, Ewe Trials record similar measurements to Wether Trials but in addition collect data about lambing performance of each team and the subsequent performance of the lambs produced by each team. As with Wether Trials, Ewe Trials require participating farmers to enter a team that represents the flock average of the participant's sheep. The results are reported as both team averages and team aggregates.

Wether Trials have demonstrated that there are strong correlations between some wool traits. Most notable is the negative correlation for fibre diameter and clean fleece weight. While we consider that it is still 'early days' for Ewe Trials, the preliminary results suggest there are also correlations between reproductive traits. Of more interest however is that there also appear to be correlations between wool traits and reproductive traits.

Early indications are that there are negative correlations between both wool quantity and quality and the reproductive performance of ewes. There is indication of a positive correlation between body weight and reproductive success, at least in maiden ewes. There is a positive correlation between the number of lambs weaned per team, and the weaning weight of the lambs, and a positive correlation between the ewe's reproductive performance and the performance of the lambs post weaning. Both the lambs growth rate and greasy fleece weight at the lambs first shearing is positively correlated with their dam's reproductive performance.

As the story unfolds it is providing some very interesting results. It also highlights that setting breeding objectives is one thing, but to successfully move toward realising them will require having an understanding of some complex biological interactions.

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### **Damara sheep - what is their potential? A case study from the North-eastern wheatbelt**

**Tanya Kilminster and Evan Burt**, Department of Agriculture Western Australia, Merredin

Damara sheep are a fat-tailed breed introduced to Australia from the African continent. They have primarily been selected for survival in a harsh environment.

There is anecdotal evidence from farmers in the north eastern wheatbelt that the Damara sheep do utilise poor quality grazing (dry pasture and stubbles) better than Merinos. If this is so, could it mean that Damaras will not only tolerate a ration of lower than usually specified quality but may even require such a ration for satisfactory growth in a feedlot.

Due to the past adverse season, a number of Damara producers established feedlots and faced the unknown, what is the performance potential for the breed? In a feedlot situation, first cross lambs are known to achieve growth rate gains of 250 to 350 grams per head per day, while Merinos can achieve 220 to 320 grams per head per day. This case study demonstrated that Damara ram lambs fed on rations that would have resulted in good growth rates in Merinos and crossbred lambs were lower. From three properties, the growth rates ranged from 170 to 235 grams per head per day.

There is limited information regarding nutritional requirements (protein and energy) and growth rates for Damaras. Does the Damara utilise a poor quality feed better than other sheep breeds? How well do Damaras perform in a feedlot situation?

Applying the same feed management techniques for Merino and Prime Lamb flocks to the Damara has highlighted some industry knowledge gaps. A challenge for researchers and producers is to gain a better understanding of the nutritional requirements and therefore performance potential of this breed.

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# Sheep Updates 2003



## Australian Sheep Industry CRC - nutrition sub-program

**Rachel Kirby**, Sheep CRC Research Fellow

The Sheep CRC nutrition program encompasses a range of activities that target strategic use of grain in production systems for meat and wool. The projects aim to:

Gain a better understanding of factors that cause variation in performance in grain finishing systems so that we can develop strategies for finishing lambs and older sheep that are predictable and profitable.

Measure performance and segment the flock (using e-sheep technologies) so that we feed the right animals at the appropriate time to meet production and reproductive targets.

Understand the biological principles that determine the partitioning of energy and protein between wool and meat.

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## Dust penetration is not genetically and phenotypically the same trait as dust content

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Breeders use dust penetration as a measure of dust content when selecting indirectly for higher yielding wool and better style wool. Merino wool from 1053 ewe and wether hoggets was used to estimate genetic parameters of dust and wool traits. Dust penetration and dust index had a moderate genetic correlation (0.54), but a low phenotypic correlation (0.32) with each other. Dust index was moderately heritable (0.36), while the heritability of dust penetration was low (0.21). It was concluded that dust penetration and dust content are genetically different therefore dust penetration should not be used as a measure of dust content. Breeders would make faster genetic gain in reducing dust content by selecting animals for higher yield rather than dust penetration. Selecting for dust content might reduce style grades as the wools would look dirtier but have better yields.

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## Developing sustainable fodder crop systems with new annual pasture legumes

**Anyou Lui**, Department of Agriculture Western Australia, Northam

High value fodder crops provide farmers with a capacity to diversify their production systems and are an integral part of strategies to intensify animal production. Legume based fodder production systems can also play important roles in the integrated management of weeds, improvement of soil fertility and in the more efficient use of soil water. To develop, test, and promote the proposed system, a new project has been started in 2003 with funding from RIRDC. This poster will highlight the key potential benefits the project will bring to the farming system, the current activities of the project, and hopefully will provide an interface for further discussions from interested parties.

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## Seasonal pricing and seasonality of supply of prime lambs in the western wheatbelt

**Karen Smith and Martin Bent**, Muresk Institute, Curtin University

Production of prime lambs in WA has a marked seasonal pattern with peak monthly production in spring being twice the level of production in the winter. Varying levels of production impact the viability of abattoirs and processors, and in some instances make marketing difficult. This study used a simulation model of ewes and lambs (based on Kingwell *et al.* 2002) to synthesise sheep production activities to incorporate into a large LP model of a mixed enterprise farm in the Cunderdin shire of Western Australia.

A seasonal price pattern based on historical data was applied and the average annual price varied to examine the effect of price on the levels of supply. Substantial increases in lamb production were observed when prices reached \$31/hd and \$78/hd. Early and late summer finishing of lambs were preferred.

The current seasonal price pattern was maintained and a uniform supply of 145 lambs from the farm in each of the eight model seasons was forced into the model. The opportunity cost of lupins and hay used for feed and the increased use of land for summer pasture resulted in a net annual cost to the farmer of \$42,000.

Modified seasonal price patterns was trialed to obtain a uniform supply of prime lambs in each marketing period. Activity dominance in the model meant that not all lamb activities could be selected simultaneously. The closest solution to a uniform supply through the year was when then unselected lamb activities had a shadow cost of zero, i.e. producers would be indifferent between seasons in which to supply prime lambs.

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# Sheep Updates 2003



## The role of alternative and exotic sheep breeds in the Western Australian sheep industry

**Matthew Young**, Department of Agriculture Western Australia, Geraldton

Alternative and Exotic sheep breeds are providing Western Australian sheep growers with an opportunity to meet changing demand in overseas and domestic sheep meat markets.

The Alternative and Exotic sheep breeds that have been imported into Western Australia, include highly valued fat tail breeds, dual purpose merinos, and prime lamb breeds. These breeds are providing management and production options not previously available to the sheep industry in this state, in addition opportunities for diversification through highly valued co-products such as skins and sheep dairy produce.

The Alternative and Exotic sheep breeds are having the most impact at this stage on the sheep meat industry in the pastoral and wheatbelt area of the State.

While the potential for the alternative and exotic breeds is high, further work is required to assess production and marketing potential for the sheep meat industry of Western Australia.

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