

An economic analysis of native grassland on the Riverine Plain of south-eastern Australia

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Summary

Public policy goals for vegetation management on farms include maintenance of biodiversity and long-term agricultural productivity, and minimising negative off-site effects of farming activities (Environment Australia & Department of Primary Industries and Energy 1997). Achieving these goals in the case of native grasslands presents particular difficulties as they are the most threatened ecological community in Australia (Kirkpatrick *et al.* 1995) with many of the remaining areas of this community being on private land. This report presents the results of an investigation into the technical and economic aspects of managing native grasslands on farms on the plains of south-eastern Australia.¹ Particular attention is given to how changes to the management of native grassland might affect the operation and profitability of the whole farm business.

Farms are businesses organised around generating income for business survival and profit. How different parts of the farm contribute, or might contribute, to the profitability and cash flow of the farm business is therefore central to whether or not the public policy goals will be achieved. Two aims of this report are to determine the contribution of native vegetation to the farm business, and to demonstrate appropriate methods for determining and evaluating this contribution. This understanding is then used to consider incentives and other mechanisms for achieving public policy goals.

This report is based on a detailed examination of the human, technical, economic and financial situation of four grazing and cropping farms, two near Echuca and Bendigo in Victoria (the Northern Plain) and two near Hay and Deniliquin of New South Wales (the Hay Plain). The case study approach is used to draw out the key processes that are operating on these farms which are likely to affect the future of the native grasslands.

The grasslands

Native grasslands are integral to the operation of each of the four farms. The farms have large areas not sown to introduced pasture or crop. Pastures composition varies enormously within and between farms. One Victorian property includes three small grasslands of between 40 and 130 hectares which are of very high conservation significance. Plains-wanderer, a threatened ground-dwelling bird, has been sited on the other Victorian property, though its native grasslands are not particularly diverse. From a botanical perspective, diversity of species may be higher on those properties in New South Wales than on those in Victoria. The dominant species varies from

¹ Results for case studies on hills and tablelands are presented in a related report.

cottonbush on parts of the properties in New South Wales to native perennial grasses in some paddocks on all the properties and to naturalised annual grasses in others. Naturalised annual grasses make an important contribution to feed supply, particularly in late winter and early spring, even in grasslands with conservation value.

Current farm financial position

The current position of the case farms differs considerably. Expected annual return to capital ranges from one per cent on a sheep only property to over five per cent on a property reliant on cropping. Expected annual operating profit after tax range for the farms from \$11,000 to \$72,000. Expected annual net cash flow ranges from -\$7,000 to \$47,000 - this is the sum available for equipment replacement and re-investment after a consumption allowance, interest payments and land lease costs have been deducted from net farm income.

The better figures are for the farm reliant most on cropping. However, these figures disguise the fact that this Victorian property is located in marginal cropping country with poor soils and erratic rainfall and has faced large losses in some years. Another property in New South Wales irrigates without a secure entitlement to water. Losses in poor years drag back the average annual net income which must be increased if both these properties and a third one, a grazing only property, are to stay in farming for the long-term. The exception is a property run by an eighty year old which is likely to be sub-divided and sold within 10 years.

Options for the future

The value of native grassland in the farming system depends on how alternative land uses might change net farm income. A range of conservation management and development options were tested on each farm.

Fencing out 2.5 per cent of the property has been tested for each case farm. Retiring such an area from production is estimated to reduce annual net farm income by between \$900 (\$42/hectare) on the smallest property and \$3,000 (\$16/hectare) on the largest. Such reductions are not likely to be easily accommodated on any of the case farms when annual net farm income is sometimes negative and there are competing uses for funds such as equipment replacement and investment in farm development. Resting these areas during seed set in spring rather than retiring land would be more manageable as income foregone would be considerably lower.

Lighter stocking of native grasslands in some circumstances might improve conservation values and prevent a decline in their long-term productivity. Two of the case study farms, one in Victoria and one in New South Wales, provide prospective models for the trade-off between short-term income and conservation and long-term productivity benefits of lighter stocking. The benefits in terms of improved livestock performance, reduced drought costs and changed farm overhead costs depend very much on the specifics of each farm. On one property, by contrast to the other, the benefits are expected to almost outweigh the direct effect of the reduction in sheep

numbers. However, when compared to a cropping-pasture sequence, which is the most likely alternative land use on this property, the results are not favourable.

The economics of **planting saltbush** was tested for the two New South Wales properties. In one case saltbush would be established mainly to allow the one-third reduction in stocking described above to be achieved. In the other case, saltbush would be used to provide the feed required to even out income fluctuations in poor years. It is concluded that some plantings are expected to be profitable, but that caution is advised for both case farms before embarking on a major planting program. While saltbush plantations were profitable on some of the scenarios, results were very sensitive to the expected stocking rate and to other key variables.

Cropping areas of native grassland is investigated on the two Victorian properties. As might be expected, cropping is found to be a more profitable use of grassland areas than grazing. However, care is needed in estimating the gains because crucial factors like the length of the pasture phase in the rotation and expected fluctuations in price and yield need to be considered. The net present value expected from the cropping-pasture rotation on one case farm is \$347 and on the other \$164 (at 15 per cent real discount rate).

Reconciling public goals and private interests

It was found that conflict between public policy goals and private interests was present on two of the case farms, and potentially so on the others. None of the actions which might maintain or improve conservation management - fencing out, lighter stocking or saltbush plantations - are unambiguously profitable. Conversely, cropping native grassland is profitable on the two Victorian properties.

Incentives may be justifiable to assist in the transition to farming systems that are viable in the long-run if the changes meet public goals but have insufficient private incentives. Reducing stocking levels and planting saltbush are two such changes that may have merit from a conservation perspective. The approach which is proposed below is a different perspective on rewarding to farmers for the provision of conservation services (Binning & Young 1997) because it not only focuses on the future of the conservation area to be managed, it also emphasises the future of the farm itself. There are five levels of influence or opportunity that can assist in designing programs to improve conservation management on private land.

Level one. Targeting the site of conservation interest is usually seen as the most important - because inappropriate management might have irreversible consequences. Accordingly, conservation agencies should pay for conservation services, make wise use of regulations, apply the duty of care principle as well as encourage development of alternative products from native grasslands. A system of covenants or management agreements for particular areas with high conservation value areas is also required.

Level two. The next level up from the site-specific is the farming system level. It requires attention because grazing and other management practices on the native grasslands are part of a property-wide management system. Incentives to bring about

changes might, for example, target how grazing systems are organised or initiate saltbush establishment (with the support necessary to ensure the success of trial plantations and so minimise public involvement in establishing further plantations).

Level three. The farm business level is where the native grassland and how it is managed can be seen in the context of farm business goals and how all resources available to the farm business, including labour and capital, are utilised. If the directions that farmers might take are identified, and the economic efficiency of alternative actions are evaluated taking into account risk and uncertainty, then the role of the native grassland in the farm system is being assessed in the light of the best information available. This provides a sound basis for devising actions to achieve public policy goals, or to convince farmers to change private goals.

Level four. The ownership and management structure of the farm business will change over time, and so will the people making the decisions affecting native grasslands. This level is associated with, but distinct from, level three.

Level five. On-farm activities are influenced by the local community, farm advisors, policy makers and players in the marketing chain (from inputs to end-products). One recommendation will be singled out as particularly worthy of attention. The proposal is to pro-actively identify the individual needs of farmers with native grasslands and tailor advice to meet those specific needs. Using farm management consultants is the recommended means of achieving this. Farm management consultants when engaged by farmers to provide annual advice on achieving their production and business goals can and do have a major impact on the directions taken in a farm business. This expertise can be turned to advantage by giving them a major role in achieving conservation management goals. Drawing on expert ecological advice where appropriate, consultants could assist the owners identify how conservation goals might be achieved within the farm business as it might be organised in the future, and then assist in annually monitoring progress.

It is expected that co-ordinated targeting of conservation programs to the five levels outlined above will reduce both the private and public costs of achieving conservation goals. It will reduce the private costs because conservation management will be increasingly treated as an integral part of the farm business operation. The conflict between public and private interest will be overcome in some circumstances, but not others. The overall requirement for public expenditure should be significantly reduced, provided that the up-front public investment required to bring about the shift in the way conservation management is treated within the farm business is made.

Finally, it is unlikely that the publicly stated goals relating to native grassland on private land can be achieved without a major injection of funds via an incentives program. One of the findings of this report is that while directing such funds at management of native grasslands is essential, funds may also be fruitfully spent in achieving change in farming systems and in the farm business.