The Changing Relationship Between Private and Public Sector Agricultural Extension in Australia

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A changing agricultural extension environment has seen the private sector in Australia assuming an increased responsibility for the delivery of agricultural information to farmers. This paper is a "work in progress" report of a project being undertaken, with RIRDC funding, to document the public and private sector organisations involved in agricultural extension in Australia and the extent of the co-operation and linkages between them. It reviews the changing roles of the R & D corporations, the re-structuring of the state departments of agriculture and the increasing private sector involvement in agricultural extension activities. It highlights some of the innovative approaches that are being taken to foster the links between the sectors. With regard to experience from other countries, it discusses issues that are affecting, or have the potential to affect, the flow of information between the sectors, and hence ultimately to farmers.

Keywords
agricultural extension, public sector, private sector, privatisation

Introduction

Over the last decade, economists' ideas about public goods, market failure, crowding out and the marginal excess burden of taxation have strongly influenced changes in the role and delivery of government funded agricultural extension. Rapid change is occurring in all states of Australia except Tasmania where it has already occurred. These changes follow, and to some extent mirror, those which have occurred in New Zealand. The changing agricultural extension environment in Australia reflects a world-wide trend towards the privatisation[1] of agricultural extension services (Johnson *et al.*, 1989; Rivera and Gustafson, 1991; Dancey, 1993). This trend appears to be related to factors such as the declining relative importance of agriculture in the economy and budget pressures on governments, as well as increasing influence of economists' theories and prescriptions within government.

Agricultural information is increasingly being perceived by policy makers to have 'private-good' characteristics. As farming has become more specialised, farmers are requiring more sophisticated and individually-tailored technical, management and marketing information. Information which is of value only within a local region or

[1] The concept of "privatisation" is used fairly loosely when applied to the restructuring of agricultural extension and can include a variety of measures other than a full transfer of ownership of the agency to the private sector. These can include contracting out ('out-sourcing') delivery of the service to the private sector, as well as cost recovery measures undertaken within the public sector agency.

even on a single farm lacks most or all of the public-good characteristics traditionally used by economists to justify government investment in agricultural extension. Without this justification, government investment would be economically inefficient, and Rivera (1996) refers to *"the onslaught of conservative ideology emphasising efficiencies over welfare"*. This refers to the ideological shift by governments to principles of 'user-pays' and accountability. Carney (1995) sees the changes in the public sector as going:

> *"....well beyond one-off privatisations and entails a far more fundamental alteration of the relationship between the state and the individual, based upon a philosophy of liberalisation and the primacy of efficiency"*. p. 521

Cary (1996), however, considers that while increased efficiency is often touted as the reason for privatising public sector services, a desire for a reduction in government spending frequently lies behind this reasoning.

In the expressed desire to have a better (i.e. more relevant, more efficient, better targeted) extension service governments have revitalised existing systems and, in some cases (e.g. New Zealand and Holland), privatised public extension (Rivera, 1996). Policy changes made in the 'revitalisation' of public sector agencies have included decentralisation, implementation of the 'purchaser-provider' model[2], instigation of cost-recovery mechanisms, cost-sharing, and participation of stockholders in development of initiatives and in other decisions that affect them. The goals of the desired changes (in contemporary jargon) are illustrated in Figure 1.

The results of these policy initiatives have been increasing private sector participation in the delivery of agricultural extension services. Farmer organisations, co-operatives and groups; seed, fertiliser and chemical companies; multi-nationals; marketing boards; research and development corporations; and university departments are some of the many players in the new extension environment. As Carney (1995) states:

> *"The multiplicity of alternative service providers and institutional configurations which have appeared in the agricultural sectors of countries where public sector retrenchment is reasonably advanced is both exciting and daunting"*. p. 521

This paper is a "work in progress" report of a project being undertaken, with RIRDC funding, to document the public and private sector organisations involved in agricultural extension in Australia and to review the extent of the co-operation and linkages between them. It briefly considers the re-structuring of the state departments of agriculture and the increasing private sector involvement in agricultural extension activities, and then goes on to discuss some of the issues we see emerging in the changed extension environment. We contend that, in some cases, the new systems introduced in the quest for efficiency seem to have introduced a new, arguably greater, set of inefficiencies. Proponents of reform have not adequately considered market failure due to the public good characteristics of information and due to transaction costs.

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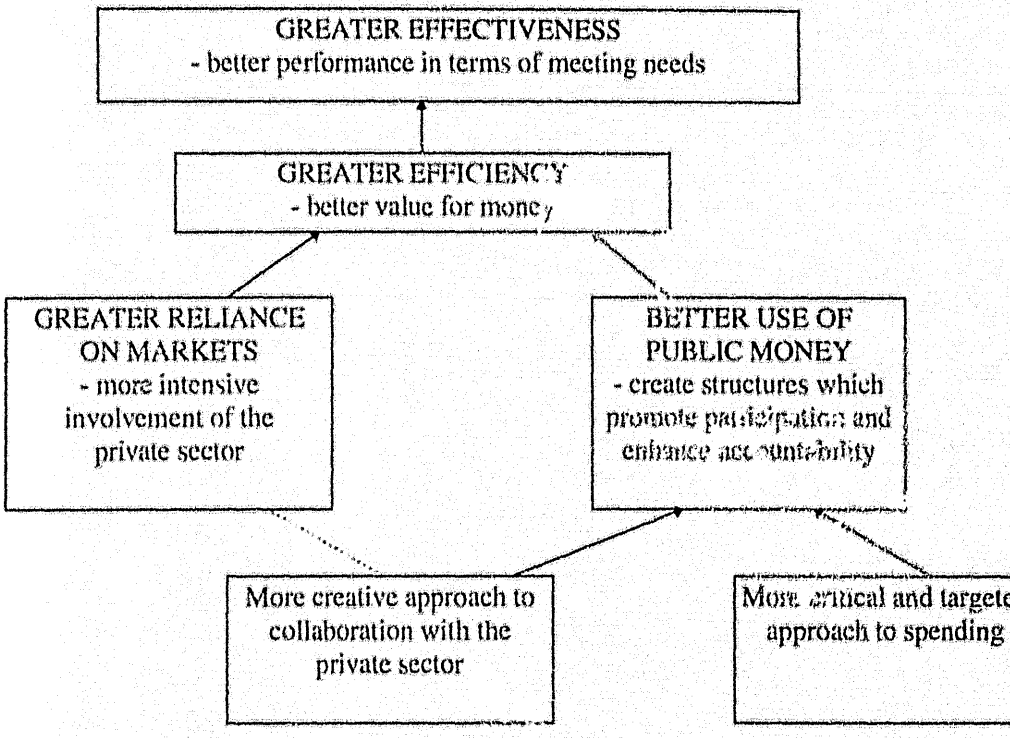
[2] The purchaser-/provider model is based on the theoretical separation of, or distinction between, the 'purchaser' and 'provider' of services. The concept is to create a market in the provision of services, with the aim of achieving the efficiencies usually associated by economist with markets.

Figure 1. The goals of changes to extension services (Source: Carney, 1995)



Traditional Delivery of Agricultural Extension in Australia

The major providers of publicly funded agricultural extension have been the state departments of agriculture or primary industries. Historically, Australian agricultural extension has been characterised by an effective public sector with a strong emphasis on production-based technology transfer (Cary, 1993). Marketing and management advice has not been a large component of the extension from the public sector, being more the province of the private sector, particularly private farm management consultants.

This emphasis on production-based technology transfer has meant that there have been good links between research and extension personnel working within the state departments of agriculture. They were often housed in the same building, and researchers running field trials in country areas relied on the active participation of district advisory officers to oversee their trial work. For example, Marsh (1997) comments on the close working relationship of researchers, extension officers and farmers in planning and conducting field trials to overcome early problems with the seeding establishment of lupins in the eastern wheatbelt in WA. Much public sector extension has of need been 'problem-centred' (Cary, 1993).

Australia has also had a strong private sector involvement in the delivery of agricultural information. This has been expanding rapidly in recent years and, in particular, rural resellers and distributors have been playing an increasing role in both the delivery of product-related and more general information (Prinsley *et al.*, 1994). Table 1 indicates numbers of private sector staff involved in extension as estimated by Crook (1994) and published by Prinsley *et al.* (1994).

However, despite this large private sector involvement in agricultural extension, there is evidence of poor private sector input into public sector policy and research. In a report to the research and development corporations on the role of the private sector in extension, Prinsley *et al.* (1994) comment that there has been limited communication and information flow between the input and output sectors and between the public sector and agribusiness, with most communication and exchange of information occurring at an informal level based on personal relationships. This observation is supported by Bedbrook (1995) who surveyed 48 (out of 55) members of the Australian Association of Agricultural Consultants (WA) Inc. and found that 73 percent of those surveyed rated personal contacts as their top information source

Table 1. Numbers of private staff sector involved in extension (from Crook, unpublished report, 1994)

Component Groups	Numbers
Distribution agronomists	500
Distribution sales staff	5000
Supplier company technical and sales people full time equivalents	600
Association of Agriculture Consultants (AAAC) members	200
Agricultural Technologists of Australia (ATA) - (mutually exclusive to AAAC)	150
Rural Counsellors, Greening Australia, Land Care	200
Cotton	100
Vets not in AAAC	?
Not included - farmer groups, media, breed and special interest groups, Accountants, Banks and Finance	-
Total	**6750-7000**

within Agriculture WA. Bedbrook (1995) also reported that most AAAC(WA) consultants perceived that they have very little input into Agriculture WA research and policy directions (see Table 2). Fifty eight percent had no formal links with Agriculture WA (38 percent were on Agriculture WA advisory committees) and 33 percent thought informal links on a personal level were satisfactory. Fifty seven percent had little or no input into Agriculture WA as to what research should be undertaken and the type of information they needed, although 96 percent thought it either important or extremely important that they have that type of input. This finding encapsulates the challenge that faces public and private sector players involved in agricultural research and extension.

Table 2. AAAC(WA) consultants' perception of formal links with Agriculture WA

	% of consultants
1. How useful are consultants' links to AgWA, in terms of information gained by consultants?	
Highly useful	21
Quite useful	36
Minimally useful	14
Not useful	29
2. Amount of information consultants input into Agriculture WA	
High input	6
Some input	35
Little input	42
No input	15
3. Perceived importance of input into Agriculture WA	
Extremely important	48
Important	48
Don't know/undecided	2
4. Consultants' views on the development of formal links	
Agree with formal link proposed[a]	63
Informal links are satisfactory	33
Links should be established between AAAC and AgWA	21

[a] The formal link proposed was that AAAC(WA) could decide on consultants who would be the contacts for different specialist areas and circulate this list within Agriculture WA. These consultants could then be contacted from people within Agriculture WA for comment on research, would be acting on behalf of AAAC(WA), and would give their time free of charge.

Recent Changes in State Departments of Agriculture and Primary Industries

State Departments of Agriculture have all had a period of review and restructuring. In some states this is relatively complete (e.g. Tasmania and NSW), while in others it is still in progress (e.g. WA, SA, Queensland and Victoria). In general, the reviews have resulted in the policy directions outlined in Figure 1 being put into action. There has been an emphasis on 'outcomes', 'partnerships with industry' and 'market-focussed' priorities. The Queensland Department of Primary Industries (1996), for example, states that *"we have reorganised DPI service delivery structures in order to ensure that we can achieve the* [stated] *outcomes"*, and lists the key features of the new organisation as:

- *fewer layers of management*
- *removal of regional management levels*
- *focus on servicing individual industries*
- *industry partnerships through institutes*
- *coordination across industries*

The newly formed Victorian Department of Natural Resources and Environment (DNRE)[3] (1996) states that *"the shape of the new Department is heavily influenced by the expectations of Government and our philosophy of focussing on customers and outcomes."* Primary Industries South Australia (PISA) have developed a set of guiding principles that include understanding customers' needs, increased community ownership and increased industry ownership. The Journal of Agriculture WA (1995) quotes their CEO saying *"the key to many of the new directions will be a strengthened partnership between producers, agribusiness and the community in setting strategic directions and priorities"*.

In many cases the re-structuring process is still underway so it would be premature to judge the results too harshly. In addition, as noted by both Cary (1993) and Carney (1995), it seems that beyond the ideology of efficiency, and the rhetoric of effectiveness and accountability, there are also political considerations that affect policy directions. In WA, for example, goals appear to have included regionalisation for reasons separate to agriculture, and lower government expenditure, which is probably only partly related to increasing economic efficiency.

The following points illustrate some of the changes that have occurred during the restructuring process.

a) Industry partnerships

All state departments of agriculture are moving towards a "market-driven" philosophy of service provision. That is, they espouse to be responding to the expressed needs of their clients, and are setting up formal links with industry to attempt to ensure that industry needs are met. For example, within Agriculture WA there now exists a range of formalised 'industry partnerships'[4] attached to the 10 'programs'. These

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[3] An amalgamation of the Department of Conservation and Natural Resources, Department of Agriculture, Energy and Minerals (excluding Energy, but including Energy Victoria), Office of the Valuer General, Office of Geological Survey, Office of the Surveyor General, Land Titles Office and Office of Geographic Data Coordination.

[4] The Cereals Partnership Group, for example, consists of 4 farmers, 3 processors, 2 private consultants with marketing expertise, and the Agriculture WA program manager for the Cereals Program.

partnerships have a direct input into the strategic planning process to assess industry priorities, formulate the strategic plan and define the program operations. Similar formalised arrangements are being instigated in other states.

b) Adoption of the purchaser-provider model

All state departments seems to be moving towards various interpretations of the purchaser-provider model as an organisational structure. This model allows for "activity-based" accounting and this is seen as essential to improve accountability. The implementation of the purchaser-provider system is being done in different ways. Within Agriculture WA, program managers 'purchase' services (e.g. research hours) for their specified program, which are 'provided' by personnel who can theoretically be employed from either within or outside Agriculture WA. Agriculture WA staff can have their time 'purchased' by a number of different programs. There are staff (currently still employed as 'residuals') who do not fit the priorities requirements of any particular program - i.e. they cannot 'provide' the required services. South Australia have separated their research organisation (South Australian Research and Development Institute - SARDI) from PISA, which has the responsibility of service delivery of agricultural information to farmers and industry. PISA now 'purchases' required research from SARDI in order to meet their desired delivery outcomes. The Queensland DPI view their interpretation of the system as a 'funder-provider' model, with a slightly difference emphasis to the purchaser-provider model.[5] In the latter, there is more influence from the funder who says "we want this", and someone provides. The purchaser "buys" and controls the provider. In the Queensland system, their advisory boards have input into what will be the priorities to provide, rather than what will be the priorities to fund.

The formation of industry partnerships and the adoption of the purchaser-provider model follow a worldwide trend (Rivera, 1996) towards a policy of financial, structural and managerial decentralisation for public sector agricultural agencies.

c) Out-sourcing

The adoption of the purchaser-provider model has enabled the agencies to engage in what is called 'out-sourcing' or the contracting out of services. Agricultural consultants and contract staff are now able to be employed to deliver required extension or research, if it is judged that they can do this more efficiently or effectively. This is already happening. Questions of efficiency aside, as Cary (1996) notes, a real benefit associated with outsourcing is that it attracts private sector funds into areas that were previously the responsibility of the public sector.

> *".....one of the attractions of outsourcing for governments is that funding partnerships can be formed between government and industry, or government and rural research and development organisations to jointly fund technology transfer activities. In Australia in the past it has proven difficult to get such organisations to agree to contribute to government delivered extension services, because their contributions are seen as allowing the government to reduce its funding proportionately."* pp. 11-12

[5] John Childs, Qld DPI, pers. comm.

d) Differing degrees of integration or separation of agency responsibilities
State departments of agriculture and primary industries have been re-structured with various degrees of integration or separation from landcare/environmental state institutions and various degrees of research/extension separation. While Victoria, for example, has just one organisation - Department of Natural Resources and Environment (DNRE), other agencies have kept natural resources or forestry outside the agriculture portfolio. In SA, extension has been completely separated from research, with all research now being undertaken within SARDI. Such separation appears to run the risk of researchers becoming remote from current farming problems and farmers' perspectives. Other agencies have maintained their dual research/extension responsibilities, but have created extension specialists attached to specific programs.

e) Privatisation
To varying degrees all state departments are moving towards privatisation (i.e. adopting a "user pays" philosophy). This is causing considerable tensions in the effort to cope with conflicting demands to "get the information out" and to recover costs of information seen to have "private good" characteristics. A general development is that the public sector is starting to charge for the delivery but not the information. Services such as Ag-Fax (available in most states) fit this category. Tasmania has gone further towards privatisation than any other state. Prescribed rates are charged for one-to-one services at rates the Tasmanian DPIF considers comparable with those charged by private sector providers.

f) A re-direction of extension activities
There has been a developing focus on group-based activities although most agencies still claim (or concede, depending on their philosophy) that they will still be doing "some" one-to-one extension. There have been a proliferation of groups focussing on both technology transfer issues (such as Target 10, Topcrop, Beefcheque, Right Rotations, best practice groups, etc.) and those dealing more with awareness and management/lifeskills education (such as Farm Management 500, Property Management Planning in all its guises, Landcare, etc.).

The group focus of agricultural extension is only partly in response to agency cutbacks. It also represents a change in philosophical approach to extension; from the linear model of technology transfer to an appreciation of what has been termed the agricultural knowledge and information system or AKIS (Roling and Engel, 1991). This emphasises the knowledge possessed by, and flows of information between, all the players in the agricultural industry and community: farmers, departments of agriculture, consultants, agribusiness, rural society.

Additionally, under the AKIS model of extension it is appropriate that farmers should have more control over the information that they need and want and how it should be delivered. Groups are seen as the more appropriate medium to work in under this "demand-pull" (as opposed to "science-push") model of extension, with the extension officer often playing a role of facilitator.

> *"The demand pull approach is initiated by farmers identifying and defining their problems...In the wider and more representative sense of demand pull relevant to agricultural extension the solutions to problems defined by farmers*

are likely to be within the province of farmers' control, rather than requiring more sophisticated research...Such an approach can use existing community knowledge with the extension worker adopting the role of helper rather than the role of expert." (Cary, 1993, p. 340)

g) Pain

The restructuring process has not been without pain, and adverse reactions from sources both internal to and external from the agencies. For example, a phone poll made by the Western Australian Farmers Federation (WAFF) of its members indicated a substantial degree of dissatisfaction and uncertainty about the benefits to farmers of the re-structuring of Agriculture WA (see Table 3). In an article identifying the characteristics of sustainable institutions, Gustafson (1994) stresses the importance of internal support for changes, although admittedly his analysis is based on changed extension organisations in third world countries. However, common sense indicates that the impacts of changes on the views, motivation and morale of internal personnel are important. Gustafson (1994) states that:

"Regardless of the advantages of the new arrangements, what they replace and how the changes are implemented can create considerable problems." p 127

He goes on to say that the fact that *"most new systems reflect consolidation, reform and strengthening extension agencies rather than the creation of entirely new ones"* can be both a strength and a weakness in that they build on already working systems, but make the implementation of changes difficult.

Table 3. Results from the WAFF phone poll on the restructure of Agriculture WA (Source: The Primary Producer, Nov 1996)

	% of respondents		
	Yes	**No**	**Uncertain**
1. At present, do you believe the changes to Agriculture WA make it more relevant to your needs?	18	75	7
2. At present, do you agree with the increase in Agriculture WA's market focus?	35	54	11
3. Do you understand the business principles of the funder/purchaser/provider model adopted by Agriculture WA?	38	57	5
4. Have the changes adversely affected your ability to access Agriculture WA officers?	59	37	4
5. At present, do you believe the industry partnership groups allow farmers to have adequate input into the setting of Agriculture WA priorities and thus the allocation of resources?	22	64	14

The re-structuring process does seem to have caused some degree of staff uncertainty within the agencies. When talking to agency staff it is common to hear complaints of 'low staff morale'. There has been a loss of both research and extension expertise. In WA, for example, the changes have resulted in a situation where there is currently much more extension expertise in the private sector than the public sector. This will inevitably mean that extension activities will increasingly be out-sourced to the private sector. Of more concern, is the loss of top researchers to areas other than the agriculture industry. This has been of concern to the Research and Development Corporations who perceive that the re-structuring process has resulted in the loss to the industry of considerable intellectual capital 'owned' by the government and farmers.

Concurrent Developments in the Private Sector

a) A bigger role in agricultural research and extension

The private sector has not been slow to grasp the opportunities that have arisen, and a general observation is that it is growing rapidly and taking an increasing responsibility for service delivery of extension messages. Private consultants in Victoria and NSW are already running Farm Management 500 groups and Property Management Planning (PMP) groups. In WA, private consultants are involved in the planning that is going into the setting up of the state's version of Topcrop. They will certainly be delivering some of the extension component of the program. This seems certain to happen in all states, as the principle of out-sourcing is applied.

The private sector is also starting to do some of the trial work that was previously done by state departments of agriculture. For example: PISA has 'purchased' the services of a private consultant to run the trials at the Hart demonstration sites at Clare; the Cooperative Research Centre for Legumes in Mediterranean Agriculture (CLIMA) is running trials in conjunction with the Birchip Cropping Demonstration Sites (a group owned and run by farmers); Agriculture WA is reviewing their plant breeding programs with one possible option being to out-source this work. Fertiliser and chemical companies have conducted considerable trial work for many years, and public sector agencies are generally pulling out of these research areas. PISA, for example, no longer puts priority on work on crop nutrition and weed control[6].

Research and Development Corporations are actively courting private sector research. At the AAAC Annual Conference held in Canberra in August 1996, consultants were urged by the R & D corporations to apply for research funds. The Grains Research and Development Corporation (GRDC), for example, saw a major opportunity for consultants to play a role under their new emphasis of commissioning and negotiating research. They saw consultants as having an advantage under the new emphasis because they were used to doing jobs for an outcome rather than a salary. They also perceive consultants as having better links to farmers, especially leading farmers, and so being capable of 'better targeted' research. GRDC also wants to harness the power of input suppliers, and is encouraging extension provision in the grain industry through their networks.

[6] Mick Faulkner, Agrilink, SA, pers. comm.

Input suppliers are increasingly becoming involved with a broader range of activities: selling inputs, providing extension and marketing the final product. For example, SBS Rural IAMA has recently announced the formation of a grain marketing subsidiary, Seed Grain and Biotechnology Australia (SGB Australia), which will have interests in seed marketing and testing, grain accumulation, price risk management and biotechnology marketing. The formation of this organisation marks a new development in the grain industry in Australia as a private sector organisation positions itself to take advantage of the opportunities now available in the wake of the Plant Variety Rights legislation and the deregulation of grain marketing. As SBS already conduct trials and employ field agronomists and are well established as general input suppliers, this puts them in a vertically integrated position to provide almost everything except the land, labour and machinery to grow the crop.

There has also been an increase in farmer participation in research and extension (e.g. Birchip Cropping group, Southern Farming Systems) and information reselling (e.g. Kondinin Group). Groups of farmers such as these are working with a huge range of institutions and individuals from both sectors, and are attracting sizeable funds from R & D corporations and other corporate sponsors. Cary (1993) noted that:

> *"....with the development of human and infrastructure resources, better educated, smaller groups of homogeneous and geographically concentrated farmers are likely to be better integrated with both public and private institutional knowledge systems and have more extensive linkages with the non-rural business sector."* p. 345

Groups such as the Birchip group with their active linkages with departments of agriculture, cooperative research centres, universities, private consultants, banks, chemical, fertiliser and seed companies, and the surrounding rural community illustrate that this is indeed happening.

In some states farmer organisations are playing an important role in the implementation of nationally funded programs. For example, the Victorian Farmers' Federation (VFF) is coordinating that state's version of PMP known as Farmsmart, and the Agricultural Bureaus in SA are heavily involved in the implementation of SA's Topcrop and Right Rotations programs.

b) A bigger input to policy and research priorities

The new emphasis of the state departments on industry partnerships means that the private sector (both farmers and agribusiness) will have more influence on public sector policy direction. Industry and regional working groups are in many cases in their early formative stages and it is too early to gauge their effectiveness, but at least the structures are being put in place. R & D corporations are also working towards getting more farmer and industry input into their operations, by their 'regional team' approach to assessing priorities.

Because of government commitment to industry partnerships, well organised farmer groups are well placed to play a role in the development of new initiatives. The Agricultural Bureaus in South Australia initiated the AgSA 2000 project, which is investigating the use of computer and communications technologies for improved information access by primary producers and agribusiness. The National Farmers'

Federation is conducting a major initiative to assess the suitability of Australia's rural telecommunications network to supply farmers with affordable and useful Internet capability.

Public sector agencies have become aware of their changing client base by conducting target group analyses. As a result of this, public sector research organisations have (in some cases) seen the need to target the private sector and are responding. For example: Agriculture WA is conducting a three day 'crop technical update' in February that specifically targets consultants and agribusiness; CLIMA actively sought involvement with the Birchip group as they were judged to be an active research and extension medium who could provide valuable feedback to CLIMA researchers[7]. By conducting target group analyses public sector agencies are recognising that there will necessarily have to be diverse extension systems to meet disparate needs (Rivera, 1995). Identifying these specific needs is a challenge to public sector providers.

c) Other developments

There is anecdotal evidence that state departments of agriculture are working well with the private sector, particularly at the on-farm level. In Victoria, for example DCNR field extension officers[8] reported that the Topcrop program pulls extension officers from the public and private sectors together. "We view input supplier agronomists as an extension of the Swan Hill office. We run cooperative field days with different organisers at different times. None of the organisations can be considered the leader." Similarly, a private consultant at Bendigo[9] reports good cooperation between DCNR and private consultants involved in the Farmsmart program.

The growth of the farmer-run non-profit Kondinin Group is exceptional. From humble beginnings as the Kondinin Pasture Improvement Group in the 1950's, the organisation had changed its name, started independent testing of agricultural products and services, and had 4500 members by 1990. In 1996 the NSW Farmers' Federation paid the subscription fee to the Kondinin Group for all its members for one year, boosting the Kondinin Group's membership by 12,500 to over 26,000. The organisation now has offices in Perth and Wagga Wagga, with plans to open a Toowoomba office in 1997. Their considerable interests now include publications (a monthly magazine, farmer manuals and children's books), research (mainly machinery orientated), Profarmer (a weekly market-orientated newsletter and fax service), and Farmline (a phone-in information service for a fee). They are now actively pursuing their role as an "information reseller", having already put together a substantial information database which is being added to continually. They have agreements with most public sector agencies about information use, are developing electronic information transfer capability, and are negotiating with interested parties over the provision of landcare/natural resources information.

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[7] Ian Maling, CLIMA, pers. comm.

[8] Rob Sonogan, DCNR, Swan Hill; Matt Coffey, DCNR, Horsham; pers. comm.

[9] Nigel McGukian, Bendigo, pers. comm.

Farmer groups have initiated and organised their own Research Expos (e.g. groups at Jerramungup, WA and Birchip, Victoria). These days are not traditional farmer field days as the information presented is often from quite complex research and is presented with little simplification. At the inaugural 1996 Expo at Birchip, the group had managed to obtain the participation of scientists and consultants from cooperative research centres, universities, R & D corporations and the state department of agriculture, as well as private consultants and agribusiness.

The private sector is showing an increasing tendency to invest in extension projects, often in conjunction with state or federally funded programs. Agribusiness is putting funds into national and state group extension projects such as Target 10 and Topcrop. Alcoa has several landcare-orientated extension commitments. The Woady Yaloak catchment project in Victoria is run with the active participation of farmers, Greening Australia, the VFF and DCNR, with Alcoa funding. Farmers and co-ordinators of the project all feel that they have a large degree of control, more so than with R & D funds, of the funds allocated by Alcoa to the project[10].

Issues Arising from these Changes

a) Questions regarding research capability and information flows

The loss of expertise in extension, but especially research, from the public sector following state department restructures is likely to have far-reaching repercussions. R & D corporations, for the reasons already canvassed, are actively seeking private sector research. In addition, funding bodies are questioning the infra-structure costs and "in-kind" contribution estimates of state departments of agriculture, universities and CSIROs. It seems likely that this will result in (at least in the short term) a drop in the percentage of farmer-levied research funds going to public sector research agencies. It is possible that there will be a serious loss of top researchers out of agriculture to overseas or other industries. There is some evidence that this is already occurring.

The public sector however is still responsible for a great deal of the generation of new information. For example, Bedbrook's (1995) survey found that Agriculture WA is an important information source to AAAC(WA) consultants. Overall, consultants believed that 42 percent of the information they used was disseminated from Agriculture WA. When asked to consider different farm management areas, consultants estimated that they obtained over 45 percent of information about conservation, cropping, and the management of livestock feeding; over 40 percent of their general animal information; over 35 percent of information on sprays; and over 30 percent of information on overall management strategies and fertilisers from Agriculture WA. Less of their information in the areas of marketing, machinery and finance came from Agriculture WA.

The ability of the private sector to replace public sector research capability, without a substantial transition period, is very doubtful. At the 1996 AAAC Conference in

[10] Cam Nicholson, Woady Yaloak project officer, pers. comm.

Canberra, consultants indicated to GRDC (in response to calls for more private sector research) that they felt under-resourced, compared to public sector institutions, to undertake large research projects.

There is already substantial research capability in the private sector in some areas where the public sector has also had significant involvement (e.g. fertiliser and spray development and management), but other issues arise when these areas are totally in the hands of the private sector. These include issues of quality control, fragmentation of information and the dissemination of information. Research conducted at major public sector institutions is subject to a regime of peer review which is valuable in ensuring the validity of procedures and reasoning.

Experience from overseas suggests that fragmentation of information flows can occur as agricultural research and extension is privatised (Harter and Hass, 1992; Rivera, 1993; Walker, 1993, Schwartz, 1994). There is evidence that this is occurring in Australia as an increasing amount of agricultural research is conducted for private clients, with results either unavailable for more general use or, alternatively, having a charge attached to their wider dissemination. It is possible that this will lead to greater duplication of research, and a failure to recognise that individual research topics often contribute to overall areas of knowledge. A large responsibility is rapidly developing for the R & D corporations to document, disseminate and make easily retrievable the research that is being conducted with their funds by a myriad of public and private sector players. A further issue for governments pursuing policies that encourage the privatisation of research is that, as noted by Carney (1995):

> *"Once supply is placed in the hands of those with primarily commercial objectives, the scope for on-going direct political intervention is substantially reduced".* p. 524

Commercial companies do not necessarily have to respond to political priorities, whereas public agencies are required to do so.

b) Questions about the sustainability and efficiency of the new arrangements

In a study of 24 third world agricultural extension programs, Gustafson (1994) identified a framework, involving both internal and external factors, that described institutional sustainability. One of his conclusions was that there needs to be a sustainability trade-off between institutional complexity (which is not good for sustainability) and stakeholder support (which is necessary for sustainability but contributes to complexity). There are indications that the new institutional arrangements being put into practice are complex, and the transaction costs involved are considerable and uncosted. Rivera (1996) states that:

> *"The assumptions accompanying decentralisation policies need to be dissected for their political underpinnings and technical biases. The potential of decentralising public services is not absolutely certain, and various studies point to the disadvantages as well as the advantages of such a decision."* p. 159

The formation of industry advisory boards at regional and state level adds to the complexity of decision making. As noted by Rivera (1996), a large potential cost of participation is the upfront financial, time and opportunity costs to the agency and stakeholders of identifying and engaging with each other. This is particularly a

problem for non-salaried private sector stakeholders. Problems have been encountered, for example, with AAAC consultants' involvement with both NSW Agriculture and Queensland DPI.[11].

Out-sourcing, or the contracting out of services, also has the potential to create large transaction costs, in addition to other inefficiencies. This is particularly so with regard to the monitoring and evaluation of large national programs. As noted by Cary (1996), private sector delivery is perceived as efficient, but can suffer from inefficiencies that occur because of vested interests when funding allocation occurs at a high level, and administration and monitoring of service delivery occur at a lower level. Lindner (1993) points out that the relative efficiencies of public and private sector services is a very under-researched area.

Watson *et al.* (1992) argue that because of problems associated with undercharging and crowding-out, governments should not charge for services but rather let the private sector provide services which can be deemed private goods. An informal (and incognito) assessment of public and private sector organisations providing written information (in response to a specific query) for a charge was conducted by the one of the authors. This indicated that public sector organisations are charging substantially less than commercial organisations for services of this nature, an observation which supports the conclusions of Watson *et al.* (1992).

Additionally, there is a potential for problems and inefficiencies to be created when private sector organisational structures are placed on public sector organisations subject to political responsibilities. Kingwell (1994) has explored the consequences of public sector agencies being forced into more business-orientated managerial frameworks, and concludes that because of political influence and the economic nature of the services produced, the model of managerialism is deficient when applied to public sector agencies. As noted by Carney (1995):

> *"It should ... be acknowledged that governments are by no means exclusively dedicated to the pursuit of efficiency or even accountability and effectiveness, whatever the rhetoric may be. They are also interested in generating and maintaining political support"* p. 523

c) Questions about the public-good nature of agricultural information and market failure

The perception of much agricultural information as a private good is a relatively new development. Knowledge *per se* has conventionally been seen as the classic public good, being both non-excludable and non-rival in consumption. It has been the perception of agricultural information as a public good, and hence subject to market failure, that has justified the provision of government extension services. The increasing industrialisation of agriculture has resulted, amongst other things, in a questioning of the public-good nature of much agricultural information, with a consequent emphasis on the potential for commercial provision of these services.

[11] Keith Brown and Peter Wylie, AAAC, pers. comm.

Market failure can however occur with the provision of services clearly deemed to be private goods. Carney (1995) provides an overview of situations where markets either produce sub-optimal results (e.g. in the presence of monopolies, because of externalities or ignorance that produces poor decision making by consumers), or fail to develop at all (e.g. because of inadequate infrastructure, incomplete supporting markets or unconducive regulatory environments).

The potential for market failure is further enhanced because, whereas some information can be clearly seen as a private good (e.g. specific veterinary advice), other information is clearly a public good (e.g. catchment hydrology information). Watson *et al.* (1992) and others point out that there is a lot of indistinct ground in the middle. Agricultural information often does not fit neatly into unchanging public/private good categories. It can depend on the time and the specific situation. As Hubbard (1995) states:

> *"Separation of private and public components of goods and services can be complex and uncertain. It may depend on a variety of local circumstances and shifts in prices and expectations, which determine whether the private sector supplies the service adequately or not."* p. 30

Furthermore, Lindner (1993) points out that, even if knowledge could be made excludable (e.g. through the application of intellectual property rights), its non-rival properties would not be affected. He concludes that this means that:

> *"...even if perfect intellectual property rights could be designed and implemented, complete privatisation of rural research and extension would still incur deadweight efficiency losses due to both under-investment in the production of knowledge and to under-utilisation of such knowledge as is produced."* p. 221

He also argues that this means that conventional conclusions about the inefficiencies associated with public sector services crowding out the private sector need not apply to rural research and extension.

d) Questions about extension methodology and technology transfer

As discussed previously, there has been a change in extension ideology from a linear "top-down" approach from scientists to farmers, to an AKIS model of "demand-pull" information flows. There currently exists a paradigm tension as to whether extension should be "person-focused" or "technology-focused", and a tendency to treat the two ("farmers'-needs pull" versus "science-push") as mutually exclusive (Cary, 1993). However, it is incorrect to assume that "technology transfer" necessarily equates with a linear model of extension. Technology transfer can occur very effectively within an AKIS model, as is illustrated by the success of such programs as Target 10 and Topcrop.

This assumption has spawned an increasing emphasis in extension on the development of human capital resources. The Meat Research Commission (MRC) is currently sponsoring workshops which focus on human capital development, where farmers are facilitated through such topics as defining lifestyle goals and recognising their own best methods of learning. Those involved speak highly of their value, but

the commitment of R & D funds to programs of this nature should be questioned. As stated by Cary (1993):

> *"Except in cases of special disadvantage, it is more difficult to argue for government support for agricultural adult education in an environment of free, universal primary and secondary education and charging for other forms of technical adult education."* p. 344

From all accounts, groups are proving to be, for the most part, an effective means of extension. As could be expected, some work more effectively than others. To a certain extent, the group approach has successfully allowed public extension agencies to deal with what Cary (1996) argues is the challenge they face: *"to adequately frame technology transfer within the demands for advice which take account of individual management contexts."* (p. 20) The group approach however could face a number of developing problems.

The number of groups that farmers can, and often need to, participate in is growing rapidly. The group approach is becoming the major method that R & D corporations are using to disseminate the results of research that is being conducted with their funds by an increasing number of private sector organisations. For farmers this means a plethora of groups, often with high participation costs and possibly a low pay-off, or at least one which is potentially difficult to determine. The problems faced by members of groups are those of participation costs, conflicting objectives, raised expectations, and the co-opting of groups by the powerful and articulate.

Groups are also contributing to the fragmentation of knowledge. Enormous amounts of farmer knowledge is being generated, but generally there is poor documentation, collation and dissemination in a wider framework beyond the group. Information flow beyond groups is, on the whole, lacking. This is one of the problems faced by the Landcare movement, where farmer groups often work on problems in comparative isolation, with the assistance of relatively inexperienced project officers. The inexperience of many public sector extension personnel working in public good areas of extension is a consequence of the loss of experienced personnel to the private sector during the restructuring process.

There is also the potential for conflicting objectives and interests to develop between farmers and R & D corporations as to how groups are to be used. There is evidence that this is already occurring. For example, both GRDC and MRC are very particular about the goals and aims of Topcrop and Prograze groups respectively. Groups are required to operate under the guidelines outlined to obtain funding. There is some conceptual difficulty in coming to terms with an extension philosophy that espouses to be "farmer-driven", but only within the confines of imposed "top-down" goals. This could eventually prove a problem for funders as groups opt out in order to control their own directions.

Conclusions

We suggest there are reasons to be concerned about:

- The de-emphasis of research within the public sector agencies, especially because of its public good character and possible efficiencies of size. Unlike the growth in private sector extension that is occurring, a rapid growth in private sector research is not evident.
- The uncritical application of outdated private-sector models of management on the public service.
- The apparent rapid escalation of transaction costs in the new institutional arrangements, and consequent reduction in activity and information flows in the public sector.
- The increasing ability of the R & D corporations to direct state public institutions, and the emphasis of extension programs, through their funding.
- The push for regionalisation for reasons other than agriculture, with its consequent loss of good experienced staff who, for a variety of reasons, are not prepared to shift to rural areas.
- The lack of understanding of the real efficiencies with both public and private sector information delivery.

However, it is also evident that there are some positive aspects of the changes that have occurred. These include:

- A rapid increase in private sector extension, which would indicate that there has been a degree of crowding out in this area.
- The increase in private sector involvement in agricultural research and extension. This has resulted in an increase in both formal and informal links between all the participants in the agricultural industry. This has occurred for a variety of reasons, from being actively pursued to arising out of necessity.
- The growth of powerful and knowledgeable farmer groups with the potential to have an effective influence on agricultural research and policy.

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References

Bedbrook, S.G. (1995), "An Analysis of AAAC Consultants Current Usage of Information Provided by the Western Australian Department of Agriculture, and their Perception of its Usefulness and Future Needs", A dissertation submitted in partial fulfilment of the requirement for the Bachelor of Science (Agriculture) in the Faculty of Agriculture, University of Western Australia

Carney, D. (1995), "The changing public role in services to agriculture: a framework for analysis", *Food Policy* 20: 521-528

Cary, J.W. (1993), "Changing Foundations for Government Support of Agricultural Extension in Economically Developed Countries", *Sociologia Ruralis* 23: 336-347

Cary, J.W. (1996), "Issues in public and private technology transfer: The cases of Australia and New Zealand", Unpublished paper.

Dancey, R.J. (1993), "The Evolution of Agricultural Extension in England and Wales - Presidential Address", *Journal of Agricultural Economics* 44: 375-393

Department of Natural Resources & Environment Victoria (1996), *Planning for the Future*, May 1996

Department of Agriculture Western Australia (1995), "New Chief Executive to take agriculture into the future", *Journal of Agriculture* 36: 54-55

Gustafson, D.J. (1994), "Developing sustainable institutions: lessons from cross-case analysis of 24 agricultural extension programmes", *Public Administration and Development* 14: 121-134

Harter, D. & Hass, G. (1992), "Commercialization of the British Extension Service: Promise or Primrose Path?", *Agricultural Science*, Nov 1992: 17-19

Hubbard, M. (1995), "The 'new public management' and the reform of public services to agriculture in adjusting economies. the role of contracting", *Food Policy* 20: 529-536

Johnson, R.W.M., Schroder, W.R. & Taylor, N.W. (1989), "Deregulation and the New Zealand Agricultural Sector: A Review", *Review of Marketing and Agricultural Economics* 57: 47-71

Kingwell, R. (1994), "Restructuring State Departments of Agriculture: A Public Service?", Unpublished paper.

Lindner, R.K. (1993), "Privatising the Production of Knowledge: Promise and Pitfalls for Agricultural Extension", *Australian Journal of Agricultural Economics* 37: 205-225

Marsh, S.P. (1996), "Agricultural Extension and the Rate of Adoption of Innovations: A Case Study of the Adoption and Diffusion of Lupins in Western Australia", Final report for RIRDC Project UWA-11A, University of Western Australia

Primary Industries South Australia (undated), *PISA's Service Delivery Policy - New Directions*, Primary Industries SA 1195

Queensland Department of Primary Industries, *Bringing it together. The new look: Department of Primary Industries, Queensland*, Information Series QI96062, The State of Queensland, 1996

Prinsley, R., Dore, J., Marks, N., McGukian, N. & Thompson, P. (1994), The Role of the Private Sector in Extension - A report to the Research and Development Corporations", RIRDC Occasional Paper No 94/3

Rivera, W.M. (1993), "Impacts of Extension Privatisation", *Journal of Extension*, Fall 1993

Rivera, W.M. (1996), "Agricultural extension in transition worldwide: structural, financial and managerial strategies for improving agricultural extension", *Public Administration and Development* 16: 151-161

Rivera, W.M. & Gustafson, D.J. (Eds) (1991), *Agricultural Extension: Worldwide Institutional Evolution and Forces for Change*, Amsterdam, Elsevier

Roling, N. & Engel, P.G.H. (1991), "The Development of the concept of agricultural knowledge information systems (AKIS): Implications for extension", in *Agricultural Extension: Worldwide Institutional Evolution and Forces for Change* (Eds. W.M. Rivera & D.J. Gustafson), Amsterdam, Elsevier

Schwartz, L.A. (1994), "The Role of the Private Sector in Agricultural Extension: Economic Analysis and Case Studies", Network Paper 48, Overseas Development Institute, Regent's College, London, U.K., July 1994

Walker, A.B. (1993), "Recent New Zealand Experience in Agricultural 'Extension'", Proceedings of the Australia-Pacific Extension Conference, Gold Coast, Australia: 126-129

Watson, A.S., Hely, R., O'Keeffe, M., Cary, J.W. & Clark, N.F. (1992), *Review of Field-based Services in the Victorian Department of Food and Agriculture*, Dept of Food and Agriculture, Melbourne

Western Australian Farmers Federation, *The Primary Producer*, Nov 1996

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