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**Tough times call for a review of farm business performance**

By Martin van Bueren, formerly Regional Economist, Great Southern Research Institute, Katanning and John Young, Research Economist Centre for Legumes in Mediterranean Agriculture, University of WA, Nedlands

Most Australian farm businesses specialising in wool production are operating at a loss at current wool prices. After both short term operating and long term costs of capital depreciation are accounted for, only a small number of wool growers are able to make a profit with the wool market indicator below 500 c/kg.

Poor prices have stimulated wool growers to review their operations and look to ways of improving cash flow in the short term, such as diversifying into cropping. The downturn should also prompt growers to address the longer term trends of declining terms of trade and historically poor productivity growth in the sheep industry relative to cropping specialists.

This article evaluates the potential gains to be made by diversifying into high yield cropping. It also examines several possible ways that wool growers can address the declining terms of trade. These include productivity improvements, increasing farm size to attain economies of scale, and increasing prices received for products through improving quality and marketing.

**Financial situation of farmers in the woolbelt**

Traditionally, specialist wool growers have obtained 90 per cent of their income from sheep, mostly from wool sales. Usually, only 10 per cent of the farm is cropped, mainly with oats for stock feed. During the late 1980s, income from wool sales approached 100 per cent of farm receipts, but since the wool price crash high value cash crops such as canola and malting barley have made a major contribution to income, up to 40 per cent in some cases.

The Australian Bureau of Agricultural and Resource Economics has estimated that farm cash incomes for Western Australian farmers specialising in sheep and wool will be $24,600 in 1993-94, which translates to a farm business loss of $26,000 after depreciation and other non-cash costs are taken into account (Bartley et al, 1993). If wool prices remain below 500 c/kg for the next three to five years, and wool growers continue to lose about $25,000 annually, farmers need to review their operations.

At a market indicator of 450 c/kg, wool growers in the woolbelt could expect to receive a gross margin of between $40 and $60 per hectare for sheep. As the gross margin does not account for overhead costs, a wool price of about 550 c/kg would be needed to cover both operating and overhead costs for an average farm in the woolbelt with 6500 sheep and $60,000 of fixed costs.
The Department of Agriculture's MIDAS model (Model of an Integrated Dryland Agricultural System), which typifies a 1000 ha farm in the woolbelt, takes into account these longer term costs. It provides direction for choosing the best rotations for each soil type, the proportion of farm to crop, and an indication of the potential profits that could be made by changing enterprise mix.

Results from the Great Southern version of the model, using a market indicator of 500 c/kg for wool, show that the extra cash flow generated by increasing cropping and using a traditional rotation of one in five with oats is almost completely offset by the future costs associated with extra machinery depreciation and reduced pasture productivity.

However, if the cropping strategy involves planting suitable soil types continuously with cereals interspersed with lupins and canola as break crops, then there is the potential to earn an extra $14,000 a year (see Figure 1).

The economic benefits of continuous cropping over traditional crop rotations stem from three main sources:

- Higher grain yields can be achieved by concentrating cropping on the better soil types.
- Growing cereals after a grass-free break crop such as lupins or canola results in earlier sowing and less root disease, leading to higher yields.
- Frequent cropping of a paddock reduces pasture productivity to the detriment of the grazing enterprise. Leaving some paddocks to continuous pasture provides the opportunity to improve stocking rates.

The results also show that it becomes more economical to crop a larger area of the farm once continuous cropping is adopted. Under traditional cropping rotations, profits are maximised by cropping 15–25 per cent of farm area, while under a continuous crop rotation it is best to crop between 30 and 40 per cent (see Figure 1).
Similar results have been found using a version of the MIDAS model designed for the West Midlands region. Farmers in the Badgingarra district have traditionally specialised in sheep, cropping only 15 per cent of the farm. MIDAS indicates that annual profits could be increased by up to $26,000 by using a lupin-wheat rotation on 44 per cent of the farm (Abadi and Wilkins, 1993).

There are several impediments to expanding cropped area which may be a problem for some wool growers. The main ones are inadequate machinery, unfamiliarity with the management practices required to achieve high yields, and the high costs of changing fencelines to match soil type. Extra cropping may therefore be a risky and costly change for some growers. As MIDAS only indicates the potential profits from changing enterprise mix, the costs of achieving the change need to be weighed against the potential benefits.

**The medium to long term**

Diversifying into high yield cropping is not just a short term option for coping with the current period of low wool prices.

MIDAS studies centred around the Kojonup district have shown that when the price of wool recovers to 650 c/kg there is still potential to improve annual farm profits by $12,000 by incorporating continuous cropping into the farm system. At this higher wool price, the optimum area of crop under traditional cropping ranges between 10 and 15 per cent, while under continuous cropping the optimum area ranges between 25 and 30 per cent.

Cropping is still a profitable component of the farm system at 650 c/kg for wool because stubbles are a valuable source of sheep feed over summer and autumn. A common observation is that farmers with the highest stocking rates in the woolbelt also crop at least 20 per cent of the farm. MIDAS results show that stocking rates across the whole farm can be increased by 1.5 dry sheep equivalents per hectare (DSE/ha) by cropping 25 per cent of farm area relative to no cropping (see Figure 2).

A further benefit of diversifying into cropping beyond the short term relates to risk management and price variability. Wool prices are set to become more volatile once the wool stockpile is depleted, so it makes sense to become less dependent on a single commodity for income.

**Fighting the declining terms of trade**

Low wool prices have stimulated woolgrowers to review their operations to ensure they are able to service their immediate debts. A longer term problem facing all farmers is the declining terms of trade, which is the ratio of prices received for outputs to the prices paid for inputs.

Farmers' terms of trade have declined at an average annual rate of 3 per cent since 1950 because rises in input costs have outstripped increases in commodity prices (Chisholm, 1992). Since 1970, real input costs for Western Australian growers have risen at a rate of 8–11 per cent while real prices for commodities have only risen by 5–7.5 per cent (ABARE, 1993).

![A Franklin malting barley crop in the South Stirlings. Barley could be an attractive alternative for some wool growers.](image-url)
There is a range of ways in which sheep farmers can address the worsening terms of trade. Diversification into high yield cropping has already been discussed. Other possible methods are:

- Improving productivity of the sheep enterprise.
- Improving economies of scale by increasing farm size.
- Increasing prices received for wool through improving quality and marketing.

**Improving productivity**

Productivity is defined as the amount of output produced per unit of input. Therefore improving productivity entails either using fewer inputs to produce the same level of output or combining the same levels of inputs more efficiently to produce more output. Often a combination of both these methods is used on the farm.

A national study of productivity changes over the period 1978 to 1989 has shown that productivity has grown at much slower rate for sheep specialists compared to crop specialists (Males *et al.*, 1990). In Western Australia it is estimated that productivity in the combined wheat-sheep industry has grown by 2.7 per cent over the period 1952 to 1987 (Coelli and Kingwell, 1992). This is just below the 3 per cent growth which is required to offset the declining terms of trade.

Another article in this issue of the *Journal of Agriculture*, 'Quality wool production at lower cost' (pages 4-6), has outlined that improved productivity in the sheep enterprise is driven by a change to late winter lambing. It has been estimated that for a typical farm in Kojonup with 6500 sheep, comprising 2600 breeding ewes, changing to later lambing can generate an extra $12,000 profit a year. This is the value of reduced supplementary feeding costs and an extra 1000 sheep that can be carried on the property.

The increased carrying capacity is achieved because ewes lambing in late winter have lower nutritional requirements at the break of season than ewes lambing in autumn. Lambing in late winter allows farmers to defer grazing of pasture paddocks at the break by grazing ewes on paddocks being prepared for cropping.

The quality and quantity of pastures at the break is most important because it dictates how much stock can be carried on a property and wool cut per hectare. Management practices that increase the growth rate of pastures at the break will be most valuable. These may include the selection of better pasture species or more appropriate fertiliser applications.

**MIDAS results** have shown that if the inherent productivity of pastures can be increased by 10 per cent, then stocking rate could be increased by 1.5 DSE/ha and farm profit improved by $13,500 (see Figure 3).

**Improving economies of scale**

In the past farmers have bought more land to increase farm size as an effective means of combating declining terms of trade. The profitability of expanding farm size needs to be assessed carefully to determine whether the cost of borrowing capital can be covered by receipts from the larger farm.

MIDAS studies have shown that if farms in the Great Southern woolbelt with fewer than 9300 sheep could struggle in future to meet the prerequisites for viability, namely that all operating costs, fixed costs, capital depreciation and debt repayments are met.

For example, a farm with an average level of management and productivity needs at least 6200 sheep to sustain a sheep grazing business free of debt at a market indicator of 550 c/kg for wool. If the farmer needs to finance annual debt repayments of $25,000, the minimum flock size is estimated to be 9300 sheep. These estimates vary considerably depending on the wool price and farm productivity (see Table 1).
Although economies of scale can be achieved by increasing farm size and sheep numbers, two factors may offset these gains.

- In addition to debt, fixed costs per hectare may actually rise if a great deal of capital improvements need to be made on the newly purchased land.
- Productivity per hectare may decline as management expertise becomes more thinly spread across larger farms.

**Improving prices received for products**

Several years ago when fine wool was selling at a large premium to broader wool, many wool growers contemplated using grazing management to 'fine' their clip by 1 or 2 microns. This is a profitable exercise provided the percentage improvement in price through finer fibre diameter exceeds the percentage decrease in wool cut per hectare and covers the extra costs involved in finer the clip. This is one example of how the price for products can be increased by improving their quality.

Other possible ways of obtaining higher prices for farm products are:

- Sell products into high value markets. This is often referred to as product differentiation and is achieved through meeting the exact specifications of the consumer.
- Market a product as a 'brand' to obtain a premium price.
- Partially process a raw product so as to add value to the commodity.

It is important to remember that while the technology may exist to produce better products which attract higher prices in the market, the costs involved in adding value can sometimes outweigh the extra returns.

**References**


**Table 1.** The minimum flock size needed to cover short and long term costs varies between 3500 and 9300 sheep depending on wool price, productivity, debt commitments and cropping practices. Overhead costs are assumed to be $36,100 and value of plant to be $60,900.

<table>
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<th>$25,000 a year debt repayments Wool price (c/kg clean)</th>
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<td>Minimum flock size</td>
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<td>(Traditional cropping)</td>
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