WOOLPLAN AND ITS RELATIONSHIP TO IMPROVEMENT OF WOOL PRODUCTION

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INTRODUCTION

WOOLPLAN is the Australian scheme designed to meet the performance recording needs of ram breeders of the non-pedigreed wool breeds of sheep. The scheme was launched in March, 1987, and a review of its implementation within the wool industry of Australia is now timely.

This paper discusses the extension (promotional and advisory) campaigns supporting the implementation of WOOLPLAN, the achievements in the 2 to 3 years of operation, and the improvements that could be made.

PAST PERFORMANCE RECORDING SCHEMES

In Australia, performance recording schemes were initially developed for Merino sheep in the 1950s, on a regional basis. These schemes did not receive wide support. Many stud breeders gained the impression that objective measurements were recommended as the sole basis for selection and resisted adoption (Butt and Kearins, 1987). Schemes which required pedigree records were largely ignored by Merino breeders, as few record pedigrees. In contrast, the Trangie Fleece Measurement Service has achieved a high adoption rate. Launched in 1976 for breeders in NSW, the service was closely tailored to industry practice, was initially free and has been vigorously supported by government advisers in NSW (Butt and Kearins, 1987).

In more recent times, a desire by breeders, researchers and extension officers to develop a national performance recording and evaluation scheme for the wool and sheep meat industries led to the development of two schemes; one was aimed at the non-pedigreed flocks in the wool industry, which became WOOLPLAN, and the other was aimed at the terminal sire breeds of the sheep meat industry, which became LAMBPLAN. This paper only deals with the WOOLPLAN scheme.

DESIGN OF WOOLPLAN

WOOLPLAN is described in detail elsewhere in these proceedings (Brien and Ponzoni, 1990). In summary, WOOLPLAN has flexibility in breeding objectives and selection criteria through the provision of options, but presentation of results and data processing are standardised. It ranks sheep which are contemporaries within flocks, but currently makes no comparisons between sheep born in different flocks. Fleece-testing laboratories provide the WOOLPLAN service and are accredited to do so by the WOOLPLAN Special Projects Committee (WSPC), which consists of representatives of breeders, research and extension bodies and the laboratories themselves. Extension services are provided by state government agencies. A national WOOLPLAN coordinator of extension activities and the WSPC expenses are funded by the wool industry.

The decision to integrate WOOLPLAN with fleece-testing services was made for the following reasons: (i) previous recording schemes not integrated with fleece-testing services were not utilised, probably as they required double-handling of data by the breeder; (ii) fleece-testing services were well established with breeders and had the necessary computing facilities.
EXTENSION SERVICES SUPPORTING WOOLPLAN

Most extension campaigns on WOOLPLAN and related subjects are divided into two. One is aimed at ram breeders who are the main direct users of WOOLPLAN, and the other is aimed at the majority of woolgrowers, who normally buy their ram replacements from ram breeders (Brien, 1990). The primary importance of breeders and woolgrowers defining breeding objectives for their sheep flocks, before embarking upon a performance recording program or before buying rams, is being stressed. Management of the sheep flock so that accurate information is obtained from an objective measurement program is also being emphasised.

The implementation of a decentralised WOOLPLAN service has caused a few problems. Some fleece-testing services have been slow to develop the necessary computer software. To help overcome this problem, a software package has been prepared centrally and copies are used at seven of the ten organisations offering the WOOLPLAN service. This has also facilitated the checking of test data sets and the implementation of new developments.

Lack of integration of the six government extension agencies and the ten fleece-testing organisations offering WOOLPLAN in all but two cases has been another concern (Rose, 1990). In non-integrated situations, extension officers do not routinely receive copies of WOOLPLAN reports issued and the laboratory manager is often not familiar with the clients or their breeding programs. This can lead to the issue of inappropriate reports and the provision of a poor service. Further, inappropriate management of the sheep under test and poor wool sampling techniques on the farm can cause significant inaccuracies, which laboratory staff may not detect unless they have suitable methods in place. Breeders often focus attention on the accuracy of laboratory testing, which is monitored at WOOLPLAN-accredited laboratories via round-trials (Morgan, 1990) and is likely to be a much smaller source of error than errors associated with inadequate management of the sheep under test.

Efforts are being made to create closer liaison between laboratory staff and government extension services. Training courses for extension officers often involve laboratory staff, and extension officers visit laboratories to become familiar with fleece-testing procedures and problems that can occur. Newsletters which circulate to laboratories and extension services also help improve liaison.

The implementation of WOOLPLAN has highlighted a need for better trained extension officers. In particular, servicing the needs of ram breeders is a complex task, and requires an in-depth knowledge of genetic theory, animal breeding practice and industry diplomacy. Industry leaders have called for geneticists to offer paid consultancy services to ram breeders. Although some consultancies are being conducted, the concept has yet to be fully exploited. Even so, most of the general enquiries on WOOLPLAN will have to be dealt with by extension officers. Expert computer systems, which put the knowledge of geneticists in the hands of the extension officer, will facilitate the extension of WOOLPLAN. Some computer programs are already in use by some extension officers and breeders. However, these are mainly data base programs, designed to efficiently handle data (both objective and subjective) involved in selection programs and in the sale of rams (Rose, 1990).

Post-graduate training in animal breeding and genetics for extension officers is a priority, but few officers of government departments are willing or able to undertake 1 to 2 year courses. To help this situation, the University of New England is now offering a 13 week short course (S. Barker, personal communication).

A number of non-government service providers have established useful roles as intermediaries between breeders and fleece-testing laboratories. The services provided vary, but often incorporate the weighing of fleeces and of the sheep, the collection of wool samples and the manipulation of data before, and sometimes after, it is submitted to the fleece-testing laboratory. Direct logging of data, transfer of data by disk (and some electronically) is practised routinely by some operators. Given sufficient knowledge and the close relationship with clients, these services are well-situated to influence breeders to adopt objective breeding programs.
USE OF WOOLPLAN

In the year ending June 30, 1989, 1,416 WOOLPLAN reports were issued to breeders, with 80% by request (Brien, 1990). Assuming that the average user received 1.5 reports (i.e. the 1,416 reports were distributed to 944 users), 40% of the 2,400 potential users of the WOOLPLAN service in Australia would have received reports during 1988/1989. Further, among the larger batches of fleece samples (100 or more) tested by most laboratories, WOOLPLAN reports account for 77% of the reports issued (Brien, unpublished). These statistics suggest that WOOLPLAN is becoming well established with breeders, although only detailed surveys will indicate how they are using the information within their breeding and ram marketing programs.

In a large survey conducted in New South Wales, 91% of ram breeders listed improvement of fleece weight as a high priority in their breeding objectives, in harmony with other traits. This finding should reinforce the value of index recording systems (Casey, 1990), such as in WOOLPLAN.

The WOOLPLAN literature has alerted ram breeders in NSW to the opportunity for better planned and evaluated breeding programs (Kearins, 1990). This has not been accepted by all and has resulted in a segmentation of ram breeders into: (i) those with a high reliance on performance records, now interested in using Estimated Breeding Values (EBVs) and wishing to establish their own economic values; (ii) those who use phenotypic records, but question the accuracy of records, particularly EBVs calculated from test records collected at 10-12 months of age; and (iii) those not using performance records. Segment (i) and (ii) breeders are interested in combining repeat measures of traits to improve the accuracy of EBVs; this would give the latter confidence that EBVs are very useful selection and evaluation tools (Kearins, 1990).

A recent survey of commercial woolgrowers in South Australia found that 90% believe ram breeders should provide objective measurements on rams available for sale (Greenslade, 1989) which agrees with recent surveys in NSW (see Kearins, 1990). This interest should encourage ram breeders to become more involved with performance recording and WOOLPLAN in future years.

IMPROVEMENTS TO WOOLPLAN

Several technical improvements to WOOLPLAN have been suggested, which are:

- Updating of genetic parameters (e.g. Atkins, 1990).
- Use of two-stage measurement and selection procedures (Atkins et al. 1990).
- Use of performance records on collateral relatives in estimating EBVs (Ponzoni, 1988).
- Use of other characters as selection criteria in an index (e.g. Purvis, 1987).
- Basing sire EBVs on progeny records from more than one lambing (Atkins, personal communication).

To date, the most pressing need has been to establish WOOLPLAN in its current form and create a suitable infrastructure for laboratories to quickly incorporate new developments. The developments listed above are now appropriate to incorporate into the scheme.

Many breeders need little change to their management practices to effectively adopt the two-stage measurement and selection procedures, which can increase genetic gain by 10 to 25% over one-stage methods (Atkins et al. 1990).

With the development of sire-referencing schemes within the Australian wool industry (Lewer, 1987), incorporation of across-flock comparisons into WOOLPLAN has been under consideration. This may involve data processing at a central location, as few laboratories yet have the necessary computing power or statistical knowledge to cope with BLUP-type analyses.
CONCLUDING REMARKS

Perhaps the largest contribution that WOOLPLAN, as a nationally coordinated scheme, has made to the Australian wool industry as a whole has been to provide a focus on sheep breeding programs. Tangible evidence of improvement in the rate of genetic gain in industry flocks will not be available for a number of years. The wool industry should consider setting up a well-designed program to monitor genetic progress. This might be available as an adjunct to a national sire referencing scheme.

A continuing commitment is necessary from the wool industry and the state governments in Australia if the impetus WOOLPLAN has created is to be fully exploited in the long term.

ACKNOWLEDGMENTS

The salary and operating expenses of the national coordinator for WOOLPLAN and the operating expenses of the WOOLPLAN Special Projects Committee has been supported by a grant from the Wool Research and Development Fund on the recommendation of the Australian Wool Corporation.

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