RESOURCE MANAGEMENT FOR SUSTAINED PRODUCTIVITY

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INTRODUCTION

Land degradation in its many forms represents Australia's largest and most important environmental problem. If allowed to continue at the rate at which it is now proceeding it could lead to such substantial losses from agricultural and livestock production that Australia's rural landholders will no longer be able to meet the nation's needs for food and fibre, let alone support a viable export industry.

The key to the effective control of land degradation lies in the application of sound resource management concepts and widespread adoption by landholders of a land management ethic based on the concept of sustainable production in perpetuity. So far as grassland production is concerned, the secret to sustainable productivity must lie in the development of conservation farming practices which integrate sustainability with profitability. If long-term conservation of Australia's land resources is to be achieved, we must develop ways and means for making conservation pay.

THE LAND DEGRADATION SPECTRE

Much attention has recently been given to the magnitude and extent of Australia's land degradation problems. It is not yet clear that the majority of people appreciate the significance of these problems or have any real idea of how they might be overcome.

These problems are most apparent in the form of water and wind erosion, whose consequences can be most spectacular and make good television material. Nearly fifteen years ago a national survey identified that more than half of Australia's cropping and grazing lands were in need of soil erosion treatment, at a total cost that translated into today's money values would be well in excess of $2 billion. There is no recent evidence to show that the extent of this damage has in any way diminished.

More recently, evidence of other kinds of land degradation has emerged. Perhaps the best publicised is the waterlogging and salination that has occurred extensively throughout the irrigation districts of New South Wales and Victoria, which has lead not only to significant losses from irrigated production but also to the development of high salinity levels downstream through the River Murray system.

Less well-known, but rapidly extending, is the problem of dryland salinity, a consequence of tree-clearing on sloping land with inherently high in-situ salt levels. This problem, which first became serious in the wheatlands of Western Australia, has become widespread in Northern Victoria and is now extending up through New South Wales along the western slopes of the Great Dividing Range.

Less well-known again, but perhaps of even greater economic significance, are two problems which are a direct consequence of apparently normal farming practices - soil structural decline and soil acidification.

Soil structural decline is becoming widespread through the north-western cropping lands of New South Wales, where the continued use of heavy cultivating and harvesting machinery on inappropriate soil types has lead to soil structural breakdown and serious production losses. Soil acidification is becoming increasingly common on pasture lands in the southern part of New South Wales and in northern Victoria, where the continued application of fertilisers on acid soils has led to increasing acidification and increasing loss of production. This is an insidious problem, because the apparent solution to the problem of falling productivity is to add more fertiliser, which only makes things worse.

There is no accurate measure of the total effect of all these problems. An educated guess, based on those figures that are available, would suggest that the overall loss of productivity to Australia's cropping and grazing lands from all these forms of land degradation is now of the order of several hundred million dollars per annum, and appears to be increasing. It is clear that solutions must be found and implemented on the grand scale as a matter of urgency.

THE RESOURCE MANAGEMENT CONCEPT

Resource management involves the deliberate manipulation of resource-producing natural systems in such a way as to optimise their long-term productivity to man. A grassland system, developed and managed by man for livestock production, comes within this definition. Bad management, which is synonymous with exploitation, involves the over-utilisation of the resource in such a way as to maximise short-term gains with little regard for the future productivity of the system or for the effects of its exploitation on wider systems. Ultimately, a grazing paddock forms part of a sub-catchment which itself forms part of a larger catchment. The effects of bad management may be apparent not only in a progressive loss of productive capability from the paddock itself, but also, if the vegetative cover is allowed to deteriorate and the soil structure is allowed to become damaged, to problems of soil erosion and changes in the hydrological regime which may extend well beyond the paddock into the catchment system of which it is a part.

It follows that the management of a paddock may have a substantial effect on the management of a catchment and on the resources that catchment can produce, particularly its land and water resources. Mismanagement may affect not only the landowner responsible but his downstream neighbours and ultimately, the entire community of the catchment of which his property forms a part.

Catchment management, then, is something in which all the occupiers of a catchment have a part to play. This is the underlying concept of the approach to land and water resource management which is called integrated catchment management, an approach which has been officially pursued by N.S.W. Governments since 1984, when what is now called the "Total Catchment Management Policy" came into being.

"THE TOTAL CATCHMENT MANAGEMENT" APPROACH

"Total Catchment Management" involves the integrated and co-ordinated management of catchment systems in such a way as to use land within its capability and retain the long-term sustainability of all the catchment's land and water resources. It requires the co-operation of landholders within the catchment and indeed, all members of the catchment community, and is not something which can be achieved by governments alone. In the final analysis, effective catchment management depends upon the co-ordinated efforts of individual catchment landholders, who must make the approach effective by working at the grass-roots level through a "Bottom Up" mechanism.

For such an approach to succeed, individual landholders must clearly recognize and understand their key role in the management network and be willing and able to make their own decisions, where necessary in consultation with their neighbours, about the best way to achieve sustainable and profitable production for their own conditions.

TOWARDS A SOLUTION - MAKING CONSERVATION PAY

Over the past thirty years a great deal of research into soil erosion has gone on in Australia.

Curiously, comparatively little of this research has looked into the economics of soil conservation, and particularly, into ways and means for making conservation profitable.

Some of the research which has been undertaken has demonstrated that the adoption of good conservation practices can lead to an increase in property values. Some of the new developments in cropping practices, such as strip cropping and minimum-till techniques, have also been shown to be worth adopting because they not only save soil but also reduce farming costs and so increase overall profitability.

There appears to have been less research directed towards the development of conservation practices on grazing land which result in improved profitability. The conventional treatments for grassland, which include the construction of graded banks and waterways and where appropriate, reduced stocking levels, tend to lead to reduced returns.

If we are to be successful in overcoming Australia's land degradation problems, it will require more than the development of a land conservation ethic and the goodwill and co-operation of landowners. If conservation is to be fully effective as a farming practice, the concept of sustained productivity must be integrated with the concept of sustained profitability. This, it seems to me, constitutes one of the more important problems facing those who are concerned with grassland research; the need to develop ways and means for making conservation profitable.