AN EXPERT SYSTEM FOR THE EXTENSION OF KNOWLEDGE ON SHEEP REPRODUCTION

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The problem *in* delivering sound extension advice on sheep reproduction is associated with the extent and detail of information available for both sexes e.g. Lindsay and Pearce (1984).

An expert system is a computer program that is well suited to processing quantititive and qualitative details. It is also able to handle information that is known to be variable by assigning a probability or certainty factor. An example of the need for this facility is provided by sheep response to lupin supplementation to improve reproductive response. While for rams the response may be consistent if the timing is correct, it is known to be variable for ewes (Oldham *et al.* 1978; Oldham and Lindsay 1984). Therefore, any advice will need to be conditional.

Expert systems provide a justification for any response. This is valuable at the non-specialist advisory level as it provides a clear indication of all elements involved in the decision making process. For experts, the system is transparent and so any logic may be questioned. This is a key difference to the "black box" that is often associated with traditional modelling methods.

Management decisions, such as those relating to nutrition and animal and flock management, may require general skills. On the other hand, products for controlling the breeding cycle such as progesterone and melatonin, require a more complete understanding of physiological events.

In addressing these varied demands for information, expert systems can offer extension personnel a source of advice that utilises current research knowledge and a consistent pattern of explanation. Development is underway to convert sheep reproduction findings mainly from Merino flocks in southern Australia into such a system using a commercial software shell on a microcomputer.

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