AGDEX 001

Agriculture in South Australia

A submission to the working group preparing a policy discussion paper on agriculture

DEPARTMENT OF AGRICULTURE
SOUTH AUSTRALIA
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AGRICULTURE IN SOUTH AUSTRALIA -

A submission to the Working Group preparing a policy discussion paper on agriculture.

Prepared by the Department of Agriculture for the Government of South Australia.

March 1982 Adelaide

FOREWORD

This report was prepared on behalf of the South Australian Government by the Department of Agriculture as a submission to a working group set up by the Minister for Primary Industry to prepare a Policy Discussion Paper on Agriculture. The terms of reference of the working group are attached.

Preparation of the submission was co-ordinated by Dr. P.R. Harvey with the assistance of the Policy and Planning Unit. Material was contributed by many officers of the Department of Agriculture and by other Departments.

As the submission examines issues of continuing relevance to the development of agriculture in South Australia it has been made available as report no. 1 in SAGRIC's technical report series.

(James C. McColl)
DIRECTOR-GENERAL OF AGRICULTURE

DEPARTMENT OF PRIMARY INDUSTRY

POLICY DISCUSSION PAPER ON AGRICULTURE

The Minister for Primary Industry, Mr Peter Nixon, recently announced the appointment of a Working Group to prepare a Policy Discussion Paper on Agriculture. The Group has been requested to report by September 1982 and is to be chaired by Mr J. S. Balderstone. Other members of the Group are Sir Donald Eckersley, Mr L. P. Duthie, Professor F G. Jarrett and Mr J. C. McColl.

The Group has been asked to identify for the Government's consideration the major policy issues and options relating to the Australian agricultural sector, having in mind the changing economic environment of the 1980's. It has been specifically requested that its deliberations include:

(a) *Implications for Australian agriculture of developments in the domestic economy, including resources development and the effects thereof on the competitiveness of the agricultural sector and on intersector relationships.*

(b) *Any differential effect which factors, such as fuel and energy pricing, wages and assistance afforded other sectors of the economy may have on farm costs.*

(c) *External influences, including developments in overseas countries which are either large markets for Australian rural produce or significant competitors in the world market, including barriers to agricultural trade and subsidised exports.*

(d) *Technical and economic efficiency in resource use in agricultural sector, including:*
- *past and desirable future changes in patterns of sector activities*
- *effects on productivity of such factors as*
  - *substitution of capital for labour*
  - *size of farm unit*
- *farmer education including extension*
- *research*

(e) *Government measures affecting agriculture including the form and extent of industry assistance and assistance to factors of production; income stabilisation; rural adjustment; research and extension activity, taxation issues and financial arrangements including rural credit.*

(f) *Marketing and distribution arrangements for Australian primary produce.*

(g) *Agricultural resource management issues including quarantine, conservation and animal husbandry measures.*

Interested persons and organisations are invited to make submissions to the Group.

Since the Group is working within a fixed timetable submissions should be forwarded as soon as possible and certainly no later than **Friday 11 December**, 1981.

Early notification of intention to make a submission and submissions and inquiries should be directed to:

Mr. A.C. Byrne,
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CONTENTS

SUMMARY

1. Agriculture in South Australia is a competitive industry which has developed by adapting sensitively to technical opportunities and market changes. It has contributed significantly to economic development and the potential exists for future gains through the transfer of agricultural technology to countries overseas.

2. It is important to examine the institutions and processes that contribute to the shaping of agricultural policy. Complex patterns of interaction have developed between the Commonwealth, State governments, farm organisations and other organised interests. These patterns have been influenced by political developments, especially changing conceptions of federalism, institutional developments at both Commonwealth and State levels, the proliferation of sources of economic advice inside and outside the public sector, and continuing developments in agricultural technology. Current concerns with limiting the role and scope of government activities, making government administration more accountable and efficient, and reviewing more intensively the effects of government activity have clear implications for the conduct of agricultural policy. Also important are Commonwealth decisions to transfer the administration of many functions back to the states, and the emergence of the National Farmers' Federation as a major force among farm organisations.

3. Past and likely future changes in the economic environment for agricultural industries are reviewed and the implications of these changes for industry structure and government policy are discussed. Consideration is given to pressures tending to favour the development of industries producing capital and natural resource intensive products. It seems likely that policy discussion will focus on the distribution of adjustment across the economy. In this context, choices between policies facilitating industry development and those which shield selected

less competitive industries assume importance. There can be no doubt that the continuation of strong, cost/price pressure on the rural sector will create severe adjustment problems for farmers and for those in associated rural communities. Two broad options will attract attention: to increase imports through a gradual lowering in tariff protection and barriers to trade which would help dissipate projected increases in foreign exchange earnings and the need for currency appreciation; and, to allow continual and gradual adjustment of exchange rates in response to market forces and/or higher domestic rates of inflation.

4. Agriculture in South Australia includes a diverse and complex pattern of related activities. Three interrelated sectors of on-farm and off-farm activity can be identified: first, the input supply sector, supplying factor inputs including fertilisers, seed, herbicides, machinery and equipment; second, the farm sector which combines these inputs as well as labour, capital and technology to produce a wide range of specific commodities; and third, the product sector which involves processing, marketing and delivery to final consumers. An input-output analysis is presented showing the contribution of agriculture to the South Australian economy. It is concluded that South Australian agricultural industries have the potential to meet projected growth in demand for agricultural products in the 1980's. However, it will be necessary to guard against resource use policy that encourages exploitation of land and water in the short-run to the detriment of long-term productive capacity or environmental quality.

5. Rural sector policy measures adopted since 1945 are discussed and case studies of South Australian industries highlighting the importance of relating national policies to regional impacts are provided. Price support schemes are reviewed critically and it is pointed out that it is desirable to examine also the possibility of income maintenance schemes. Arrangements for rural adjustment and natural disaster relief in South Australia

are reviewed. The rural adjustment scheme includes provision for debt reconstruction, farm build-up, farm improvement, rehabilitation, carry-on loans to specific industries and household support. Natural disaster relief measures have been changed radically to concentrate on providing affected farmers with carry-on finance. The horticultural industries in South Australia are examined to illustrate the need for integrating policies on production, marketing, assistance and adjustment. The dairy industry is examined to illustrate the importance of relating national policies to state and regional circumstances.

6. Trends in research, extension, regulation and agricultural education are reviewed. The importance of Rural Industry Research Funds as a source of funds for research is emphasised. Similar funds for the encouragement of extension services would be desirable. In times of restraint attention is being given to extending the principle of fee for service to services traditionally provided free. Improved co-ordination between agricultural education programs and SAGRIC extension activities would be desirable.

7. During the 1980's farmers and governments will need to extend their understanding of changing market characteristics and opportunities. The National Farmers' Federation has recently encouraged farmers to examine critically the costs and benefits of government activity in marketing. This is timely as current expressions of concern about the extent of government involvement in social and economic life have included extensive criticisms of agricultural marketing arrangements.

8. Relations between intra-state, interstate and overseas transport systems are becoming more complex. The utility of analysis from a national perspective is illustrated by reference to the needs of the livestock and grain industries. In both cases commodities are being transported with increasing frequency across state boundaries.

9. Over the past two decades the direction of Australia's trade has changed dramatically. To achieve its trade goals Australia will need to be prepared to absorb increasing inputs from Asia and the Pacific Ocean. The costs and benefits of closer economic relations with New Zealand are considered and it is concluded that other areas of the world offer more potential for trade. The domestic adjustment implications of changing patterns in rural exports are also considered. These are illustrated by reference to the live sheep trade. The benefits to farmers of the live sheep trade are outlined. It is pointed out, however, that slaughtermen with declining job opportunities have protested at the trade. Similar adjustment pressures are present in other industries and the live sheep case illustrates the need for careful consideration of the interests affected.

10. The need for the active management of South Australia's agricultural resources to encourage efficient resource use and conservation is recognised prominently in SAGRIC's objectives. The principal issues involve the use and conservation of the land, soil, water, plant and animal resources upon which agriculture is based. The extent of effort expended on particular measures tends to vary with market forces, changing technology, and community expectations. In recent years greater attention has been given, not only to the efficient use of resources but to more general conservation questions. It is pointed out that Commonwealth, State and Local Government resources have been involved together with farmers and other industry groups.

11. Much of the responsibility for improving the efficiency of farm machinery rests with manufacturers and farmers but national and state governments have roles in encouraging research and conducting extension work. Farmers and farm organisations are showing increasing interest in improving decisions on the acquisition of farm machinery and other equipment and materials. Some independent farmer groups have taken action themselves to try to overcome the scarcity of objective information about the capability of new machinery.

12. Effective control measures for rural accidents are extremely difficult to establish without a clear understanding of accident phenomena and a sound data base. A need exists for research into the causes of rural accidents and the collection of relevant statistics. A data collection program should be set up either on a national basis or on a basis allowing comparisons to be made between different states. Particular consideration should be given to the cost of rural accidents and the likely effect of different approaches in reducing accident costs.

13. Selected trends in rural society are discussed. Family farming remains well established in South Australia and any trend away from it will be in the intensive livestock industry and in some aspects of horticulture. Trends in foreign investment in rural land, hobby farming, rural education, social security and welfare services, the ethnic composition of rural communities, and the role of women in rural society are also discussed.

1. INTRODUCTION

1.1. Agriculture in South Australia is a competitive industry which has developed by adapting sensitively to technical opportunities and market changes. South Australian agricultural products are competitive in most of the world markets to which they have access.

1.2. Agriculture has contributed significantly to South Australian economic development. Despite considerable emphasis since the 1930's on manufacturing industries and, more recently, the development of natural resources, agriculture continues to under-pin the South Australian economy. It contributes proportionately more in this state to the economy than it does in any other state except Queensland. Every extra dollar's worth of production from farming results in about $2.50 worth of economic growth. An extra dollar's worth of coal production generates $1.60 worth of growth and, a dollar increase in petro-chemical production leads to $1.95 worth of economic growth. (South Australia - a strategy for the future, 1981). In this process the close relationship between agricultural production and the food processing sector is particularly important.

1.3. The potential contribution to economic development from the transfer of South Australian agricultural technology overseas is also significant. This technology is being demonstrated in countries such as Algeria, Libya, Jordan and Iraq. The adoption of South Australian agricultural technology as a result of projects initiated through the Department of Agriculture (SAGRIC) has already generated new export opportunities for a number of local agricultural equipment manufacturers, and has strengthened the position of others already active in the export trade. Further promotion of the merits of South Australia's dryland farming system and the specialised inputs, particularly of machinery and plant genetic resources, which its adoption requires, should be of benefit to the whole state.

1.4. INNOVATION AND ADJUSTMENT

One of the most critical innovations in South Australia's farming systems was the introduction of ley farming between 1930 and 1960. The key to successful ley farming lies in the pasture phase of the crop rotation. Legume pastures increase soil fertility, improve soil structure, and regenerate naturally after crops. (G.D. Webber et al., 1976). Ley farming has been the foundation for successful mixed cereal and livestock production in the agricultural areas of the state.

1.5. Recent adjustment experience has been in the direction of increasing property sizes and productivity gains. New techniques such as reduced tillage have held farm field costs in check. Larger, more efficient machinery, even though it is very expensive, has enabled individual farmers to plant and harvest much larger areas of their farms, often single-handed, than was previously possible. Improved stock handling techniques have also enabled farmers to handle increased numbers of stock on their own. However, adjustment entails costs as well as benefits. While South Australia's mixed farmers have been in the forefront in benefitting from adjustment, other industries, for example horticulture, face much more difficult challenges. The encouragement of rational adjustment and the maintenance of a balance between the viability of industries and the welfare of individual farmers remain major challenges for agricultural policy.

1.6. FUTURE DIRECTIONS

Public sector support for agricultural enterprise has been for many years an important feature of the Australian agricultural experience. Such support has included research, extension, regulation, marketing arrangements and agricultural education. However, in times of pressure on public sector resources, increased attention needs to be given to improving the productivity of agricultural support services. In recent years

agencies concerned with agriculture have developed better analytical tools for understanding the network of technical, economic and social relations involved in the production and marketing of agricultural commodities. Particular emphasis has been given to the use of economic analysis to assess the impact of particular policies. Further development of systematic approaches to the analysis of policy and administrative issues will be important. In this connection, the development of improved technology for the handling of information will present a number of challenges and opportunities. Further, agencies concerned with agriculture will be relating to farmers and farm organisations with an enhanced understanding of policy matters.

1.7. Among the forces shaping future developments in agriculture, directions in macro-economic policy will be especially significant. Policies on assistance to industries, balance of payments, exchange rates and the money supply all have a direct impact on agriculture. The changing relations between different sectors of the economy are also highly significant. Increasingly, analysis is being directed to intersectoral relations rather than the needs of individual farmers or specific agricultural industries. It will be important to take positive action to assist farmers and their representatives understand the reasons for this shift in attention.

1.8. Continuing attention is also needed to the management of basic agricultural resources. Particularly in South Australia, farmers cannot be complacent about the potential for extra productivity. Special care must be taken to conserve the most valuable of all agricultural resources - the soil. Trends to more intensive cropping mean that soil conservation programs have become much more important. Further, it is important to protect soil fertility. Shorter crop rotations and the recent arrival of new insect pests such as the sitona weevil and the blue-green and spotted alfalfa aphids pose a threat to the stability of South Australia's medic-based ley farming systems.

It will be a major challenge in the 1980's to look after the legumes in the agricultural system. Other issues in resource management will also require attention, for example, the appropriate use of pesticides, the maintenance and improvement of quarantine procedures, the successful conclusion of the BTB campaign and the extension of services to hobby farmers to encourage sound land management practices.

REFERENCES: Chapter One

State Development Council, South Australia - A Strategy for the Future, Adelaide, 1981.

Webber, G.D., et al., Farming Systems in South Australia, Adelaide, 1976.

2. SHAPING AGRICULTURAL POLICY - INSTITUTIONS AND PROCESSES

2.1. It is important to examine the institutions and processes which contribute to the shaping of agricultural policy as well as the substance of policy measures and their effects. In Australia, complex patterns of interaction have developed between the Commonwealth, State Governments, farm organisations and other organised interests. These patterns have been influenced by political developments, especially changing conceptions of federalism, institutional developments at both Commonwealth and State levels, the proliferation of sources of economic advice inside and outside the public sector, and continuing developments in agricultural technology. Current concerns with limiting the role and scope of government activities, making government administration more accountable and efficient, and reviewing more intensively the effects of government activity have clear implications for the conduct of agricultural policy.

2.2. COMMONWEALTH AND STATE RESPONSIBILITIES

Although agricultural policy is constitutionally the responsibility of the States, in practice a pattern of shared responsibility with the Commonwealth has evolved. The States have clear responsibility for agricultural production and the domestic marketing of agricultural products. The Commonwealth has responsibility for overseas marketing, quarantine for imports, the health and quality of exports, the supply of credit and financial incentives, and important aspects of policy regarding assistance to agricultural industries. The financial influence of the Commonwealth and the use of section 96 grants have reinforced the power of the Commonwealth to intervene in agricultural policy.

2.3. Patterns of complementary Commonwealth and State legislation on agricultural matters have been built up. These have been supplemented by intergovernmental agreements on a range of matters. Join Commonwealth/State activity in marketing and price support schemes has been particularly notable.

2.4. The problems caused by shared responsibilities in federal systems have been evident in agricultural policy. In many fields there have been histories of delays, hard bargaining and misunderstandings. It is important that close and continuing attention be given to means of conducting relations between governments in as efficient a manner as possible. Timely consultation and the sharing of information are particularly important.

2.5. Recent Commonwealth moves to withdraw from the extensive use of specific purpose grants and to transfer the administration of many functions back to the States are welcome. However, the transition from a National to a State basis for established programs requires many adjustments and creates uncertainty within State agencies about the nature and extent of future commitments to the programs concerned. Also the financial involvement of the Commonwealth has in some cases encouraged desirable co-ordination and uniformity between States in program implementation. It would be regrettable if this encouragement were lost and other arrangements for promoting co-ordination and uniformity may be necessary. Careful management of transitional arrangements is therefore essential. Further, boundary problems will always remain. For example, the States are affected by the content of treaties entered into by the Commonwealth. With the circulation to the States of information about the progress of negotiations on treaties, States will probably seek to influence the outcome of some treaty negotiations. Similarly, the growth in some States of strong interest in the export of agricultural technology, has led to a developing interest in other aspects of foreign relations.

2.6. AGRICULTURAL COUNCIL

The Australian Agricultural Council (AAC) provides a major forum for the co-ordination of Commonwealth and State activities. The AAC was formed in 1934 and has provided a model for Ministerial meetings in many other policy fields. The Council has no legislative base. It operates by consent and does not attempt to make binding majority decisions. It provides a regular forum for consultation and negotiation on a wide range of issues. Where agreement is reached, matters are referred back to decision making bodies in the Commonwealth and the States for action. It is recognised that unanimity is usually a precondition for the

successful adoption of AAC recommendations, though the Commonwealth can and does reserve the right to pursue its own policies if it so desires.

2.7. The AAC is supported by the Standing Committee on Agriculture which is a permanent technical committee. In turn, the SCA is supported by Technical Committees and working parties set up to report on particular issues. These arrangements provide for regular communications between State and Federal officers. South Australia is pleased that recently the structure of SCA committees was reviewed and redundant committees terminated with a view to increasing the effectiveness of deliberations and the speed with which reports could be returned to the full committee. However, it still takes up to two years for an item to traverse the committee process. Changes in the nature of business coming before the Agricultural Council, and the increasing need to integrate specialist technical advice with general policy considerations, mean that further attention to the working methods of the SCA will be necessary from time to time. In any further review it will be desirable to attempt again to increase the speed with which references to specialist committees return to the full committee (for further details on the AAC and SCA, including membership, see Handbook to the Australian Agricultural Council, 1981)

2.8. FARM ORGANISATIONS

The structure of farm organisations has been strongly affected by the federal system and the commodity orientation of many producers. The recent emergence of the National Farmers Federation (NFF) as a national organisation, based in Canberra, committed to analysing policy issues across industry and commodity groupings, and employing highly qualified professsional staff, has been a significant development.

2.9. To a large extent the politics of agriculture has been commodity based. An Australia-wide pattern of farm organisations emerged from the depression and war years of the 1930's and 1940's. This consisted of State-based commodity organisations together with

federal commodity organisations. There was no effective national farm organisation. However, the amalgamation of organisations in several States, especially graziers' and wheat and wool growers' organisations in the 1970's provided a basis for the emergence of strong State-based general purpose organisations, which ultimately led to the emergence of the NFF.

2.10. The formation of the NFF has important implications for the consideration of agricultural policy by governments. This is particularly so in the style of presentation of submissions on preferred policies. The NFF's commitment to the close scrutiny of the costs and benefits of different policy instruments, as illustrated in its policy paper Farm Focus: the '80s, will mean a change for governments too.

2.11. Farm Focus is significant because it makes clear the assimilation by NFF leaders of the need to express farm interests through the concepts and language of mainstream agricultural economics. Key themes include the importance of relating farm issues to macroeconomic policy, distinguishing between symptoms and causes, scrutinising carefully the impact of government assistance to industries and, on protection policy, getting away from tariff compensation arguments. While sectional advocacy in the paper is plain, and inconsistencies and omissions can be found, the NFF has accepted the need to argue for policies on their merits and to be as consistent as possible. The result is a cogent and compact paper which makes an important contribution to understanding current issues in farm policy.

2.12. The implications of the style of analysis presented in Farm Focus for government/farmer relations are considerable. Since the 1939-1945 war, governments have looked regularly to farm organisations for advice on the preferences of farmers. Many industry schemes, particularly marketing schemes, have been

negotiated between governments and farm organisations. The resulting marketing boards have been based on commodity structures parallel to farm organisations, themselves with strong commodity bases. The thinking reflected in Farm Focus places this pattern of producer organisation/marketing board/ government relations under pressure from within the farm sector at a time when it is also under pressure from elsewhere. Federal and State parliamentary committees have tended recently to question the role of statutory authorities and, in particular, a federal parliamentary committee has examined closely the role of marketing boards and raised wide ranging questions regarding the efficiency and accountability of their operations. Further, in January 1982 the Minister for Primary Industry announced that his Department would undertake a review of the legislation and administrative practice of all statutory authorities under his control. The Minister also announced that the Department of Primary Industry would be comprehensively reorganised. It is clear that a new balance is required between the responsibility of boards to farmers and their responsibility to the wider community. South Australia welcomes the Minister's initiative in arranging a review of statutory authorities.

2.13. In considering the trend represented by the NFF it should, however, be remembered that not all farmers have the same interests, and that there are still important relationships between different levels of farm organisations to be worked out. The diversity of rural production, the initial commodity orientation of most farm organisations, and state and regional differences will ensure that difficulties remain in integrating farmers' felt needs with the results of professional analysis of policy issues. Further, the NFF is largely representative of broad acre mixed farmers producing for export markets. There are many smaller industries which are not fully represented within its structure. Some smaller organisations have come out explicitly against NFF policies, for example, on trade liberalisation, which would benefit the export oriented sectors of the rural economy but affect adversely some of the industries producing primarily for the home market.

2.14. It should also be borne in mind that down turns in the farm economy tend to generate spontaneous protest movements which can change or challenge existing structures of farm organisations in a short space of time.

2.15. ECONOMIC ANALYSIS AND MANAGEMENT

Both governments and farm organisations have been affected by the development of thinking in agricultural economics. At the federal level the establishment of the Bureau of Agricultural Economics (BAE) in 1945 was a critical development. Since then, university research in agricultural economics has developed extensively. Within the Commonwealth Public Service economic expertise has proliferated, both within departments and in specialist bureaus. The establishment of the Industries Assistance Commission, with a charter including review of proposals for assistance to agricultural industries, was an important further stage in this trend.

2.16. At the State level the acquisition by Departments of Agriculture of expertise in agricultural economics has been important too. This has, however, also been associated with wider concerns with the organisation of research and extension activities, regionalisation, and the role of management skills in providing effective agricultural services. Much more attention will be required to the development of management skills in public agencies concerned with agriculture. South Australia considers that this is a major challenge for Departments of Agriculture. Although the continuing need for financial restraint contributes to the need for more attention to management skills, the increasing complexity of policy and administration, independent from financial considerations, is just as important.

2.17. FORCES AND OBJECTIVES IN POLICY DEVELOPMENT

The development of agricultural policy is both a matter of conscious pursuit of specific objectives by governments, farmers and other interests, and the interaction of wider social, political, technical and economic forces.

2.18. For example, specific objectives might be elaborated within a framework similar to the following outline:

- consumer objectives
  - reasonable and stable food and fibre prices
  - adequate and dependable supply of products
  - high quality and nutritious products
- producer objectives
  - fair returns to producers
  - stable incomes
  - reduced economic disparities between agricultural sectors
  - reduced economic disparities between agricultural and manufacturing and other non-agricultural sectors.
- public objectives
  - improved quality of rural life
  - balanced distribution of population between rural and urban locations
  - conservation of productive resources and the rural environment
  - fulfilment of national and international responsibilities.

2.19. Objectives might be pursued by:

- setting policy preferences
- recognising constraints on policy
- adopting measures within specific time frames
- evaluating policy effects.

2.20. However, in any complex policy field there are gaps between intentions and effects and the tasks of policy analysis and prescription require careful attention to the wider pattern of forces and activities which specific measures seek to influence. As interactions in agricultural policy increase in complexity it will be necessary to review patterns of policy strategically, identify relevant points of influence, and assess the impact of both individual policy measures and wider forces. The impact of such reviews will be felt not only in particular recommendations but in providing a framework of ideas and information for further

analysis. Indeed, immediate policy commitments may be less important than, for example, the encouragement of deeper understanding, identification of new issues, and the integration of different perspectives. For these reasons the preparation of a Policy Discussion Paper on Agriculture in 1982 is indeed welcome.

REFERENCES: Chapter Two

Handbook to the Australian Agricultural Council, April 1981.

National Farmers' Federation, Farm Focus: The 80s, Canberra, 1981.

3. ECONOMIC AND GENERAL POLICY ISSUES

3.1. This section reviews past and likely future changes in the economic environment for Australian agricultural industries and discusses some of the implications of these changes for industry structure and government policy.

3.2. THE ECONOMIC ENVIRONMENT[1]

During the 1970's the main underlying sources of pressures for change in the Australian economy were: the continued rapid growth of the mining sector with energy resources assuming greater importance as the decade passed, continued industrialisation in the developing countries, increasing oil prices, wage increases, movement in the composition and size of the population and labour force, changes in production technology and slower rates of growth for developed economies. Overall, these pressures tended to favour the development of industries producing capital and natural resource-intensive products. Industries which were adversely affected tended to be those using widely known or readily transportable technology to produce labour-intensive goods.

3.3. These general pressures for change in the economy appear likely to continue. Strong growth in energy and energy-intensive exports is probable, while the industrialization of developing countries is likely to continue and to have the effect of both broadening and intensifying import competition and expanding export opportunities. These development are likely to have a considerable impact on the development and composition of the Australian economy. The growth in mineral export earnings is likely to enlarge significantly Australia's capacity to import at a time when import competition is broadening and intensifying.

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1 This section draws heavily on the Industries Assistance Commission (1981).

3.4. While future movements in oil prices seem likely to have an important influence on the growth potential of Australia's energy-intensive exports, it is important to note that the potential for expansion in Australia's resource-based exports does not hinge entirely on high international oil prices. Lower oil prices could stimulate an expansion in the world economy and increase demand for many of Australia's mineral and agricultural exports.

3.5. In addition to the widely discussed influences mentioned above, demographic changes are also likely to have significant implications for the structure of the economy. Slower rates of population growth will give rise to less rapid growth in market demand, especially for youth-oriented and household formation type goods, and reduced growth in the supply of labour than has been the case since the mid-1960's. The trend toward greater labour force participation by females, especially married women, and increased growth in part-time employment appear likely to continue in response to changing social values, industry structure and employment opportunities. Changes in production technology will also continue to be a pervasive source of economic change.

3.6. While the potential for further growth of the Australian economy appears favourable, the 1980's are likely to be characterised by uneven growth between industries. Moreover, success in transforming this potential for growth into reality will be significantly influenced by the way we respond, both individually and via government policy, to changes in the economic environment. The options available to the government to influence the development of industry extend over a wide spectrum: ranging from defensive policies designed to shield selected industries from pressures to adapt, to strategies designed to foster industry adaption.

3.7. Continuing attempts to defend the least competitive sectors of the economy will tend to restrain the exploitation of the promising opportunities for growth and improvement in general living

standards which appear to be available during the 1980's. The cost to consumers and relatively lightly assisted industries of maintaining high levels of assistance to preserve certain industries has increased substantially in recent years. Moreover, these costs can be expected to increase further during the 1980's as the economic environment is expected to become progressively less favourable for the least competitive sectors of the economy.

3.8. The realization of opportunities for economic growth will require changes to industrial structure throughout the 1980's. This reflects the inter-dependencies between industries within the economy as they compete for labour, capital and markets.

3.9. It seems likely that policy discussion will focus on the distribution of adjustment across the economy and not simply on the difficulties of adapting to a changing environment in a time of high unemployment. It is in this context that choices between policies facilitating industry development and those which shield selected less competitive industries, assume importance. A policy of fostering energy-related development, while continuing to shield some high cost industries from foreign competition, would result in a squeeze on profitability and employment in many other import-competing and exporting industries.

3.10. Irrespective of the magnitude of any 'resources boom' in the 1980's and the overall prospects for growth offered by the expansion of world markets and other developments, it will not be possible to achieve an industry structure which is well adapted to the emerging economic environment if some of the least competitive sections of the economy continue to be shielded from pressures to adapt. Increased consideration needs to be given to the alternative approach of permitting more rapid change to occur in response to market pressures and pursuing social and employment objectives through more direct means.

3.11. THE CHANGING COMPETITIVE POSITION OF AGRICULTURE

The 1970's saw dramatic changes in the fortunes of the rural sector. The world commodity boom lifted Australian farmers' terms of trade (as indicated by the ratio of prices received for their products to prices paid for their inputs) from 80 in 1971/72 to 101 in 1972/73 (Table 3.1). The ratio fell by 32 per cent from 101 in 1973/74 to 69 in 1974/75. A further 12 per cent drop to 62 occurred in 1975/76. The ratio stayed at 62 in 1976/77. This was affected by the 17.5 per cent devaluation in November of that year.

TABLE 3.1: Gross returns, farm costs and net returns, and indexes of prices received and paid by farmers.

Year	Gross value of rural production	Farm costs	Net value of rural production	Index of prices received [a]	Index of prices paid [a]	Ratio of prices received to prices paid [a]
	$M	$M	$M	no.	no.	no.
Average of 3 years ended						
1953-54	2 182	1 136	1 047	105	82	128
1963-64	3 031	1 875	1 155	102	101	102
1966-67	3 486	2 250	1 235	108	109	99
1969-70	3 645	2 595	1 051	105	120	88
1971-72	3 968	2 705	1 263	106	133	80
1972-73	4 957	2 997	1 960	144	143	101
1973-74	6 412	3 393	3 019	168	165	101
1974-75	5 877	3 933	1 944	148	215	69
1975-76	6 173	4 351	1 822	155	251	62
1976-77	6 757	4 704	2 053	173	281	62
1977-78	6 984	4 972	2 012	179	310	58
1978-79	10 280	5 795	4 485	218	332	66
1979-80 p	11 742	6 632	5 110	263	370	71
1980-81 p	11 450	7 250	4 200	287	423	68
1981-82 s	12 370	8 170	4 200	298	472	63

a Base: average 1960-61 to 1962-63 = 100 p Subject to revision

s Estimated by BAE.

Source: Quarterly Review of the Rural Economy, Vol. 3, No. 4, November 1981.

3.12. Two factors have been particularly significant in the downturn in farmers' terms of trade during the 1970's.

3.13. First, rapid domestic inflation resulted in massive increases in the prices paid by farmers for their inputs. In 1974-75 the BAE index of prices paid rose by 30 per cent. An increase of 17 per cent was recorded in 1975/76. Second, these high levels of domestic inflation have not been fully reflected in the relative decline in the value of the Australian dollar that might otherwise have been expected. The underlying change that has occurred in the structure of our exporting sector has been the principal reason for this.

3.14. In the normal course of events, more rapid domestic inflation in Australia than in other countries would have resulted in reduced exports and greater imports. Consequent balance of payment difficulties would have generated pressures to devalue the currency. The competitive position of the exporter would have thus been in large part restored. However, in the past decade the pressure to devalue in Australia has, by and large, been more than counteracted by the increase in mineral exports and by the increased inflow of foreign capital associated with mineral exploration and development.

3.15. The changing competitive position of farming has been a long term feature of Australian economic development. The basic cause of the intensification of this pressure in recent years can be related to the emergence of a new export sector and to competition for resources domestically. This increase in pressure is largely expressed in the form of difficulties in competing with foreign producers. For manufacturers the problem is import competition. For farmers, it is competing with supplies from other countries.

TABLE 3.2: Contribution of major sectors to GDP and to exports

Year	Gross domestic product [a]	Contribution to GDP by				Total exports [b]	Contribution to exports by		
		Agric. fishing, forestry	Mining	Manu-facturing	Tertiary		Agric. fishing, forestry [c]	Mining [c]	Manu-facturing and other [c]
Average of 3 years ended	$ M	%	%	%	%	$ M	%	%	%
1953-54	7 502	19	2	27	52	1 567	84	7	9
1963-64	14 618	13	2	27	58	2 311	79	7	14
1966-67	18 820	11	2	27	60	2 701	72	11	17
1969-70	24 591	9	2	26	63	3 382	59	20	21
1971-72	33 835	7	4	24	65	4 719	52	25	23
1972-73	38 486	8	4	23	65	5 961	57	22	21
1973-74	45 967	9	4	23	64	6 673	54	24	22
1974-75	55 088	7	4	22	67	8 420	48	28	24
1975-76	64 127	6	4	21	69	9 303	47	31	22
1976-77	73 300	6	4	21	69	11 382	47	30	23
1977-78	79 603	5	4	21	70	11 922	44	30	26
1978-79 p	88 984	7	na	na	na	13 785	45	28	27
1979-80 p	99 959	8	na	na	na	18 203	47	25	28

a At factor cost. b Total Australian produce excluding gold. c Unprocessed and processed.

p Subject to revision. na Not available.

Source: Quarterly Review of the Rural Economy, Vol. 3, No. 4, November 1981.

3.16. THE DECLINING RELATIVE ROLE OF AGRICULTURE IN THE ECONOMY

Declining terms of trade in agriculture are not a new phenomenon. The ratio of prices received to prices paid from 1953-54 trended steadily downwards until the mid-1960's. Thereafter the rate of decline increased substantially, until it was interrupted by the commodity boom of the early 1970's. While the fall in terms of trade that began in 1974-75 has been exceptional, it can also be regarded as simply generating a return to the rapid trend rate of decline of the latter half of the 1960's.

3.17. This pressure has been accompanied by a decline in the relative position of agriculture in the economy. The share of farm product in GDP has fallen from around 20 per cent in the early 1950's to around 10 per cent and less in the 1970's. The share of rural exports in total exports has shown a similar decline, from around 80 per cent in the early 1950's to about 45 per cent in the mid-late seventies (Table 3.2). However, in absolute terms, the contribution of agriculture to both GDP and total export earnings has increased.

3.18. In discussing the place of the rural sector in the Australian economy, it is common to start from the proposition that the rural sector is a declining sector. However, this statement is, to a considerable extent, misleading.

3.19. The confusion arises in part because agriculture can be viewed in two distinct ways: firstly, as a purely economic enterprise contributing, like any other industry, to economic growth and development; and secondly, as a social and geographical sector of the economy providing a population and settlement basis for a large part of the non-metropolitan area. As an industry, albeit experiencing some difficulties, it is not declining in any normal sense of that term. As a social sector, it is declining in relative importance and this has important consequences - not just the relative growth in the political importance of the cities replacing the dominance in the social as well as economic fields

once held by the rural sector, but with a more diversified economy, economic policies are less likely to be shaped specifically to the needs of the rural sector.

3.20. A consequence of the change in the rural sector's relative size is its reduced social and political significance. The rural sector has to do more than before to try to influence the development of sound policies for three reasons; first, much of the cost of any policy is likely to end up being borne by the export industries; second, it has less chance of being recompensed now for mistakes made elsewhere in the economy; and third, it cannot now assume that its interests will automatically be taken fully into account.

3.21. FUTURE PROSPECTS

In looking at the longer term implications of the changing competitive position of farmers in the economy, a critical issue is whether the pressure on their terms of trade is likely to continue unabated, to let up, or to worsen. Steadily rising real world commodity prices could be one avenue for relief from cost/price pressures in farming.

3.22. A number of projections have been made of annual changes in world relative prices for imported commodities (Freebairn, 1978). Basically the projections of world prices for different groups of commodities depend on a number of key assumptions relating to demand factors (population and income changes) and supply factors (productivity, technology changes, and intensity of production). In general terms demand shift factors have been identified as relatively more important than supply shift variables for the bulk of export oriented agricultural commodities.

3.23. World price projections (Table 3.3) indicate that meat products (especially beef) and fish export prices will rise at four to five per cent annually relative to the slowest increasing group (manufactured products and machinery), wool will rise at two per cent while wheat and dairy products are expected to remain constant in real terms.

TABLE 3.3: Assumptions concerning annual rates of growth in world commodity prices to the mid-1980s

Commodity Description [a,b]	Price Group Number	Projected Additional Inflation in Commodity Price Relative to Slowest Growing Group (Group 9)
		(% per year)
ENERGY AND ENERGY RELATED		
Crude oil	1	6.8
Coal		5.8
Oil and coal products		5.8
Other basic metals		4.8
MAINLY AGRICULTURAL EXPORTS		
Meat products	2	5.2
Leather products		4.9
Fishing; Wool		4.8
MAINLY ADVANCED COUNTRY EXPORTS (OTHER THAN MACHINERY)		
Forestry; Prepared fibres; Man-made fibres and yarn; Wool and worsted yarns; Pulp and paper; Fibreboard; Paper products n.e.c.; Newspapers and books; Commercial printing; Chemical fertilizers; Industrial chemicals; Paints and varnishes; Pharmaceuticals; Soap and detergents; Cosmetics and toiletry; Chemical products n.e.c.; Signs and writing equipment.	3	4.1
CERTAIN FOODS, DRINKS		
Milk products; Milk cattle and pigs; Fruit and vegetable products; Bread, cakes and biscuits; Margarine, oil and fats; Other farming import competing; Tobacco products.	4	4.0
NON-ENERGY MINERALS		
Iron; Non-metallic n.e.c.; Other metallic minerals.	5	3.4
MISCELLANEOUS GROUP[c]		
Wheat; Barley; Other cereal grains; Poultry (eggs); Flour and cereal products; Soft drinks and cordials; Beer and malt; Concrete products.	6	3.8
		2.8

TABLE 3.3 (continued)

COMMODITY DESCRIPTION [a,b]	PRICE GROUP NUMBER	PROJECTED ADDITIONAL INFLATION IN COMMODITY PRICE RELATIVE TO SLOWEST GROWING GROUP (GROUP 9)
		(% per year)
SUGAR AND RELATED PRODUCTS		
Other farming export; Confectionery; Food products n.e.c.	7	2.7
MAINLY EXPORTS AND PROSPECTIVE EXPORTS OF INDUSTRIALISING ASIA		
Cotton, silk and flax; Textile finishing; Textile floorcovers; Textile products n.e.c.; Knitting mills; Clothing; Footwear; Sawmill products; Plywood and veneers; Joinery and wood products; Furniture and mattresses; Glass; Clay products; Cement; Non-metallic mineral products; Basic iron and steel; Structural metal; Sheet metal products; Metal products n.e.c.; Rubber products; Plastic products; Other manufacturing.	8	2.6
MACHINERY, EQUIPMENT AND APPLIANCES		
Motor vehicles and parts; Ship and boat building; Locomotives; Aircraft building; Scientific equipment; Electronic equipment; Household appliances; Electrical machinery; Agricultural machinery; Construction equipment; Other machinery	9	0.0

[a] The composition of most commodity categories can be inferred from the commodity description. Details are in Australian Bureau of Statistics (ABS) (1978). The commodity categories, Other farming export, and Other farming import competing, are not used in the ABS I-O classification. Other farming export consists mainly of sugar cane. Other commodities included in this category are various fruits and dried vine fruits. Other farming import competing includes tobacco leaf as well as vegetables and flowers.

[b] Commodities which are essentially non-traded do not appear on this list.

[c] The overall world commodity price level is assumed to inflate at the same rate as for this group.

Source: Freebairn, J.W. "Projections of Australia's World Trade Opportunities: Mid and late 1980's", IMPACT Working Paper, No. I-07, Melbourne, 1978.

3.24. The IMPACT model (Vincent and Ryland, 1979) has been used to evaluate the effects on South Australian agriculture of this projected world price scenario. The results indicate a marginal change in the composition of South Australian agricultural production. For example, Table 3.4, column 1, shows that wool production is projected to increase by 6.6%, whereas wheat production is projected to decline by 1.3%.

TABLE 3.4: Projected changes in the Quantity of Agricultural Production, by Industry, resulting from three macro-economic forces.

	World Prices	Mining Boom	25 per cent Tariff Reduction	Total Impact
Wool	6.6%	-1.8%	0.4%	5.2%
Sheep	9.75%	-2.1%	0.5%	8.1%
Wheat	-1.3%	-2.2%	0.5%	-3.0%
Barley	0.8%	-1.9%	0.5%	-0.6%
Other Cereal Grain	1.3%	0.8%	0.2%	0.6%
Meat Cattle	10.3%	-2.2%	0.5%	8.5%
Milk Cattle & Pigs	3.7%	-0.7%	0.2%	3.2%
Other Farming Exports	-	-	-	-
Other Farming Imports competing	1.3%	-0.1%	0.15%	1.3%
Poultry	3.3%	-0.7%	0.18%	2.8%
Rural Employment	6.0%	-2.9%	0.5%	3.7%

Source: Vincent and Ryland (1979)

3.25. While this conclusion is of value in its own right, it will be shown later that, of the three macro-economic influences seen as being of particular importance to agriculture in the 1980's, it is this projected world price scenario that, in this analysis, exerts the greatest single influence for change on the composition of agricultural production.

3.26. However, the interpretation of these results is important. They do not imply that the growth rate in animal production will exceed the growth rate in cereal production as relative prices change. They do imply that the rate of growth in cereal production will be slower than previously relative to animal products.[1]

3.27. The containment of general inflation would certainly help farmers relative to other groups in the community, particularly in the short term. However, when Australia does again achieve a high level of economic activity at low rates of inflation, pressures for currency appreciation seem likely to emerge. This would be particularly true with strong growth in the mineral sector.

3.28. The effects of the projected growth in export earnings of minerals and energy related resources will result in an unprecedented increase in foreign exchange earnings which will influence exchange rates, domestic inflation and the basic structure of agricultural industries. Primarily the basic mechanism involves a lowering of the domestic price of traded goods (goods which enter international trade) relative to non-traded goods once the effect of the increase in foreign exchange earnings finds its way into the economy by way of revaluation of our currency, or by increased price inflation in Australia relative to other countries. The lowering of the domestic price of Australian exports will result in some contraction of output of export related industries particularly agriculture. (See Table 3.4 for IMPACT estimate of the output effects of a mining boom).

3.29. Although the rate of growth of the tertiary sector has slowed down in recent years, its absolute size, at around 70 per cent of GDP, means that even slow growth would require significant transfers of resources, particularly labour resources, from other sectors. Consequently no let-up in the level of competition for resources by the tertiary sector seems likely.

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1 If the growth rate in ouput of meat products is around 10 per cent annually and cereal output is 16 per cent annually, then the ten per cent output response in meat and a 1% reduction in cereal output as a result of a change in world prices which takes place over a three year period, will produce a 40% change in output of meat and 46% change in output of cereals relative to the base year.

3.30. Taken together, these factors suggest that the rural sector is unlikely to have its long term cost/price pressures relieved by exogenous economic forces.

3.31. GOVERNMENT POLICIES[1]

There can be no doubt that the continuation of strong secular cost/price pressure on the rural sector will create severe adjustment problems for farmers and for those in associated rural communities. Public policies that might be considered appropriate in this situation can be divided into two groups:

a) Those that attempt to moderate the forces themselves; and
b) Those that attempt to ameliorate the consequences of the forces.

3.32. The first group include policies aimed at changing relative output prices between sectors in the economy, such as by changes in the currency value, tariff changes or the payment of output subsidies. Schemes that attempt to change the relative availability or prices of input supplies to different sectors could also be categorised in this group. Given that the supply of farm land is more or less fixed, these measures could be directed either at the supply of capital (or credit) or at the rural labour supply. Government sponsored improvements in the supply of variable inputs or in a marketing efficiency could also be included in this group.

3.33. The second group of measures includes moves to stimulate agricultural productivity and to hasten the rate of resource movement out of farming and policies of a more explicitly human welfare nature. Specific measures include structural adjustment and rural reconstruction policies, rural research, education, extension, household support arrangements, payment of unemployment benefits, rehabilitation assistance, migration subsidies, retraining schemes, annuity-type retirement schemes and other similar measures.

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1 For parts of this section acknowledgement is given to G. Miller (1976).

3.34. In terms of their effects, these two groups of policy measures are inter-related. However, they are discussed separately below because they have different implications for the remainder of the economy.

3.35. COUNTERVAILING POLICIES

A plethora of policies might be used in moderating the decline in the terms of trade of farmers. All have direct implications for the intersectoral balance in the Australian economy and thus for the overall level of national economic welfare. The policies discussed below are those capable of exerting the greatest influence in moderating the relevant macro economic forces.

(i) Devaluation

Devaluation of the Australian dollar is one of the economic policy measures available to governments in meeting three objectives:

- shorter term management of the economy, including the maintenance of the external/internal balance, employment and inflation goals;
- longer term resource allocation and economic growth;
- income redistribution.

In the past, because of the importance of rural exports in total exports, a decline in farm exports was often synonymous with balance of payments difficulties. In this situation a devaluation would simultaneously assist in meeting both the first and third objectives. However, because of the declining relative importance of rural exports, declines in the prices of farm products will in the future have progressively less influence on the balance of payments. Consequently it would seem likely that only in unusual circumstances would a decision to devalue coincide with the more severe dips in farm incomes.

Use of the exchange rate in economic policy is complex and the effects of exchange rate changes vary according to the levels at which other economic variables are operating.

The shift away from fixed exchange rates has resulted in increased recognition of the role of the exchange rate in controlling, transmitting and intensifying inflation. As well as the effect on import prices, changes in currency values can be directly linked with wage rates through wage indexation or other institutional arrangements. There are numerous less direct links with interest rates and other costs. When an economy already has a relatively high level of inflation, controlling the inflationary consequences of a devaluation by use of other policy measures is uncertain, and in any event not costless for the rural sector. Tight monetary measures for instance, could create difficulties for farmers if they are already experiencing liquidity problems as a result of cost pressures, market price declines or adverse seasonal conditions.

(ii) Tariff Reductions

A substantial and broadly based reduction in tariffs would reduce the profitability of import competing manufacturing industry. This would lessen the degree of competition for resources, reduce the upward pressure on farm input prices and simultaneously create downward pressure on the value of the Australian dollar. Farmers would also receive some direct benefits in reduced prices for imported inputs, although this could eventually be partly offset by changes in the value of the dollar.

The effects on South Australian agriculture of an across the board reduction in tariffs have been estimated using the IMPACT model (Vincent and Ryland, 1979). The effects of a 25% reduction in tariffs on agricultural industries and employment are shown in Table 3.4

Across the board reductions in tariffs will assist the competitive performance of the export oriented agricultural sector. In particular it will benefit most those agricultural industries which utilize a relatively large component of imported inputs and where a high percentage of output is exported. Tariff reductions and reduced assistance measures to industry generally have been advocated as appropriate policy responses to offset the impacts of chronic balance of payments surpluses from the resources boom.

(iii) Direct Assistance to Farmers

The payment of direct subsidies to farmers in order to alter the intersectoral balance in the economy was first advocated by Corden (1958).

The Green Paper on Rural Policy (Harris et al., 1974) endorsed the case and enshrined the misleading title of 'Tariff Compensation' for this form of assistance to farmers. The Industries Assistance Commission (1974) rejected the general case for such government assistance.

The cost/price pressures farmers face are of a continuing nature. In contrast, tariff compensation payments, if made, would constitute a once-and-for-all change in the ratio of input costs to output prices. They would not provide a long run solution to the changing competitive balance between the sectors. If direct government subsidies were to achieve this purpose, the amounts of subsidy would need to increase secularly in proportion to the growth in costs/returns pressure.

On balance, the prospect of a general policy of tariff compensation providing farmers with much relief from the long run pressures they face seems unlikely. General tariff compensation could only be considered a viable economic proposition if, first, it were supported by an empirical evaluation of the likely costs and benefits and, second, it were integrated into a broader policy package aimed explicitly at increasing efficiency and changing the intersectoral balance in the Australian economy.

(iv) The Supply of Capital

Equity ratios in agriculture are relatively much higher than those in manufacturing industry. The average equity ratio in agriculture is about 90 per cent compared with 40 per cent in manufacturing industry. That this is so is probably due to a reluctance of farmers to borrow particularly for farm improvements (internal capital rationing) and/or the reluctance of the financial system to advance loans to agriculture (external capital rationing). Reforms of the financial system may help alleviate the latter but certainly not the former. Given the sort of cost/price pressures that have been referred to it is not certain that farming in total will be able to attract new capital in competition with other productive activities. The ability of the sector to attract new capital will depend largely on the rate of emergence of new technology and the capacity of farmers to use it efficiently.

Until the late 1950's most lending to farmers was by overdraft. The need for longer term loans to finance pasture development programmes saw the emergence of the Commonwealth Development Bank and the Term and Farm Development Loan Funds. Further, the rural recession of the early seventies and subsequent setbacks stimulated the development of rural reconstruction agencies as lenders to farmers.

It seems unlikely that the provision of low interest finance to farmers would increase total rural capital formation greatly unless the supply of such funds were limitless. Where there are limits on the availability of funds, borrowers beyond that limit must face the same high-cost capital market as other borrowers. Consequently, at the margin the rate of new capital formation in farming would continue to be affected by the costs/returns pressures facing farmers.

Subsidized interest rates are nearly always regressive because the rich generally owe more than the poor who are then often driven to high interest rate markets. Moreover, concessional funds tends to be rationed by wealth criteria rather than interest rates. This reinforces the position of those with high initial wealth as the concessions are capitalized into land values.

The developments that have taken place in the rural credit market have been effective, not so much in stimulating new capital formation or offsetting the costs/returns pressures, but in facilitating responses to these pressures.

Some of the measures have had a welfare as well as an efficiency objective, such as in the case of carry-on finance and rehabilitation assistance, but for the most part the finance has been part of a package aimed at productivity improvement and structural change.

It is significant that the NFF has reviewed critically farmers' demands for government assistance in securing favourable access to finance and concluded that farmers would benefit more from opening up the banking system to greater competition:

> "In the past, farmers have sought Government intervention, principally through the provision of long term credit facilities or concessional credit, to offset the distortions in the availability of finance and to provide rural credit programs which are tailored to the realities of cash flows in primary production. However, it is now recognised that some Government-backed initiatives, such as widely available concessional interest rates, may ultimately prove counter-productive. The benefits can be capitalised into land values and rationing of funds may be required.

> Despite the welcome activities of the Commonwealth Development Bank and more recently, the Primary Industry Bank of Australia, the farm sector remains at a disadvantage as a result of regulations imposed on the capital market. Some of these regulations need to be relaxed. The Government needs to move in the direction of opening up Australia's banking system to new entrants. The resultant competition would lead to greater diversity and therefore specialisation, from which those groups requiring long term finance would be better catered for". (Farm Focus: The '80s)

The report of the Campbell inquiry into the Australian financial system (Campbell et al., 1981) has strongly supported de-control and de-regulation. The basic argument of the report was that to achieve improved efficiency of the financial system, the most cost effective method is through a competitive market mechanism with a minimum of intervention and government regulation. Further, according to the committee, equity considerations are more appropriately dealt with through the welfare process.

Regarding the rural sector, the committee found that the availability of finance for short and medium term lending (3 to 10 years) was adequate. About 66 per cent of loans outstanding by trading banks in 1980 was accounted for by over-draft and term loans.

On the other hand, the committee found a marked reluctance by institutional lenders to provide facilities for medium to longer term lending (10 years and more). Longer term institutional loans to agriculture have often involved concessional interest rates, loans not being fully secured and the farmer not paying the full costs of management support and loan assessment services.

In 1980, the amount of total institutional rural debt accounted for by longer term loans from the Farm Development Loan Fund (FDLF) and Commonwealth Development Bank (CDB) amounted to about 27 per cent. Other institutional sources of longer term finance included the Primary Industry Bank of Australia (PIBA), which re-finances rural loans by prime lenders and provides some loans for rural adjustment, and some State-sponsored rural credit schemes.

According to the committee, 72 per cent of gross rural debt in 1977 was accounted for by loans advanced by institutional lenders, of which about half ($1330 M.) involved concessional interest rates. The committee proposed an unfettered commercial banking system that would render the current provisions of rural finance associated with PIBA, FDLF and CDB redundant.

Further, the committee recommended that any government interest rate subsidy to farmers should be provided by way of recurrent budget allocations.

The committee considered that while there are extra costs associated with decontrolling interest rates there are also benefits in terms of providing increased availability of funds for longer term finance. The net effect of these changes according to the committee is that the average cost of rural finance may change only marginally.

The committee considered requests for greater flexibility in rural loan repayment arrangements from institutional lenders to account for the uncertainty, variability and seasonality of rural income fluctuations. The committee concluded that the de-regulation of interest rates, together with increased competition for banking business, would lead to more flexible repayment arrangements for rural borrowers.

The Committee recognised that there would always be circumstances where viable rural producers would be unable to obtain finance from institutional lenders. It concluded that this form of assistance should be from the budget by way of direct assistance to borrowers.

The committee considered various submissions that indicated that farmers were generally unhappy with the skills of local trading bank branch managers in assessing rural loan applications. The committee concluded that these complaints were symptomatic of the present regulatory framework which gives financial institutions little incentive to make sophisticated commercially oriented evaluations. Because lenders are forced to ration funds at regulated interest rates they tend to rely on rule of thumb and conservative security rules. The committee concluded that a de-regulated system would tend to alleviate these problems.

The high equity ratios in agriculture mentioned above imply that farmers as a group would be less affected by any changes in the financial system than most other groups in the community. In a recent study the BAE showed that about ten per cent of gross capital formation in agriculture was from institutional sources. However, in South Australia a preliminary examination of recent BAE survey data (1977-1979) has revealed that South Australian farmers tend to borrow relatively more funds from external sources (about 25 per cent) than the average Australian farmer. This implies that South Australian farmers would be relatively more affected by changes in the financial system than the average Australian farmer.

(v) <u>The Supply of Labour</u>

The overall pattern of future industrial development in Australia will be influenced by total resource supplies, including labour supplies. A major feature of the rural labour situation over the

past three years has been an upturn in rural employment. On-farm employment increased by 19 000 to an estimated 381 900 between 1978-79 and 1980-81, thus reversing a long-term downward trend. Over the past five years, rural wages have risen at a slower rate than have the prices of other major farm inputs. However, rural wages are expected to rise relative to the prices of other farm inputs and to the consumer price index during 1982 because of the likely flow-on of wage increases from other sectors of the economy.

The rise in rural wages can be expected to dampen the demand for rural labour in the short term. However, it is likely that unemployment in other sectors of the economy will discourage labour from leaving the rural sector. In any event, the substitution of agricultural labour for labour in other sectors of the economy is low.

The ability of the agricultural sector to compete with other sectors for available labour supplies will be a more important consideration during the 1980's than the total labour supply. The outlook for rural employment depends on relative movements in factor and product prices and volumes, and on technological developments. The expected growth in rural production during the 1980's (as discussed elsewhere in this paper), and the expectation that the scope for rural labour displacement appears to be diminishing, indicate that the current relatively high levels of rural employment will continue during this decade.

3.36. POLICIES TO AMELIORATE THE CONSEQUENCES

So far this section has concentrated on policies aimed at off-setting the cost/price pressures imposed on farmers. Although in aggregate farmers might expect some benefits from policies of this type, they do not seem likely to be significant in relation to the forces themselves. The question therefore emerges whether more benefit may not be gained in the long term by greater reliance on measures aimed at promoting productivity growth and stimulating adjustment within agriculture, and between agricultural and other pursuits.

3.37. As indicated earlier agriculture has been able to withstand severe cost/price pressures in the past but nevertheless continued to grow. A principal reason for this has been its capacity to generate productivity growth. Between the early 1950's and the late 1970's the ratio of volume of rural outputs to volume of inputs has increased at a trend rate of growth of 1.5 per cent per annum.

3.38. Growth has taken place as a result of a build-up in the quantity and quality of farm capital; from the substitution of capital for labour; from increased use of purchased inputs and improvements in their quality; from technical change; and from improvements in the way in which resources and technology have been combined to produce appropriate combinations of different outputs. In varying degrees these factors will be important in the future response of the rural sector to the cost/price pressures postulated in this paper.

3.39. For growth to take place in the future, productivity increases would need to be great enough to compensate for the postulated increases in costs relative to returns. One way in which this can come about is through improvements in technology. Substantial improvements in varieties, breeds, agronomic practices, agricultural equipment and so on, would be needed to ensure continued growth in Australian agriculture.

3.40. The ability of a reduced number of farmers and farm workers to generate growth in farm output in the past cannot all be explained by improved technology and the substitution of capital and purchased inputs for labour and land. Increasing management and labour skills have been required to determine which technology is relevant and to combine new technology with other farm inputs in an efficient manner. It is generally agreed that the growth has in large part been due to the skills and capacities of Australian farmers. Another way to look at this is to say that there has been a substitution of human capital for labour or an improvement in the quality of human resources engaged in farming.

3.41. If agriculture is to be subjected to the pressures suggested above and if technology is to become even more dynamic in the future, a substantial further improvement in the skills and allocative capacities of farmers will be needed. Farm adjustment in the future will need to be accompanied by the entry of younger, better educated and more professional farm operators. These needs also extend to the human resources engaged in the marketing of farm products. (For a discussion of farmer education see Chapter 6).

3.42. To some extent changes in the population of farmers can be expected to come about as a result of changes in the demographic characteristics of the farm and national population and natural market processes. However, they can be assisted by government policies aimed at improving the quality of educational facilities in rural areas.

3.43. Improved education for rural people would also improve the overall capacity of future farmers to use available information effectively. Their increased supply of human capital would give them greater occupational mobility and increased skills in managing household and financial affairs. These factors would all contribute to making the response to change less painful and more productive.

3.44. Notwithstanding the increased productivity in farming that could be brought about by the efforts of farmers themselves, and by government policies aimed at improving research, education and extension, the entry of new managers and the rearrangement of resources on existing farms, there will continue to be a need for facilitating the movement of human resources out of agriculture. This could best be achieved by the maintenance of a fully employed economy so that alternative employment is readily available. However, other measures such as relocation and rehabilitation assistance, the payment of unemployment-type household support benefits, the provision of counselling assistance, and possibly the development of annuity arrangements for older farmers, will probably also be needed on a larger scale than in the past.

3.45. CONCLUDING REMARKS ON RELEVANT MACRO-ECONOMIC POLICY

There are two broad policy options for dealing with the projected balance of payments surpluses throughout the 1980's. The first is to increase imports through a gradual lowering in tariff protection and barriers to trade. This would help dissipate the projected increase in foreign exchange earnings and need for currency appreciation.

3.46. An analysis reveals (Table 3.4) that the total impact on South Australian agriculture of 'across the board' tariff reductions, the mining boom and the world price rise scenario is a slight expansion of activity and that this expansion is more likely to come from projected real increases in the world import price of agricultural commodities relative to manufactured goods.

3.47. The second option for macro-economic policy is to allow continual and gradual adjustment of exchange rates in response to market forces and/or higher domestic rates of inflation. This latter option is probably less preferred than the former but the effect is to reduce the projected increase in the real effective exchange rate. The impact of higher domestic inflation on agriculture is probably less than on any other sector, particularly its impact on real net farm income. It does, however, raise the value of farm assets, encourages the acquisition of land and capital

equipment and strengthens the competitive positions of the wealthy.

3.48. The appropriate macro-economic policy response may be a blending of these two broad options. Reduced protection levels throughout the economy will decrease the costs of some farm inputs, as a lower exchange rate will be required to achieve external balance. A mining boom will result in pressure for an upward revaluation of the dollar with consequent adverse effects for agricultural imports. This scenario would result in a slower rate of growth in agricultural outputs than would otherwise occur in response to the anticipated increase in world prices discussed above.

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4. AGRICULTURE IN SOUTH AUSTRALIA

4.1. Agriculture in South Australia includes a diverse and complex pattern of related activities. Current directions are influenced by a variety of forces — local and international, production-oriented and economic, technological and social. The relative influence of various forces has changed over time and further changes may be expected. A critical task for farmers, policy analysts and administrators of farm policy is to make informed appreciations of these forces and to formulate and implement continuing strategies of adaptation and adjustment.

4.2. Agriculture begins with the farmer who is primarily involved with the production of food and fibre. However, beyond the farm gate it involves many activities including input supplies, farm services, distribution, processing and marketing. Three inter-related sectors of on-farm and off-farm activity can be identified: first, the input supply sector, supplying factor inputs including fertilizer, seed, herbicides, and machinery and equipment; second, the farm sector which combines these inputs as well as labour, capital and technology to produce a wide range of specific commodities; and third, the product sector which involves processing, marketing and delivery to final consumers. As agriculture becomes increasingly specialised the significance of the off-farm sectors increases.

4.3. South Australian agriculture includes broad acre mixed farming, grazing, dairying, and a wide range of horticultural and market gardening activities. Techniques of dryland farming have received close attention as farmers and agricultural scientists have come to terms with the local environment. The history of agricultural development has involved changing balances between the contributions of practical farmers and technical specialists. In the early years of settlement farmers led the way in adapting agricultural techniques and demonstrating the suitability of

apparently unpromising land for cultivation. Later, agricultural specialists played important parts in, for example, demonstrating the potential gains from fertilizers, diagnosing the need to apply trace elements, and introducing medic pastures. Partnership between specialists and farmers has also been important. For example, the use of fertilizer did not become widespread until scientific experiments giving positive results were followed by practical innovations in drilling methods by farmers.

4.4. Maintaining productive relationships between specialist advice and practical adaptation is a continuing challenge. As farmers need to make judgements about a wider range of off-farm matters their dependence on specialist advice is likely to increase. However, as farm enterprises increase in size and sophistication the kinds of advice sought will challenge the capabilities of specialists.

4.5. CHARACTERISTICS OF AGRICULTURE IN SOUTH AUSTRALIA

Agriculture is the predominant primary industry in South Australia. The agricultural and food processing sectors taken together have the highest multiplier effects on regional economic activity, except in the South East Region where other primary industries including forestry and fishing are more important. However, while the productivity of farm enterprises in South Australia is high the farm labour force and the relative contribution of agriculture to gross value of production are declining.

4.6. Between 1954 and 1974 the proportion of the workforce engaged in agriculture (operator/owners and hired labour) declined from 14 per cent (45,500 people) to 6.6 per cent (36,000 people). Details are given in Table 4.1.

TABLE 4.1: Distribution of Workforce by Industry 1954/55, 1974/75

Industry	June 1954[a] 1954/55						August 1974[b] 1974/75					
	Aust.			S.A.			Aust.			S.A.		
	No.	%	Rank	No.	%	Rank	No.	%	Rank	No.	%	Rank
Agriculture	467,823	12.6	3	45,499	14.1	3	383,100	6.5	7	36,000	6.6	6
Fishing/Forestry/ Hunting	25,475	0.7	12	2,036	0.6	12	21,700	0.4	12	1,100	0.2	12
Mining (and Quarrying)	61,371	1.7	11	2,587	0.8	11	73,800	1.3	11	3,500	0.6	11
Manufacturing	1,027,331	27.8	1	90,704	28.2	1	1,374,300	23.5	1	141,100	25.7	1
Construction	325,622	8.8	5	29,005	9.0	5	506,300	8.7	4	41,300	7.5	5
Transport/ Communication	335,835	9.1	4	30,464	9.5	4	439,800	7.5	5	41,600	7.6	4
Public Utilities	73,650	2.0	10	5,520	1.7	10	100,200	1.7	10	9,200	1.7	10
Finance	98,644	2.7	8	8,019	2.5	9	429,400	7.3	6	33,900	6.2	7
Public Administration	97,638	2.6	9	8,751	2.7	8	222,300	3.8	9	15,100	2.8	9
Community Service	318,622	8.6	6	23,547	7.3	6	746,700	12.8	3	79,200	14.4	3
Entertainment	224,489	6.1	7	18,122	5.6	7	355,500	6.1	8	31,100	5.7	8
Retail/Wholesale trade	577,381	15.6	2	52,887	16.4	2	1,165,700	19.9	2	109,500	19.9	2
Other	68,141	1.7	-	4,608	1.6	-	36,400	0.5	-	6,800	1.1	-
TOTAL	3,702,022	100		321,749	100		5,855,200	100		549,400	100	

NOTE: The industry classification used in the 1954 Population and Housing Census differs from that used in the Labour Force Survey and as such figures are not strictly comparable.

(a) from "Census of the Commonwealth of Australia, 30th June, 1954".

(b) from "Labour Force Survey" and "Civilian Employees". The "Civilian Employees" series was used for August 1974 communication, Public Utilities, and Public Administration and as this series excludes employers, self employed and unpaid helpers, will slightly underestimate the figures.

4.7. The number of farms has also declined while the number of farms larger than 800 hectares has increased. Details are given in Table 4.2.

TABLE 4.2: Classification of farms by size.

	1959	1968	1978	
0 - 40 ha	10 078	11 335	6 319	
40 - 80 ha	2 096	2 030	1 485	(40 - 75 ha)
80 - 200 ha	3 328	2 914	2 572	
200 - 400 ha	4 341	3 778	2 910	
400 - 800 ha	4 165	4 237	3 451	(400 - 750 ha)
800 - 2000 ha	2 994	3 250	3 526	
> 2000 ha	1 525	1 593	1 646	
	28 527	29 137	21 909	

Source: Australian Bureau of Statistics.

4.8. In 1954/55 agriculture contributed 16.4 per cent of G.D.P. in Australia and ranked second to manufacturing. However, by 1974/75 the contribution of agriculture had declined to 6.4 per cent and ranked only seventh. In South Australia over a similar period the contribution of agriculture to the gross value of production, relative to manufacturing and mining, has also declined. Details are given in Table 4.3.

TABLE 4.3: Gross value of Production[a]: South Australia Selected Industries

	1954/55 ($M)		1974/75 ($M)	
	Value	%	Value	%
Forestry	9.2	4.7	16.4	0.4
Fishing	2.4	0.3	22.5	0.6
Hunting	1.0	0.1	0.6	-
Agriculture	193.8	23.9	672.6	17.49
Mining	18.4	2.3	131.3	3.4
Manufacturing	586.2	72.3	3003.0	78.00
TOTAL	811.00	100.00	3846.00	100.00

(a) These figures show gross valued output at current prices. No allowance is made for cost of purchased inputs (raw materials, etc.) Source: A.B.S.

4.9. REGIONAL DISTRIBUTION

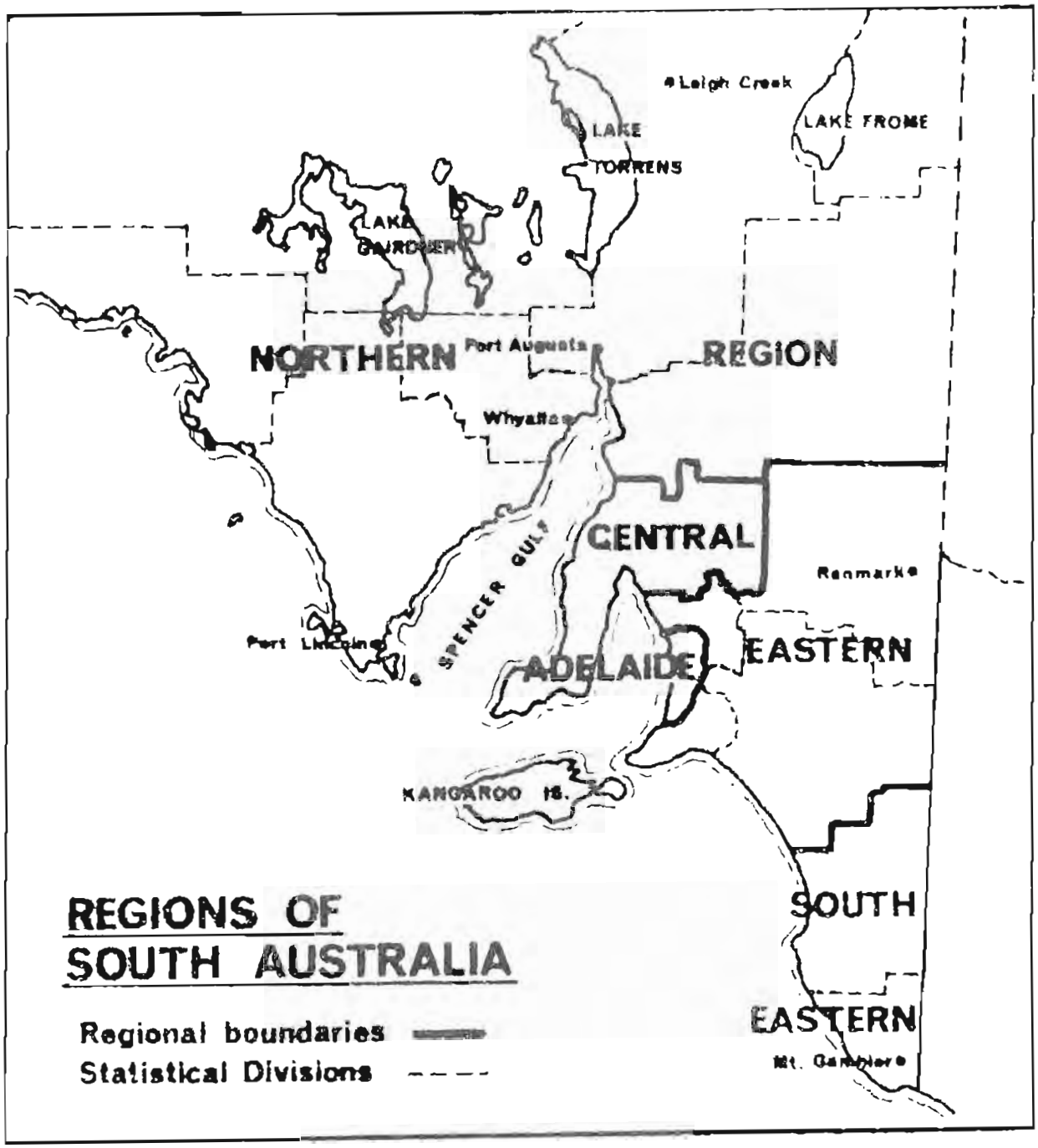
The contribution of agriculture to the economy in South Australia is unevenly distributed. This can best be illustrated by comparing the contribution of agricultural production to gross value added among a number of geographical regions of South Australia.

4.10. The share of agriculture in regional value added in 1976/77 is given in Table 4.4. This share varies from 0.8 per cent in the Adelaide metropolitan area to a high of 40.7 per cent in the Central Region.

TABLE 4.4: Per cent contribution to value added of major industries by Region in South Australia.

Industry	South Eastern	Eastern	Adelaide	Central	Northern
Animal Industries	9.7	8.7	0.1	11.8	4.6
Other Agriculture	2.4	18.7	0.7	28.9	11.3
Forestry/Fishing	4.5	0.5	0.04	0.4	0.6
Coal/Oil Mines	-	0.3	0.03	-	1.5
Other Mining	0.8	1.7	0.7	3.2	5.2
Food Manufacturing	3.4	13.3	3.6	3.3	0.8
Wood/Paper Manufacturing	23.6	1.1	3.3	0.5	2.0
Other Manufacturing	1.8	6.0	18.1	4.1	18.1
Utilities	2.2	2.0	2.9	1.2	4.7
Building/Construction	3.3	3.6	4.3	2.6	2.1
Trade	19.5	13.8	19.3	10.5	14.5
Transport/Communication	5.6	6.8	7.5	8.8	12.0
Finance	10.9	10.3	16.7	13.2	9.8
Public Administration	1.7	2.8	5.6	1.4	3.1
Community Services	7.4	7.3	11.3	7.6	7.2
Entertainment	3.5	3.0	3.9	1.8	2.5
TOTAL	100.0	100.0	100.0	100.0	100.0

Source: Australian Bureau of Statistics


Leigh Creek
LAKE FROME
LAKE TORRENS
LAKE GARDINER
NORTHERN
Port Augusta
REGION
Whyalla
CENTRAL
SPENCER GULF
Renmark
Port Lincoln
ADELAIDE
EASTERN
KANGAROO IS.
SOUTH
EASTERN
Mt. Gambier
REGIONS OF
SOUTH AUSTRALIA
Regional boundaries
Statistical Divisions

MAP 4.1

4.11. In addition the degree of specialization of each type of primary economic activity among regions differs significantly (Table 4.4). The contribution to the value added of animal industries in South Australia varies from 3.7 per cent in Adelaide to over 36 per cent in the Eastern Region while other agriculture (cropping and plant industries) varies from a low of 2.4 per cent in the South East to 38 per cent in the Eastern Region. Relative to the rest of the state, the Eastern Region makes the greatest contribution to agriculture. In a similar manner, the South Eastern Region specializes in forestry/fishing and the Northern Region in mining. The pattern of specialisation means that policy changes will have different impacts in different regions. (Regions referred to here are statistical regions. See Map 4.1).

4.12. COMMODITY DISTRIBUTION

Within agriculture itself there are significant differences in the value share contribution of each type of agricultural commodity. Broadly, commodities of plant and cropping activities contribute more to value added than those of animal origin (Table 4.4). Within each of these industry groupings there are regional commodity specialisations as indicated in Table 4.5.

TABLE 4.5: Distribution of value added of Primary Industry by Region in South Australia 1976/77

Region	Animal Industry	Other Agriculture	Forestry/ Fishing	Coal/ Oil Mining	Other Mining	Utilities
South East	20.0	2.4	57.1	-	2.6	3.5
Eastern	36.1	38.1	12.6	15.2	11.2	6.4
Adelaide	3.7	11.4	8.6	9.4	35.5	69.7
Central	16.8	20.2	3.8	-	7.5	2.2
Northern	23.4	27.9	17.9	75.4	43.2	18.2
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0

Source: Australian Bureau of Statistics

The share of gross agricultural returns for each major commodity is given for several years in Table 4.6

TABLE 4.6: Gross value of agricultural production by commodity - South Australia.

$'000

Commodities	1970/71		1975/76		1977/78		1978/79	
	Gross Value	%	Gross Value	%	Gross Value	%	Gross Value	%
Beef-Cattle + Calves (Slaughterings)	34709	10.3	63539	9.4	98197	14.1	142852	13.2
Wool	65525	19.4	131865	19.5	145277	20.8	161985	14.9
Sheep - Slaughterings	28082	8.3	25822	3.8	64261	9.2	56365	5.2
Dairy Products	26318	7.8	30170	4.5	34293	4.9	37407	3.5
Pigs	13142	3.9	21562	3.2	23459	3.4	29543	2.7
Poultry	5488	1.6	15158	2.2	22673	3.3	24617	2.3
Other Animal Products - Eggs Honey Beeswax	8879	2.6	15685	2.3	20649	3.0	21759	2.0
Wheat	40562	12.0	118063	17.4	50349	7.2	265159	24.5
Barley	34902	10.3	105865	15.6	50553	7.2	118303	10.9
Other Cereal Grains	5426	1.6	6800	1.0	4727	0.7	11212	1.0
Grapes	16060	4.7	38200	5.6	43953	6.3	46947	4.3
Potatoes	6059	1.8	9966	1.5	10443	1.5	14684	1.4
Oilseeds Linseed Rapeseed Safflower Sunflower	46	-	1576	0.2	4449	0.6	5449	0.5
Other Crops	53325	15.8	93528	13.8	125294	17.9	147859	13.6
TOTAL	338523	100.0	677809	100.0	698578	100.0	1084142	100.0

Source: Australian Bureau of Statistics

A regional breakdown for 1976/77 for the same set of commodities is detailed in Table 4.7.

TABLE 4.7: Gross value of agricultural production for selected commodities by Region in South Australia(a) 1977/78

	South-East	Eastern	Adelaide	Central	Northern	Eyre
			$'000			
Wool	38582	36666	1914	20694	27179	20242
Wheat	2520	8978	102	15115	7918	15716
Barley	2810	12071	399	20211	3935	11127
Oats	1040	1187	22	718	273	836
Grapes	2612	37319	2663	1359	1	-

(a) figures derived by multiplying quantity produced in each region by the wholesale prices realised in the principal markets (Sources: ABS Catalogue Nos. 1304.4 and 7503.4).

These tables illustrate the extent of commodity specialization in each region. Some regions have a highly diversified commodity base while a region such as the Eastern Region specializes in horticultural cropping.

4.13. Over time, significant trends are emerging in the broad agricultural industries. Cropping tends to be increasing at a faster rate than animal industries. There is clearly an increase in the use of land for cropping rather than pasture.

4.14. INPUT/OUTPUT ANALYSIS

The dependence of the farm sector on the non-farm sector both in terms of output demands (intermediate, export and final consumption) and input supply services can best be summarised in the form of an input/output framework.

4.15. In Table 4.8 a modified 11 sector input/output table of the South Australian economy is presented for illustrative purposes. The table conveniently summarizes all the transactions of goods and services between each sector in South Australia for 1976/77. The rows of the input/output table represent outputs or sales to other sectors.

SECTOR TITLES, TABLES 4.8, 4.9, 4.10.

SECTOR NO.	TITLE
1	Animal industries
2	Other primary industries
3	Mining
4	Manufacturing
5	Electricity, gas and water
6	Building and construction
7	Trade
8	Transport and communication
9	Finance
10	Public administration and defence
11	Community services and entertainment, recreation.

TABLE 4.8: 11-Sector transactions table: South Australia, 1976-77 ($'000)

SECTOR	1	2	3	4	5	6	7	8	9	10	11	H-H	O.F.D.	EXPORTS	TOTAL
1	130	0	0	118580	0	0	0	0	0	0	0	0	0	99891	218601
2	18632	20026	451	83724	114	0	0	1447	27	2	806	35707	3	217670	378609
3	3	39	22659	35877	790	3852	349	367	42	12	318	0	0	89008	153315
4	15960	21028	13065	1218045	9346	149060	175772	99269	7201	24759	62925	536532	207052	1178122	3718136
5	5142	5436	2393	44666	4128	1508	10619	3680	16599	1667	39402	51933	18003	0	205168
6	1106	1158	633	8600	3562	0	6923	13116	8296	5320	7064	50256	347343	1789	455086
7	7685	7920	1798	38058	1085	7656	77519	23958	27739	765	15323	208686	846589	461148	1725929
8	4217	7380	4664	142658	3755	13973	53720	22323	17337	4548	9100	64281	445847	5860	799663
9	102	175	2384	40505	286	2950	205647	5491	94286	11119	17428	474758	2	204572	1059704
10	0	0	4	786	0	0	0	0	132	0	0	34073	302133	0	337128
11	1804	301	446	1208	191	41	3893	806	16883	109	8509	350323	601509	29441	1015463
H-H	115483	241838	41668	999183	79583	149095	465214	370326	406260	246727	581003	0	0	0	3696380
O.V.A.	6945	30551	44234	313917	78928	60284	508126	154819	394366	11324	163051	0	0	0	1760745
IMPORTS	41392	42757	18916	672329	23409	66667	218147	104863	70536	30776	110534	585608	0	0	1985934
TOTAL	218601	378609	153315	3718136	205168	455086	1725929	799663	1059704	337128	1015463	2392157	2768481	2287421	0

Source: G.R. West, et al., Generation of Regional Input-Output Tables for the State and Regions of South Australia, Report to the Treasury Department (S.A.), 1979, p. 59.

4.16. The columns of the input/output table depict purchases of inputs from supplying sectors. Thus the manufacturing industry sector supplies agricultural cropping industries with most of their purchased inputs. In 1976/77 this accounted for 5.55 per cent of total output or $21.028 m.

4.17. Using the input/output table it is possible to trace out the effect of an increase in the final demand for cropping of say $1 M. in South Australia. The direct impact of an increase in value of cropping is to stimulate additional demand for inputs. This induces as a direct effect an additional demand for output of the manufacturing sector of $.055 M. In turn $.055 M. of manufacturing induces an additional demand for trade (for example) of $.0021 m. When all sectors are combined and the effects are traced through this shows the direct and indirect impact on each sector stimulated by an increase in the final demand for cropping. These effects are summarised in Table 4.9.

TABLE 4.9: Direct and Indirect Effects of an Increase in Agricultural Cropping

SECTOR	DIRECT	INDIRECT	TOTAL
1	.0000	0.0188	0.0188
2	0.0529	1.0984	1.0913
3	0.0001	0.0075	0.0076
4	0.0555	0.5334	0.5889
5	0.0144	0.0505	0.0649
6	0.0031	0.0349	0.0378
7	0.0209	0.1374	0.1583
8	0.0195	0.0747	0.0942
9	0.0005	0.3005	0.3010
10	0.0000	0.0176	0.0176
11	0.0008	0.1870	0.1878
TOTAL	0.1677		
H-H	0.6388	0.5881	1.2269
TOTAL	0.8065	1.7617	2.5682

Table 4.9 shows that the initial increase of $1 M. has increased total value of output by $2.57 M. This means that the initial one million dollar increase in final demand for cropping has resulted in an increase in total economic activity of two to three times this amount.

4.18. Similar multipliers for each region of South Australia stimulated from an increase in final clearance of each sector have been calculated and these are given in Table 4.10. The difference in the multipliers for agriculture as a whole in each region reflects the importance of the agricultural sector in each region and the extent to which the farm sector relies on local suppliers. Purchased non-local inputs in agriculture average 14 per cent of total agricultural output in South Australia as a whole but on a regional basis the figure varies, with a maximum of 25 per cent in the South East Region.

TABLE 4.10: Regional output multipliers by sector

		REGION					
		South East	Central	Eastern	Northern	Adelaide	S.A.
1.	Agriculture - Animal Ind.	1.61	1.58	1.83	1.57	2.10	2.57
2.	Agriculture - cropping	1.42	1.44	1.90	1.52	2.26	2.57
3.	Mining	1.56	1.44	1.45	1.31	2.33	2.24
4.	Manufacturing	1.84	1.56	1.89	1.74	2.15	2.70
5.	Public Utilities	1.30	1.24	1.42	1.38	1.75	1.97
6.	Building	1.47	1.35	1.63	1.54	2.26	2.62
7.	Trade	1.35	1.27	1.45	1.33	1.97	2.21
8.	Transport	1.41	1.34	1.34	1.50	2.03	2.38
9.	Finance	1.36	1.28	1.44	1.36	1.86	2.08
10.	Public Administration	1.51	1.39	1.66	1.52	2.27	2.69
11.	Community services and entertainment, recreation	1.46	1.36	1.58	1.48	2.07	2.41

Source: G.R. West, et al. op. cit.

4.19. The agricultural sector itself is of course a major supplier of raw material to food manufacturers. Thus the agricultural sector is particularly sensitive to changes in the value of output of the food processing sector. In Table 4.11 the impact on agricultural output of a one per cent increase in the food processing sector in each region is presented. Thus Table 4.11 demonstrates that although the sensitivity of agriculture varies in each region the overall impact on agriculture of food processing facilities is particularly significant.

TABLE 4.11: Increase in agriculture output from one percent increase in output of demand for food processing industry by Region.

	South-East	Eastern	Central	Adelaide	Northern	S.A.
Agriculture						
Animal Ind.	0.28	0.17	0.11	0.03	0.20	0.44
Cropping	0.16	0.17	0.19	0.08	0.07	0.33
Fishing	0.01	0.01	-	-	0.01	0.10

Source: G.R. West, et al. op. cit.

4.20. The importance of the food processing sector and the agricultural sector compared with other sectors may be gauged by comparing the relative magnitude of the output multiplier effects of each sector in each region. These multiplier effects are given in Table 4.10. Except in the South East Region the food processing and agricultural sectors in each region have the highest multiplier effects on regional economic activity. Consequently, any change in the economic health of the South Australian food processing economy will be felt throughout South Australia and particularly in the Central and Eastern Regions. Any policy changes should take this pattern into account.

4.21. The impact multipliers given in Table 4.11 conveniently summarise the relative importance of the food economy in each region of South Australia. These sector multipliers combined with the commodity shares of value of production in each region indicate the relative effects of changes in commodity composition. Thus 30 per cent of the gross value of commodities of the South East is derived from beef production which indicates that sector output of agriculture will be increased by approximately 0.50 per cent for each one per cent change in the value of production.

4.22. FUTURE DIRECTIONS

South Australian agricultural industries have potential capacity to meet projected growth in demand for agricultural products in the 1980's. Growth in production may come from productivity improvements in broad-acre farming, substituting cropping for pastures, some limited development of land for agriculture south of the Dog Fence, and productivity improvements in the pastoral zone.

4.23. However, production increases will probably be achieved at substantially higher costs in terms of opportunity costs of increased land costs or rents, more intensive use of fertilizers and herbicides, higher yield variability on marginal lands, higher machinery costs and higher resource costs in terms of environmental pollution. The gains from productivity increases will be limited particularly on existing agricultural lands and will probably be offset by higher unit costs in the short term. However, farmers will benefit from higher prices over the long term from the projected transition from a buyers' to a sellers' market in many traded goods.

4.24. In conclusion, agriculture in the 1980's in South Australia will be influenced by the following factors:

i) Unlike the 1970's, the 1980's will probably reveal a much tighter food supply/demand balance on international markets. Agriculture in major food-exporting

countries is in a transitional phase with projections of a much tighter balance between food supply and demand in the 1980's compared with chronic excess supplies and depressed farm prices through the 1970's. The transition from a "farm problem" to a "food problem" implies there will probably be a need to stimulate food production rather than a need for adjustment and other assistance measures.

ii) A number of adjustment pressures will influence the growth of agricultural production. These include commodity price changes, surplus balance of payments and a possible gradual lowering in protection across all industries.

iii) In broad-acre farming the greatest potential increases in production will come from increasing the land area under cultivation by ploughing up pastures.

iv) In addition to price incentives provided by the market, it may be necessary to encourage food production by providing further incentives, for example, on taxation and freight. (For a more general discussion refer to para 3.31 - 3.44).

4.25. It will be necessary to guard against resource use policy that encourages exploitation of land and water in the short run to the detriment of long-term productive capacity or environmental quality. The "equilibrium perspective" and prospects for increased demand in the eighties increase the urgency of this need. The interaction between commodity considerations and conservation programs needs much more attention.

4.26. If real commodity prices do rise, they will provide incentives for greater production. Cropping will move on to marginal lands and land already in crop production will be used more intensively, for example, by the application of more fertilizers and pesticides. This could result in greater environmental degradation and the loss of future productive capacity. The intensity of these concerns will depend heavily on the actual factors exerting pressure on the land base. The important point here is that these possible impacts be recognised.

REFERENCES: Chapter Four

G.R. West., et al., Generation of Regional Input - Output Tables for the State and Regions of South Australia, Report to the Treasury Department (S.A.), 1979.

5. RURAL SECTOR POLICY MEASURES [1]

5.1. The complex agricultural policy that emerged in the post-war period was strongly influenced by concern for agriculture's contribution to the balance-of-payments under relatively fixed exchange rates. This concern provided a rationale for such diverse policies as home price schemes, tax concessions to agriculture, subsidies for export promotion, government involvement in agricultural research and extension services and public investment in land development and the provision of rural infrastructure. These measures were designed to encourage rural output and exports in the face of a balance-of-payments constraint to economic growth. In terms of the responsiveness of rural output (although probably not in terms of cost effectiveness), the overall policy could be judged a modest success.

5.2. Many of the individual policies are poor policies from a number of stand-points. For example, the home price instrument is restricted to those products which pass through centralised points in the marketing chain. A differential pattern of assistance between products was therefore inevitable because local and export markets could be kept separate only for some commodities - notably wheat, dried vine fruits, sugar, dairy products and eggs. Even in the case of products for which home prices could be introduced, differences in the proportions of output exported meant that a given degree of domestic price support gave different rates of protection to different industries. Home price schemes were not practicable for meat and wool because of the difficulty of keeping markets for meat separate and, in the case of wool, because the overwhelming proportion of output is exported.

5.3. The differential pattern of assistance created distortions in resource allocation.

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1 Parts of this section contain material from Edwards and Watson, 1978.

5.4. After the mid-sixties, the environment changed dramatically. 'Balance-of-payments pessimism' which had influenced both policy advice and government decisions for decades, ceased to be relevant. The mining industry had increased exports substantially and exchange rates could be, and were, varied more readily to achieve external balance. Therefore, many of the ad hoc measures taken to increase agricultural production and exports would not now be needed even if the same balance-of-payments situation existed.

5.5. PRICE POLICY

Major criticisms have been directed at the resource allocation consequences of a commodity-by-commodity approach to price policy for an agricultural system characterised by multi-product farms; the arbitrary nature and theoretical weaknesses of methods of setting guaranteed prices; the poorly defined nature of the stabilization objective; and the conflicts between producers and consumers involved in statutory marketing boards.

5.6. Moreover, since the time of the adoption of these narrow commodity or factor policies, agriculture has changed. It is now different in character and needs. Recent trends are towards:

- A relatively small number of large-farm operators who produce a relatively large share of the agricultural products, have incomes better than the average Australian, and receive a disproportionately large share of the benefits of price and income support programmes.
- A much larger number of persons who operate small farms, produce relatively little of the total value of agriculture output, and are only tangentially affected by traditional agricultural policies. The group includes some who are full-time farmers and genuinely poor, and some whose incomes derive significantly or primarily from non-farm sources.
- A number who operate intermediate-size farms. This intermediate group of producers is declining in number and in their share of farm output.

Table 5.1 provides information on kinds of enterprise and value of operations in South Australia.

TABLE 5.1: Agricultural enterprises, industry and estimated value of operations in South Australia, 1978-89

Industry or enterprise	Estimated value of operations ($'000)											Total enterprises	%
	2-9	10-19	20-29	30-39	40-49	50-59	60-74	75-99	100-149	150-199	200 & more		
Poultry	21	16	19	21	13	12	13	11	17	9	20	172	1
Grapes	579	527	325	140	59	28	22	12	3	2	1	1,698	9
Orchard and other fruit	394	344	287	212	124	81	69	65	37	23	18	1,654	9
Vegetables	235	364	167	91	64	31	46	48	46	32	32	1,156	6
Cereal grains (incl. oilseed n.e.c.)	259	261	298	389	345	273	378	435	398	121	95	3,252	17
Sheep - cereal grains	249	528	764	767	627	499	448	402	227	59	28	4,598	24
Meat cattle - cereal grains	35	33	24	25	23	14	15	16	15	3	2	205	1
Sheep - meat cattle	189	174	181	161	126	94	94	81	85	29	38	1,252	6
Sheep	494	378	321	229	198	114	125	124	74	36	23	2,106	11
Meat cattle	577	165	67	43	33	16	22	23	19	5	38	1,008	5
Milk cattle	223	425	369	196	95	65	47	17	14	4	-	1,455	7
Pigs	106	75	46	29	26	18	16	20	9	4	10	359	2
Nurseries	7	4	5	3	22	8	7	16	9	6	12	99	0
Agriculture n.e.c.	270	57	19	7	2	5	6	2	4	2	3	377	2
Total South Australia	3,638	3,351	2,892	2,313	1,757	1,258	1,308	1,272	957	325	320	19,391	100
%	19	17	15	12	9	6	7	6	5	2	2	100	-
Australia	39,120	29,825	23,618	17,702	12,948	9,605	10,347	10,484	9,167	3,618	4,555	170,989	-
%	23	17	14	10	8	6	6	6	5	2	3	100	-

Source: ABS Publication 7102.0

5.7 In broad acre farming in South Australia 10 per cent of enterprises were large enough to return over $100 000 in 1978/79. On the other hand, nearly 27 per cent of enterprises returned less than $20 000. The economic well-being of many of the smaller farmers has become more closely tied to the non-farm economy (i.e. off farm income). The low income problems of smaller farmers cannot be solved using traditional commodity price policies.

5.8. The larger farmers as a group appear to have competitive levels of income and returns. Yet, their incomes and rates of return do not mean that this farm group has no problems. The changed financial structure of these farms (as superficially indicated in Table 5.2 for wheat-sheep farms in South Australia), implies that they are much more vulnerable to variability of incomes and returns. This is especially true for the most financially leveraged farmers, those with little equity who have gone into debt to acquire assets - generally the new farmers.

5.9. An issue for consideration is whether it is appropriate to have benefits skewed to large farms or whether public policies should be "neutralized" in terms of distribution of benefits by size. Further, to the extent that the intended benefits of farm programmes are capitalized into asset values, the intended distribution of benefits is perhaps subverted. Therefore, preventing benefits from being capitalized into land and other asset values may be an increasingly important aspect of future policy development. The separation of land ownership from operation also affects the distribution of programme benefits. It is widely agreed that most of past programme benefits have largely been capitalized into the value of land to the benefit of landowners. If continued, such programmes would prove to be of little benefit to the farmers who rent most of the land they operate. Continuing increases in land prices can also be expected to attract non-farm investors as competitors with farmers for available land.

TABLE 5.2: Summary of survey data S.A. Wheat-Sheep Zone

(Surveys are not strictly comparable because of changes to sampling criteria).

	Av. 3 years* 1960/61-1962/63	Av. 3 years* 1970/71-1972/73	1977/78†	1978/79#
ESTIMATED NO. OF PROPERTIES	7 963	7 940	5 349	5 689
AV. PROPERTY SIZE (ha)	871	947	1 573	1 391
CAPITAL INVESTED in Farm Business	49 300	87 100	291 000	327 600
Land and Improvements	-	65 700	215 600	231 200
Plant	-	14 500	41 900	49 800
Livestock	-	6 900	9 400	19 000
Av. Farm Business Debt	-	-	27 500	35 000
Av. Equity	-	-	91%	89%
ACTIVITY				
Av. Area of Wheat Harvested	85	93	154	209
Av. Area of Barley Harvested	33	59	96	152
No. of Sheep Carried	841	1 064	961	889
Area wheat harvested as a percentage of total area	9.8%	9.8%	9.8%	15.0%
Area barley harvested as a percentage of total area	3.8%	6.2%	6.1%	10.9%
RETURNS				
Cash Return from Sheep	4 501	5 417	9 589	11 403
Cash Return from Wheat	3 563	3 484	6 258	23 347
Total Cash Returns	11 026	15 370	26 704	60 814
Returns from Sheep as % of total	41%	35%	36%	19%
Returns from Wheat as % of total	32%	23%	23%	38%
Returns from Cereals as % of total	44%	-	39%	55%
COSTS				
Fuel	572	976	2 334	4 609
Fertilizer	593	630	2 225	2 177
Total Materials	2 784	4 224	11 305	18 155
Total Services	1 105	1 991	6 278	7 867
Depreciation	-	2 396	10 900	11 826

	Av. 3 years* 1960/61-1962/63	Av. 3 years* 1970/71-1972/73	1977/78†	1978/79#
Farm Costs (including Rent and Depreciation but excluding Interest)	6 647	11 293	31 179	41 444
Costs as Per cent of Farm costs				
. Fuel	9%	9%	7%	11%
. Fertilizer	9%	6%	7%	5%
. Total Materials	42%	37%	36%	44%
. Total Services	17%	18%	20%	19%
. Depreciation	19%	16%	35%	29%
Interest Paid	-	819	1 734	2 721
Wool Returns per Ha	3.52	3.70	4.68	4.88
Cereal Returns per Ha Harvested	31.60	-	39.04	87.21

Sources of Survey Data

* B.A.E. Australian Sheep Industry Survey
Sample was drawn from properties with more than 200 sheep.

† B.A.E. Australian Agricultural and Grazing Industry Survey (AAGIS)
Sample was drawn from properties with more than 200 sheep or 40 ha of wheat or 50 beef cattle.

\# B.A.E. AAGI - Survey
The 1978/79 sample was drawn using the same criteria as the 1977/78 sample but the boundaries of the wheat-sheep zone were expanded for 1978/79.

5.14. The emphasis in price stabilisation policy and discussion for wheat, sugar, butter and dried vine fruits has been on reducing instability and uncertainty in domestic producers prices. Whether reduced instability and uncertainty about Australian consumer prices have been seen as significant in themselves or as means to stabilising producers prices is sometimes unclear. It is noted that 'stabilisation' is often used as a euphemism for support of domestic prices above world levels. But even when domestic prices are not on average supported above world prices, domestic stabilisation (unlike stabilisation of world prices) as practised in Australia involved an economic cost. This is because national opportunity costs, as measured by world prices, generally differ from the prices facing producers and consumers.

5.15. The main method of stabilising domestic agricultural prices is through home consumption price schemes operated in conjunction with equalisation of returns from local and overseas sales and with buffer fund arrangements. On the basis of partial equilibrium analysis these schemes have been widely criticised for inducing excess production when, as is common, domestic prices exceed world prices.

5.16. It has been widely accepted that for the single commodity case, price stabilisation can destabilise firm and industry gross receipts or income, depending on demand elasticity.

5.17. Moreover, because the contribution of price variability to variability of industry gross income varies from close to 100 per cent for wool through intermediate ranges for the livestock products and horticultural crops to relatively minor figures for the main cereal crops, there are major differences in the contribution that successful price stabilisation schemes can make to stabilising industry revenue.

5.10. A basic tenet of commodity programmes, maintained from their inception, is the provision of benefits to farmers based on volume of production (or factor use). Hence, the larger the quantity produced (or used) the more subsidy a farmer receives. As farm numbers have declined over time and the average size correspondingly increased, the fewer larger farms have received a greater proportion of the benefits of the programmes than have the numerous smaller farm owners. Over time, distribution questions about which groups of farmers are receiving higher incomes from the higher prices and at what cost to tax payers and consumers have been recognised but never treated adequately in policy and programme formulations.

5.11. Furthermore, the use of national averages in developing some programme parameters across the entire farm sector needs review. This approach assumes a homogeneous agricultural sector. The effect has been windfall gains to some producers and too few benefits to be meaningful to others. This is a distortion of resource use.

5.12. PRICE UNCERTAINTY

Reduction of price instability and uncertainty has been the main component of stabilization policy for Australian farming.

5.13. A fundamental distinction needs to be made between stabilisation of world prices and the stabilisation of prices within Australia only. Only the former can reduce the instability and uncertainty of export prices that is more relevant from the view of a trading nation; that is, in prices received by the economy from exports. Only for wool, of which Australia is the world's largest supplier, does Australia operate a buffer stock scheme to stablise world prices.

5.18. There is a widely held view that removal of the risk of 'unreasonable' falls in producers price is an important requirement of stabilisation policy. This view is reflected in the Green Paper's principle that 'some safeguard should be provided against sudden price falls, particularly to extreme levels' (Harris, et al., 1974, par. 4.130). It has found a variety of expressions for wool, wheat, dairy products and dried vine fruits. Many commentators however, have seen floor prices as a hindrance to desirable adjustments in resource use and would like to replace them with income supplements.

5.19. PRODUCTION UNCERTAINTY

While uncertainty about domestic producer prices can be reduced, at a cost in terms of efficiency, by divorcing them from world prices, there is no corresponding way of reducing producers' production uncertainty. It is natural therefore that price stabilisation has received much more attention than has production stabilisation. The main policy measures which have been discussed are national fodder reserves and incentives to encourage private investment in fodder and water conservation.

5.20. INCOME UNCERTAINTY

Income uncertainty and instability have been seen as causes of economic problems as well as equity ones. The economic problems discussed here include impact on macro-economic fluctuations, the increase in tax liabilities and effects on ancillary industries. The writers of the Green Paper said that 'while the effects of price instability may be more serious than production instability, an income stabilisation scheme can avoid the price distortions which often result from price stablisation schemes' (Harris, et al., 1974, para. 4.92).

5.21. A number of issues have been canvassed under the broad headings of price, production and income uncertainty. A radical suggestion for temporary income support was presented by Campbell and Glau (1970), who proposed that gross wool income be stabilised on a regional basis. In a year when gross wool income was below a moving average by more than a specified percentage (say 10 per cent), each producer of the commodity would receive an income supplement (equal to half the difference between the actual percentage fall and 10 per cent, for example). Campbell and Glau pointed out that a genuine stabilisation scheme would provide for levies on wool income when this was above the base period average. While a scheme of this type would reduce fluctuations in income resulting from price and production variations for the major commodity of a region it could not reduce instability arising from fluctuations for other commodities or, less significantly, from instability of costs. An advantage of a scheme that works on a regional average is that it is likely to avoid the 'moral hazard' problem associated with insurance and compensation schemes based on an individual's loss.

5.22. Another regionally-based farm income stabilisation plan has recently been canvassed by A.G. Lloyd (1977) and the IAC (1977). This plan could in principle cover all the major products of a region. Each producer would nominate the extent of his participation with respect to each commodity. For example, a producer could nominate 200 hectares of wheat and 100 hectares of oats for inclusion in the plan in a year. If average regional value of wheat output per hectare fell below a moving average by more than a threshold percentage, each farmer 'insured' against fluctuations in the value of wheat output would receive an income supplement. If the regional average value of output rose above the moving average for oats, producers covered for this crop would pay into the stabilisation scheme. A producer participating with respect to both crops would receive a net

income supplement or make a payment. A third, and important, feature of the plan is symmetry in the calculation of premiums for a commodity in 'good' years and payments in 'bad' years. This prevents certain inequities that would otherwise arise. It also makes it easier to devise a plan that is self-supporting. The IAC said that there may be possibilities for reducing income fluctuations through region 'income insurance', but reported that it had been unable to obtain the data to test such a scheme.

5.23. More conventional insurance against low crop yields is available in many countries and compulsory in some, e.g. Sweden and Japan (Harris, et al., 1974, par. 4.82). Western Australian government all-risk crop insurance is available to Carnarvon banana growers and within the wheat industry consideration has been given to a compulsory insurance scheme (Harris, et al., 1974, paras. 4.80-1). The general absence of all-risk crop insurance in Australia, despite abortive attempts to establish it, suggests that it is not commercially viable, but the writers of the Green Paper considered that such a method of offsetting production uncertainty warranted further investigation (Harris, et al., 1974, par. 4.90). The IAC (1977) expressed doubts about government-supported multiple-risk crop insurance (especially if compulsory) but recommended investigation of rainfall insurance.

5.24. RURAL ADJUSTMENT AND NATURAL DISASTER RELIEF

While extensive income stabilisation measures have not been implemented in Australia, Federal and State authorities have implemented schemes to encourage structural adjustment and provide relief from natural disasters.

5.25. Structural adjustment is an inevitable consequence of change. The role of government should be to facilitate adjustment rather than to prevent it. When providing any assistance to agriculture, governments should consider the implications of assistance measures for adjustment trends.

5.26. Comparative analysis of the objectives and administration of structural adjustment and natural disaster schemes is desirable. With this in view, information is presented below on measures adopted in South Australia.

5.27. Rural Adjustment

The South Australian Rural Adjustment Scheme provides for the following kinds of adjustment assistance - debt reconstruction, farm build-up, farm improvement, rehabilitation, carry-on loans to specific industries and household support. The scheme is administered by the Rural Assistance Branch of the Department of Agriculture.

5.28. Table 5.3 indicates the disbursement of resources to rural industry by enterprise type in South Australia under the Rural Adjustment Scheme.

TABLE 5.3: South Australian Rural Adjustment Scheme: Applications Approved ($,000s), 1980/81

	Debt Recon-struction	Farm Build-up	Farm Improve-ment	Rehab-ilitation	House-hold support	Total	% of Total
Grazing	202	65	-	-	4	271	4.7
Wheat-Sheep	596	2916	74	-	33	3619	62.9
Dairying	158	789	4	-	7	958	16.7
Horticulture	143	392	72	5	6	618	10.7
Other	111	65	59	-	54	289	5.0
	1210	4227	209	5	104	5755	100.0
% of total	21.0	73.5	3.6	0.1	1.8	100.0	

5.29. In 1980/81 77 per cent of rural assistance funds were used to facilitate adjustment by way of farm build-up or farm improvement. Debt reconstruction accounted for 21 per cent of funds, the remaining 2 per cent going to household support and rehabilitation. By enterprise type, wheat-sheep farms received 63 per cent of total allocations followed by dairy farms 16.7 per cent, and horticultural properties, 10.7 per cent.

5.30. It is difficult to compare the allocation of funds between different enterprise types. However, it appears that dairy farmers have received more assistance than their numbers or value of production would suggest. Conversely horticultural producers appear to have received less than their share.

5.31. The following projections are made about demand for the different forms of assistance available:

i) Debt Reconstruction - It is expected that demand for this form of assistance will increase due to the current high interest rates. Applications for debt reconstruction are presently being received from people, who, a few years ago committed themselves to loan repayments at 10 to 11 per cent interest and who are now experiencing difficulties having to pay 14 to 16 per cent interest.

ii) Farm Build-up - This is likely to continue to absorb the major portion of funds available. However, the adjustment impact may be diminished because increased land values have out-stripped the growth of rural adjustment funds. While the average amount advanced to FBU applicants has remained steady at around $40,000 this is now a smaller proportion of total borrowings required for build-up.

iii) Farm Improvement - This is considered to be a valuable adjustment measure which could be more widely used. Declining economic circumstances may precipitate an increasing demand as an aid to diversification.

iv) Rehabilitation - This is a welfare measure with limited demand to date. It is likely to be used only in times of severe industry downturns.

v) Carry on Loans to Specific Industries - These provide stop gap assistance with greater application in times of short term difficulties. In cases of long term industry difficulties, for example, permanent loss of markets, this form of assistance is of limited use in facilitating adjustment.

vi) Household Support - This is another welfare measure of limited application. Similar limitations apply as for carry on assistance to specific industries.

5.32. It is considered that two additions to the current scheme would be desirable:

i) Relocation Assistance - The farm build-up provisions could be broadened to provide for adjustment by relocation.

ii) Assistance to Lessees and/or Share Farmers - At present lessees and sharefarmers who do not own any land are not eligible for farm build-up loans. A broadening of the eligibility criteria to provide assistance in these cases would allow valuable expertise to be retained within the industry.

5.33. To 30 June 1980 the Rural Adjustment Scheme had lent $51.1 M. to farmers. Annual lending has varied from a high of $26 M. in 1977-78 (associated with drought problems) to a low of $6.4 M. in 1978-79. Costs of administration have been calculated at 3.49 cents per dollar lent. These costs include salaries and administration in the Rural Assistance Branch together with departmental on-costs related to administration. Costs of salaries and administration in the Rural Assistance Branch itself have been calculated at 2.60 cents per dollar lent. It is understood that these costs are low by the standards of comparable agencies.

Natural Disaster Assistance

5.34. Natural disaster assistance is provided in South Australia under the Primary Producers Emergency Assistance Act and is also administered by the Rural Assistance branch of the Department of Agriculture.

5.35. Under present Commonwealth/State financial arrangements for natural disaster relief, funds for relief measures are a State responsibility up to a threshold amount above which Commonwealth assistance becomes available. Since 1978-79 the threshold amount has been $3 M. Expenditure above this is to be shared in the ratio of 1:3 between the State and Commonwealth.

5.36. South Australia has made radical changes to the type of assistance provided in times of natural disaster. The changes were introduced during the 1976/77 drought and were described in 1977 in the following terms:

> The major thrust of the Government drought policy is to make carry on finance the basis of drought assistance. This will enable individual farming families to make their own drought management decisions to suit their individual needs. (Government Policy on Drought Relief, August 1977).

Fodder, starving stock and water transport subsidies were also maintained (but with no guarantee for future droughts).

5.37. Carry on finance was considered to be the most suitable form of assistance because:

i) it provided money on a needs basis rather than the "blanket" basis of transport subsidies.

ii) it allowed recipients the flexibility to use assistance in the way best suited to their own farming situations to survive the effects of the drought.

iii) it did not "lock" recipients into particular management practices (for example, agisting or hand feeding stock) which may not have been in their best longer term interests.

iv) "water droughts" invariably bring with them an associated "dollar drought". Aside from control of soil drift, producers generally seek relief from the dollar drought. Money, therefore, was the best assistance that the government could provide - even ahead of technical information.

5.38. Drought relief, as provided on these lines, is now generally recognised as a most effective approach.

5.39. The philosophy of natural disaster assistance is to alleviate temporary hardship as distinct from rural assistance which aims to facilitate long term adjustment. South Australia considers that continuing Commonwealth support in sharing the cost of assistance for major natural disasters is necessary.

5.40. The assistance required following a prolonged drought as experienced in South Australia during 1976-77 can be considerable. It is also important for assistance to continue after rain has fallen. If assistance is not provided, recovery is slow and the viability of farms and rural businesses servicing agriculture is threatened. Therefore any Commonwealth assistance to supplement that provided by the State is valuable in aiding recovery and preventing the retraction of services from small country towns.

5.41. In the case of small or localized natural disasters it is within the State's capability to provide assistance. However, there is a danger that if assistance is provided too often or too readily, it will be seen by rural producers as a permanent form of assistance and as a substitute for normal risks. Growth of this view must be avoided.

5.42. ASSISTANCE AND ADJUSTMENT - THE CASE OF HORTICULTURE

The need for close analysis of the appropriateness of the forms of assistance discussed in this paper, and the integration of policies on production, marketing, assistance and adjustment, is illustrated by trends in the horticultural industries in South Australia. Horticulture is facing increasing pressure to make significant adjustments.

5.43. In agriculture generally over time the size of farm units has become increasingly critical, while opportunities to increase productivity have become limited. While technical improvements such as reduced tillage methods, more effective fertilizers, high yielding varieties and improved livestock strains have assisted in increasing returns or reducing costs for broad acre farmers in the wheat/sheep belt in South Australia, similar improvements have been less available in horticulture. This is of significant concern as the gross value of horticultural crops in South Australia in 1979-80 was $169 M., that is approximately 13 per cent of the total for all agriculture.

5.44. Several factors suggest that horticultural industries as they now exist in South Australia will face many problems in the next decade.

These problems include:

i) Potential to overproduce in most major horticultural crops if seasonal conditions are favourable. This leads to intermittent surpluses.

ii) Basic reliance on the domestic market to take up the bulk of production. An exception is dried vine fruit although this industry is relatively small in South Australia. The canned fruit industry had prior to 1981 relied on the export market for the sale of a significant proportion of its production. Much of the export market has now been lost - hence the problems the industry now faces. With low population growth,continued reliance on the domestic market requires increasing per capita consumption.

iii) Difficulty in achieving economies of scale in established areas because of physical and financial restrictions associated with increasing property size.

iv) Lack of funds at acceptable interest rates for the purposes of redevelopment, mechanisation and upgrading of plant and for improved irrigation practices.

v) Quality of water in river-irrigated horticultural areas which can have a detrimental effect on yields.

vi) In future there will be competition for limited water between irrigators and urban water users. There will thus be an increasing emphasis upon the more efficient use of water. There has been a virtual freeze on new water allocations since 1968. Future alterations to the existing method of charging for irrigation water could have a significant effect on costs.

vii) Reduction in protection to citrus and almond industries could reduce the domestic market share held by local industry relative to imports.

5.45. The Riverland[1]

Although horticultural crops are grown in several areas of the State, a major proportion of South Australia's horticultural crops (60% of the orchard area and 40% of the vineyard area) is grown in three counties bordering the Murray River between Renmark and Morgan. This area in 1979-80 produced nearly all the South Australian apricots, peaches, citrus, 60% of grapes and over half the pears. (Refer to Table 5.4). Most vegetable production is centred around Adelaide with some produced in the South East of South Australia and other areas of the State. At present the major concentration of almond production is in the Southern Vales area south of Adelaide but this industry is now expanding rapidly along the River Murray in the Riverland and North West Victoria. A summary of the situation of the major horticultural crops in South Australia is given in Appendix 5.1.

5.46. As horticultural crops are the major agricultural activities in the Riverland region any reduction in these activities could lead to severe regional economic and social problems. All six forms of major problems listed in para. 5.44 apply to the Riverland.

5.47. Many Riverland fruitgrowers have already embarked on programmes of redeveloping their blocks from, for instance red grapes to white grapes, old vines to young nematode resistant rootstocks and presently conditions are emerging where some growers will have to re-develop away from canned fruit. Policies aimed at facilitating redevelopment and adjustment of various forms must be considered as top priority in the near future.

[1] In this context "the Riverland" refers to the Murray River Valley and the irrigation lands that extend back from the river at various locations between Morgan and Renmark.

TABLE 5.4: Riverland Industries 1979/80

	AREA: ha		PRODUCTION[1]: TONNES							
	Orchards	Vineyards	Almonds	Apricots	Peaches	Pears	Oranges	Lemons and Limes	Total Grapes	Dried Vine Fruit (dried wt)
Counties										
Albert	2 957	2 625	54	3 080	1 949	1 199	63 854	2 601	43 884	252
Alfred	3 172	2 753	160	3 438	3 778	449	47 873	4 417	44 168	728
Hamley	3 137	6 947	21	5 884	7 704	2 321	32 656	2 408	109 934	2 982
Riverland	9 266	12 325	235	12 402	13 431	3 969	144 383	9 426	197 986	3 982
S.A.	59	40	18	84	95	56	93	93	61	98
Total S.A.	15 670	30 734	1 323	14 701	14 132	7 111	155 134	10 128	325 909	4 056

Source: ABS 7103.4

[1]Includes fruit for drying. Note also that figures for grapefruit are not available.

5.48. Owing to static supplies of water and salinity problems, irrigation will become a major issue in the Riverland in the 1980s. Significant conversion to undertree sprinklers and other forms of improved irrigation is taking place in order to improve the efficiency of water use and, it is hoped, reduce saline run-off into the Murray River. Improving flexibility in the allocation of water would help promote its most effective use and at the same time aid treatment. Competition between urban and rural water requirements is going to be a major problem in the near future.

5.49. Consideration is being given to introducing incentive loans for River Murray irrigators in an attempt to encourage adoption of improved irrigation practices. The object of such a scheme would be to improve water quality by reducing drainage problems. Because all users of water are potential beneficiaries of improved irrigation practices it is appropriate that the irrigator be encouraged to change by Government providing grants and/or concessional interest rate loans.

5.50. ADJUSTMENT AND REDEVELOPMENT PRESSURES IN HORTICULTURE

In summary, horticulture in South Australia faces many problems in the next decade (as it does in other areas of Australia) with the emphasis being on marketing and adjustment problems. Small scale production appears unable to compete with large scale production both on the domestic and export markets without some degree of protection. Thus a high priority must be placed on adjustment and redevelopment. The Riverland of South Australia, where the bulk of South Australia's horticultural products are grown, and which basically consists of relatively small mixed horticultural operations, could face many serious social problems in the next decade as adjustment and redevelopment pressures continue to develop.

5.51. REGIONAL NEEDS, INCENTIVES AND ADJUSTMENT - THE CASE OF DAIRYING

The importance of relating national policies to State and regional circumstances is illustrated by the recent experience of the dairy industry in South Australia. Trends in the dairy industry also illustrate the use of incentives to encourage sufficient supplies of milk in the off-season in the different regions of the State and responses to adjustment pressures.

5.52. South Australia has a regionally-based dairy farm income stabilisation structure. This structure has arisen as a consequence of the evolution of developing a milk production pattern to meet regional needs. (Appendix 5.2 describes the five dairy regions in South Australia).

5.53. The milk production pattern has varied according to the size of the population to be serviced with liquid milk and the availability of suitable land for milk production. Consequently, in the Lower Mid-North of the state, the Riverland and Port Lincoln farmers have structured their milk production to meet liquid milk needs only. In the Adelaide Hills and Murray Swamps, the seasonal pattern of production has been sufficiently modified to meet the liquid milk needs of Adelaide and supply surplus milk for manufacturing needs. In the South East which, while more suited to dairying, has a small liquid milk demand, the pattern of production has been very seasonal and milk is mainly used for manufacturing.

5.54. There has been a considerable adjustment in the number and size of farms, as the result of low prices during the 1970s for manufactured dairy products, particularly butter. There were originally several thousand very small dairy farms in South Australia producing cream. In recent years these have dwindled to a very small number. Table 5.5 shows the rapid adjustment that has taken place in South Australia with the moving out of the industry of those farms which were either too small or had too high a cost of production.

TABLE 5.5

Year	Dairy Cows in Milk and Dry	No. of Holdings with Milk Cattle	Whole Milk Intake by Factories (million litres)
1969	144 558	7 159	467
1973	147 604	4 200	424
1976	134 958	2 700	398
1979	106 000	2 064	332
1981	100 596	1 633	319

Sources: Australian Bureau of Statistics
Australian Dairy Corporation Reports.

5.55. As a result of IAC enquiries in the mid-1970s and Commonwealth policies on underwriting, a certain cushioning of returns occurred when world export prices fell disastrously. Increased world prices for dairy products in the last two years have resulted in little, if any, Commonwealth underwriting.

5.56. Regional Milk Equalisation

However, the South Australian dairy industry has been able to adjust with minimum assistance due to the regionally equalised market milk structure. A summary of the scheme is given in Appendix 5.3. The basis of the scheme is not to place a quota on any farm in the region, but by price incentives to persuade sufficient farmers to produce milk in the off-season to meet demands for liquid milk by processors and consumers. In meeting out of season demand, costs of production are very much higher than for those seasonal producers in the South East who take maximum advantage of pasture growth. The South East farmers are only required to supply five per cent of their total production of liquid milk as compared with 40 per cent in the Adelaide Hills and Murray Swamps or over 95 per cent in the Mid-North.

5.57. Without the protection of regionally-priced schemes, fresh milk would not be available to consumers in the densely populated areas of Adelaide and the industrial towns in the Mid-North. If the South East producers were required to produce large quantities of milk in the late summer or autumn, their advantage of low cost production would be lost.

5.58. Further, as transport costs increase, milk production for fluid milk purposes can be justified close to the point of consumption, even though production costs may be higher so long as the ultimate price paid by the consumer indicates that no subsidisation of production is occurring. Although costs of production in market milk regions in South Australia are high, transport advantages provide consumers in Adelaide and major centres in the north of the State with market milk prices among the lowest in Australia.

5.59. Impact of CER

If the federal government agrees to the proposal for closer economic relations with New Zealand (CER) including a freely available market in Australia for New Zealand dairy products, this will result in the importation of considerable quantities of butter from New Zealand into the eastern states. This will put at risk many of the dairy farmers in Victoria and the South East of South Australia who are basically producers of manufacturing milk. If the CER plan comes into operation, Victorian dairy farmers will most likely challenge the current closed structure of State market milk schemes and in the case of South Australia, its within-State regional market milk schemes. Because South Australian market milk farmers are geared to all-the-year-round production, they have a higher cost of production than their Victorian counterparts who produce milk seasonally. The influx of cheaper spring produced milk from Victoria in to the South Australian market milk arena, would result in a rapid reduction in the number of viable South Australian dairy farmers. The result of this would be that in the summer and autumn when Victorian milk would not be available, there would be a considerable shortfall of market milk to South Australian consumers. (CER is discussed more generally in Chapter 9).

5.60. New Technology

The successful development of Ultra-High Temperature (UHT) treatment of milk, does offer some scope for balancing year-round consumer needs and optimising seasonal production of low cost milk. Increasing costs of transport will, of course, put certain limitations on the distance to which even UHT milk can be transported. At this stage, there are not data regarding the reaction of consumers to having only UHT milk available at certain times of the year as against fresh milk.

5.61. In any consideration of future marketing arrangements for the dairying industry, consideration should be given to the current regional market milk industry structure in South Australia and the impact that any changes may have on the availability of fresh milk to South Australian consumers.

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APPENDIX - 5.1

SUMMARY OF SITUATION OF MAJOR HORTICULTURAL CROPS IN SOUTH AUSTRALIA

The situation of the major horticultural crops in South Australia is as follows:

Wine Grapes

Wine making is the major outlet for grapes grown in South Australia. Certain varieties of red grapes are being overproduced, however, and this appears likely to continue for some time. White grapes, which for most of the 1970s were required in ever increasing numbers to supply a growing white wine market, have for the last few years shown a quite dramatic sales decline.

Grapes for Drying

For the last few years this section of the grape market has received high returns. However, it is an opportunistic market as it relies on grape crop disasters overseas to be successful. Approximately half Australia's dried vine fruit is exported. South Australia is a relatively small dried vine fruit producer.

Dried Tree Fruits

This industry basically concerns dried apricots and South Australia produces about 95 per cent of Australia's production (approximately 2 200 tonnes). As this production barely meets Australia's requirements, there is room for a small expansion in production.

Canning Deciduous Fruit

This industry relies on export sales to take up 60% of its production. Continuing losses of export sales to EEC markets have resulted in surplus stocks of canned fruit. Australia-wide about 30 per cent less canned peach production will be required and in South Australia's case less than half the canning peach production will be accepted by the State's cannery - Riverland Fruit Products. The financially troubled cannery is presently in receivership and being offered for sale for $2.5 M. It will be necessary for some rationalisation both on the growing and canning side of the industry. A canning peach tree-pull scheme is one of the possible options being discussed but if this were implemented the viability of a future possible canning operation in South Australia would be jeopardized.

Citrus

The Australian citrus industry is currently in a healthy position with demand for citrus juice being 30 per cent greater than supply. This 30 per cent of unfulfilled juice demand is being supplied mainly from Brazil. However, the local industry is protected by a variable tariff which is equivalent to about 25 cents per single strength litre. Under this arrangement there is no incentive for juice to be imported except to meet demand.

There is no incentive to import juice at its true cost plus insurance plus freight rate, due to the differential between it and the equivalent of $2.40 per kilogram of total soluble solids (approximately 25 cents per single strength litre) being payable as a tariff to the Federal Government. Hence many juices are quoted at a country of origin price base of 25 cents per litre. An alternative mechanism that has been suggested to overcome this is a combination of a fixed tariff and a subsidy to Australian producers. The tariff would be set so as to allow imports of citrus juice at a price below 25 cents per litre. The tariff being fixed could not be avoided and as such could be collected by the Australian Government and used to subsidize the purchase of Australian citrus by processors. This could result in less costly citrus juice being supplied to consumers and hence a possible increase in consumption.

An Industries Assistance Commission inquiry is presently being held to review the varying tariff arrangement applying to the import of orange and tangerine juices. Without such assistance there is little doubt that imports would begin to compete with local production for market share.

Of the 40 per cent of Australia's citrus produced by South Australia, about two thirds is destined for the juice market. Orange production for the fresh market is relatively static with the growth area being the juice market. This trend would appear likely to continue. Citrus is predominantly grown in the Riverland.

Almonds

Almond production has been mainly centred in the Southern Vales area south of Adelaide. However, there is a move to develop large plantings in the North West of Victoria. There is also a growth of plantings in the Riverland.

This industry is presently under import pressure, but given that cost structures in the U.S. (the major source of almond imports) are similar to Australia's newly developing areas, the present import prices are not expected to be sustained in the long term. There is in fact optimism for some degree of further growth in the local industry provided the developments are of a large scale nature.

Vegetables

This industry is mainly concentrated around the Adelaide metropolitan area and basically supplies this State's requirements although some lines are exported at certain times of the year. Most of the vegetable production is irrigated and hence is subject to many of the problems associated with use of this State's scarce water resources.

Apples

Apples are the major non-citrus fruit crop in South Australia and are principally grown in the Adelaide Hills. The industry in this State could face problems of surplus production in the future as an indirect result of the reduction of export markets in the U.K. and Europe. Tasmania, the principal apple exporting State in Australia, is looking to markets within Australia to replace lost export markets. Hence South Australian producers face greater competition from interstate. Higher production levels in N.S.W. Victoria and Tasmania result in lower per unit costs of production for producers in these States. South Australia's production of apples in 1979-80 was 17 400 tonnes compared with Australian production of around 298 800 tonnes.

Pears

The two main areas in the State for pear production are the Adelaide Hills and the Riverland. The production from the former, mainly the variety Packham's Triumph, is for fresh and export markets and production from the latter, mainly the variety Duchess, for canning fruit production. However with the decline in the market for canning pears, more of the Duchess variety from the Riverland is being sold on the fresh market. The result of this action could lead to a serious over supply of pears for the fresh market. South Australia produced only 7 100 tonnes of pears (for all purposes) in 1979-80 of Australia's total production of 124 300 tonnes.

APPENDIX - 5.2

DAIRY REGIONS IN SOUTH AUSTRALIA

Adelaide Hills and Murray Swamps

This area contains 969 dairy farms. Approximately 40 per cent of the milk produced in this region is used for the fluid milk market (*) in Adelaide and the rest is used for the manufacture of cheese, butter, butter-oil, milk powders, ice cream, cheesecake and yoghurt pies.

South East

This area contains 306 dairy farms of which 68 are situated in Victoria. Approximately 3 per cent of the milk produced in the region is used for the fluid milk market in the area, and the rest is used for the manufacture of cheese and butter.

Mid-North

This area contains 127 dairy farms supplying milk, all of which is required to meet the needs of the fluid milk and ice cream markets in the area.

Riverland

The area contains 10 dairy farms supplying milk, all of which is required to meet the needs of the fluid milk market in the area.

Port Lincoln

This area contains 6 dairy farms supplying milk, 95 per cent of which is required to meet the needs of the fluid milk market of the area.

(*) For the purpose of this submission the fluid milk market may be defined to include fluid milk, table cream, cream mixtures, UHT milk, flavoured milk, yoghurt and modified milks.

APPENDIX - 5.3

REGIONAL MILK EQUALISATION IN SOUTH AUSTRALIA

In South Australia discrete regions can be identified representing specific areas of dairying providing fluid milk to a local market, with surplus milk being converted to manufactured products for sale in Australia and overseas (see Appendix 5.2).

Dairying has developed in these regions to meet local demand at the time, and not solely on the basis of the suitability of the land and climate. Rural towns have developed in these regions to provide for the dairyman's needs. The cost of producing milk is not the only criterion for measuring the viability of the dairy farmer, or his suitability as a producer of milk.

For instance, dairy farmers in the Mid-North of South Australia, despite its apparent unsuitability for dairying, produce milk for the fluid milk market in Broken Hill and Alice Springs, and have withstood the competition of fluid milk coming from lower cost production areas. Further, the citizens of Whyalla in the north of South Australia enjoy the same price for fluid milk as do the citizens of Adelaide, and the price paid is one of the lowest prices paid for fluid milk in Australia.

The viability of these dairy farms depends on the equalisation of returns within the region and is based on the major use of the milk produced. In the Mid-North, over 90 per cent of the milk produced is directed to the higher priced fluid milk market. All dairy farmers in the region receive the same price for their milk, based on the large percentage of their milk entering the liquid milk market.

For any region, regional milk equalisation ensures that all dairy farmers in the region receive an equal share of the fluid milk market, pro rata of their monthly milk production, with the remainder of their milk being used for manufactured dairy products.

The producer should meet all costs of getting milk, either in the fluid form or in the manufactured form, to the market. The acceptance of this principle supports the concept of a regional equalisation scheme based on the fluid milk market.

It is estimated that the cost of transporting milk is of the order of one cent per litre per 200 kilometres. Therefore, from the consumer's point of view, not only can there be some justification for the difference in returns to the farmer for fluid milk and manufacturing milk, but also higher costs of production within a region can be justified in terms of supplying a fluid milk market within that region at a reasonable cost.

In South Australia, the fluid milk market has been shared equally by farmers within a region in terms of the price received per unit of milk produced. This scheme has worked well and equitably and maintained a high degree of viability amongst its farmers. It also allows milk to be transported between areas where peak production may occur at differing times, for example, irrigated and non-irrigated areas. Milk transport distances have been kept to a minimum and the expense of maintaining daily quotas has been avoided. As such the price of fluid milk to the consumer has been kept at a level which compares favourably with the price paid for fluid milk in other states.

6. SERVICES TO AGRICULTURE - RESEARCH, EXTENSION, REGULATION AND EDUCATION

INTRODUCTION

6.1 The South Australian Government delivers its principal agricultural research, extension and regulation services to the community through the Department of Agriculture (SAGRIC). In addition, formal education services in agriculture are provided at secondary level by the Education Department and at the post-secondary level by the Department of Technical and Further Education.[1]

6.2 In providing these services, it is necessary to evaluate:-

- the resources to be assigned to agriculture and its specific industries in comparison with other government activities.
- the value of and future potential of the industries to be served.
- the respective needs for research, extension, regulation and education of these industries.
- the balance of technical, economic and social factors to be incorporated into the respective services.
- the most effective and efficient form of service delivery.
- the extent to which those industries can contribute to the cost of services.

6.3 Australian farmers must adjust to changing technology, market demands and product prices. They face a cost/price squeeze which is affecting nearly all industries. These pressures will continue and adjustment in agriculture will be necessary on a continuing basis, particularly if greater fluctuations in world supplies in the decade ahead require very rapid adjustment.

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[1] Tertiary education oriented to agriculture is Commonwealth funded and conducted at the University of Adelaide and Roseworthy Agricultural College.

6.4 Agricultural extension and regional research facilitate adjustment by farm families as they adapt their farms, management and way of life to changing social, economic and technological pressures. The most beneficial form of adjustment in agriculture is increased efficiency. This not infrequently also involves increases in farm size. Controlled adjustment raises the living standards of farmers and those with whom they trade, and contributes to maintenance of national prosperity.

6.5 Agricultural extension and regional research increase the efficiency and productivity of agriculture. Benefit-cost studies of extension and regional research in Australia have shown that these have been profitable avenues for Government funding and that the returns in this area can be highly favourable (Industries Assistance Commission 1976).

6.6 Research results are of little value unless they are understood and applied by primary producers. The communication, transfer of technology, demonstration of benefits and development of understanding that are all involved in the extension process are essential links in the chain. Adequate investment in extension is necessary to ensure that high returns are obtained from the research investment made by Government and producers. Regulatory programmes in some instances are required to protect agricultural resources and maintain the quality of rural production.

6.7 Much of the process of technology transfer and learning by producers takes place informally (outside formal classes) as producers read the agricultural press, follow agricultural radio and television broadcasts, attend Bureau meetings, shows, demonstrations, field days, conferences and a range of other extension activities. Many of these services are provided directly or supported indirectly by SAGRIC, and can be made all the more effective when they become incorporated into the informal communications flowing between individual farmers.

HISTORICAL PERSPECTIVE

6.8. Provision of services by the South Australian Government to the rural community began nearly a century ago. Initially, services were primarily regulatory, aimed at protecting landowners' property rights through a Stock and Brands Act and the protection of agricultural resources through procedures such as vineyard quarantine protection against phylloxera.

6.9. In 1883, J.D. Custance was appointed Professor of Agriculture to provide policy advice to Government and to establish Australia's first agricultural college at Roseworthy. The College's pioneering research on superphosphate soon after it began helped develop the southern Australian dryland farming system.

6.10. Extension work had its origins in the Agricultural Bureau organisation inaugurated by Mr. Albert Molyneux in 1888 with the principal objective of disseminating agricultural information and distributing seeds of agricultural crops likely to prove suitable in the State.

6.11. At the turn of the century, "Inspectors" were appointed in fields such as horticulture and stock, and soon afterwards, industry "Experts" were appointed in several fields including poultry and dairying. Experimental farms were established from 1904 to demonstrate new agricultural techniques.

6.12. The formal operation of a department of agriculture in South Australia can be traced from this period.

6.13. University training in agriculture was initiated by a bequest of land by Mr. Peter Waite to the University of Adelaide. The Agricultural Education Act of 1927 established the Waite Agricultural Research Institute on the bequest site and gave responsibilities for investigation into "agriculture and allied subjects". The Act also provided for the Institute to supply an advisory service to the Minister of Agriculture in the fields of plant pathology and entomology. This legislation and the consequent development of high quality agricultural science programs at the Waite Institute had the effect of minimizing Department of Agriculture involvement in agricultural research and plant pathology and entomology extension for a further 30 years.

6.14 Secondary agricultural education was also encouraged by the Waite bequest which provided land for building the State's Urrbrae Agricultural High School.

6.15 Agricultural research and extension services within South Australia were stimulated with direct grants by the Commonwealth Dairy Industry Extension Grant from 1948 and Commonwealth Extension Services Grant from 1952. The progressive creation from about the same time of the Rural Industry Research Funds further encouraged this development. As management of these funds became more sophisticated, project structures were instituted. As was intended, these external initiatives had a catalytic effect in developing South Austraiia's research and extension services. New areas of expertise were opened up within SAGRIC. When the initial external funds terminated, the State Government was able to assume responsibility for many of the new services from its own budget. However, since 1977, the South Australian Government has not had the resources to take over the funding of additional terminating projects. Trust-funded research is now managed as short term finite projects. Staff are employed on a temporary basis for the duration of funding only.

6.16 Recent years have also seen major changes in the educational scene. Vocational agriculture began to be taught at Urrbrae Agricultural High School in 1968 and in a few country secondary schools from the mid 1970's. In 1974 Roseworthy College ceased to be a South Australian government department, and became a College of Advanced Education funded by the Tertiary Education Commission. However, because of its unique tradition of effective agricultural research, it has continued to receive a substantial annual research grant from the State.

6.17 The Department of Further Education (now Technical and Further Education - DTFE) was established in 1974, and immediately entered the field of post-secondary education in agriculture. This was achieved by developing regional centres from which courses were taught, often using SAGRIC staff contractually hired outside of their normal employment. These arrangements have meant the need for adjustments between SAGRIC and DTFE, particularly regarding the role of SAGRIC extension services and the provision of scientific and technical support for DTFE courses. The process of adjustment is continuing. SAGRIC considers that agricultural education should be seen as part of an integrated extension program.

THE DEPARTMENT OF AGRICULTURE

6.18 SAGRIC's current objectives and functions are stated in the following terms: -

Objectives

1. To stimulate and assist the agricultural sector to provide high quality food and fibre at competitive prices, thereby maximizing its contribution to the economic and social welfare of South Australia and of the Nation.

2. To encourage the most efficient use of, and conservation of the State's natural resources (including soil, water, plant and animal resources) for the benefit of the entire community.

3. To assist the State's rural industries to remain economically viable and to help participants in the agricultural sector to advance their physical, social and economic welfare comparably to the remainder of the community.

4. To promote the development of mutually beneficial technical and trading relationships with developing countries through provision of expertise to support their agricultural development.

5. To provide effective administration, financial and personnel services within the Department of Agriculture, and to facilitate the implementation of government policies by maximising the productivity and motivation of the Department's workforce.

6. To promote an understanding and appreciation of the contribution of the agricultural sector to the economic and social welfare of South Australia.

Functions

. Provide advice to the Government to assist in the formulation of agricultural policies.

- Administer Government legislation designed to manage and enhance the development of and the quality of production from the State's agricultural industries.

- Prevent the introduction of new, and to control the spread of existing pests and diseases which adversely affect agricultural industries. To conserve the physical resources used in agriculture.

- Conduct research into the biological, physical, social and economic aspects of the existing and potential agricultural industries and to improve quality, efficiency of production and marketing.

- Provide an advisory service to agriculture industries, home gardeners and part-time farmers covering technical, economic and marketing factors, to assist these groups adapt to changing circumstances and expectations.

- Provide agricultural expertise to developing countries in compliance with Government policy.

- Administer funds made available for the improvement of primary production, rural reconstruction and for assistance to rural producers in the event of natural disasters.

- To provide support services across the Department of Agriculture to facilitate the operation of the Department's programs.

DEPARTMENT OF AGRICULTURE RESOURCES

6.19 State revenue funds appropriated for the research, extension and regulatory services of SAGRIC have been influenced by government policies seeking to improve the efficiency of all sectors of the public service. Over the past five years, the South Australian Treasury has been promoting efficiency by encouraging departments to operate with less revenue funding when expressed in real terms. In the period 1976-1980, Departments were permitted to make a total allowance of 25% for inflation when preparing their contingency budgets. During this period, the Consumer Price Index increased by 50%, and a number of items which form a significant component of the SAGRIC budget increased by considerably higher

amounts. For example, travel costs rose by 68%, postage and telephone by 110% and electricity and gas charges by 158%. The nett result has been a reduction in real terms of 35% in the funds provided to the Department of Agriculture for contingency purposes.

These effects were further compounded by the Commonwealth Government's progressive withdrawal from funding the Commonwealth Extension Services Grant. The State Government has since been able to provide funding to support, in real terms, about 60% of the work previously supported through CESG.

6.20 To some extent offsetting these effects has been SAGRIC's greater successes in attracting Rural Industry Research Funds. The nett result is that numbers of full-time equivalent research officers, which had risen from about 65 in 1966 to 119 in 1976 have undergone a further minor increase to 129 in 1981. New staff are, however, on short-term contracted appointments.

6.21 The distribution of fund sources within the principal activities of research, extension, regulation and administration within SAGRIC for 1980/81 is shown in Table 6.1. The distribtion of staff, both professional and technical, and including both salaried and wages staff, is shown for the respective functions in 1980/81 in Table 6.2.

6.22 There is of necessity some arbitrariness in assigning the various categories of expenditure to functions. For example, senior officer, reception and typing staff costs and office expenses in all district offices have been listed under administration, though their prime function is to support extension programmes. Many research staff carry out significant extension work to communicate their research findings to the farming community, while much of the thrust of regulatory programmes is oriented to extension rather than enforcement. Nevertheless, the data show that extension resources provided from State revenue funds are less than those provided for research.

FUNDING OF RESEARCH

6.23 A major contributing factor to the proportionately higher cost of research is the high cost of maintaining research centres. SAGRIC

TABLE 6.1 1980-81 EXPENDITURE, S.A. DEPARTMENT OF AGRICULTURE AND ASSOCIATED SERVICES

Fund Source	Research $	Extension $	Regulation $	Administration $
State Funds	5 282 000	3 127 000	4 657 000	5 127 000
Commonwealth Funds (including services carried out on behalf of Commonwealth)	292 000	221 000	1 803 000	21 000
Joint Commonwealth/State Funding	262 000	-	2 812 000	100 000
Generated Funds	232 000	46 000	-	-
Joint Producer/State Funds	48 000	-	-	-
Producer Funds	28 000	7 000	87 000	-
Contract Services	47 000	-	-	-
Producer/Commonwealth Funds	1 033 000	1 000	385 000	15 000
Other research funds	65 000	-	-	4 000
TOTAL	7 289 000	3 402 000	9 744 000	5 267 000
GRAND TOTAL			$25 702 000	

S.A. DEPARTMENT OF AGRICULTURE

TABLE 6.2

Salaried and Wages Staff Distribution as at June 30, 1981

Function	Number
Research	385
Extension	169
Regulation	306
Administration	158
	1 018

is currently reviewing the operations of its research centres. To offset these costs, the State Treasury has requested the Department to examine methods of increasing revenue generated by research centres.

Rural Industry Research Funds

6.24 Agricultural research effort is further enhanced by the availability of funds from industry to support additional investigations.

6.25 Most Rural Industry Research Funds have increased the value of producer contributions in recent years, and this in turn has attracted matching Commonwealth funding.

6.26 It has been demonstrated that agricultural research leads to significant benefits to consumers as well as producers. In cases of domestic industries where the elasticity of supply is greater than the elasticity of demand, the majority of research benefits will accrue to the consumer (Edwards and Freebairn 1981). However, any evaluation of the respective apportionment of benefits from research to producers or consumers should not lose sight of the benefits to the nation as a whole. Thus research specifically oriented towards reducing costs of Australian production, if it is unsuitable for adoption elsewhere, will result in the greatest benefit to Australians as a whole, even though a significant proportion of these benefits will accrue to producers. In contrast, Australian research which can be as readily adopted in the rest of the world as in Australia may provide greater benefits to Australian consumers, but the total benefits to Australia will be less. National research policy should be primarily concerned with obtaining the highest possible returns for Australia, and should only secondarily concern itself with the apportionment of these benefits between producers and consumers within Australia.

6.27 The Industries Assistance Commission enquiry into Financing Rural Research (Lloyd, Dun and Melville 1976) accepted that because rural research is characterised by external benefits and uncertainty, there would be under-investment in it without some form of government intervention. It was the Commission's judgement that government financial assistance is vital to ensure that the very large gains which can be obtained through research will be realised. Because the rural

producer is able to appropriate a substantial proportion of the benefits of research, producers should continue to finance research through industry levy collections.

6.28 It is the recommendation of the South Australian Government that the Commonwealth should continue to maintain its present equal level of matching support for the statutory levy-based Rural Industry Research Funds.

Research Funding by Smaller Industries

6.29 Within the past five years, there has been evidence that a number of smaller industries are increasingly able to organize voluntary levies from among their members. A recent example is the S.A. Pea Industry, which through the Protein Crops Committee of the United Farmers and Stockowners of S.A.(UF and S) instituted a voluntary levy of $1 per tonne on field peas at point of sale. These funds are managed directly by the U.F. & S. Other similar programmes have recently been generated by the small seeds, strawberry, cherry, apple and tomato industries. This highlights an increasing inequity of research opportunity for the smaller industries collecting voluntary levies compared with the large industries which have statutory research levies. The smaller industries must compete for matching funds under the Commonwealth Special Research Grant. This grant has very limited funds, resulting in a less than 40 per cent probability that grower-approved projects will receive matching Commonwealth support, whereas the industries with statutory levies are guaranteed full Commonwealth support in terms of their respective Acts. Yet it is likely that the greatest returns to research investment may be secured in the smaller industries which have thus far had little research effort. Furthermore, most are domestic industries where the highest proportions of returns may be expected to be to consumers.

6.30 It is recommended that additional Commonwealth Special Research Grant funds be provided to match research levies raised by those industries which do not have access to statutory research levy legislation.

INNOVATIVE AND MULTIDISCIPLINARY RESEARCH

6.31 Another research funding source which has become increasingly important

over the past five years is the Rural Credits Development Fund (RCDF) administered through the Reserve Bank. This fund has supported many innovative and multidisciplinary projects which are not readily eligible for funding by the Rural Industry Research Funds. In consequence, it fills a gap which is left unserviced by the existing statutory-levy based funds. Its value was recognised by Lloyd, Dun and Melville, 1976. It is noted that the Final Report of the Committee of Enquiry on the Australian Financial System (Campbell et al. 1981) recommends that the Rural Credits Department of the Reserve Bank should be phased out. Hence the funding source for the RCDF, being half of the profits from the Rural Credits Department, would cease to be available. It would be a serious loss to agriculture if the funds equivalent to these generated from these credit activities were withdrawn from agricultural research.

6.32. South Australia strongly supports the Campbell report recommendation that if the Rural Credits Department is to be phased out, appropriate transitional arrangements be made for the funding of ongoing research, and that the research previously funded by the RCDF would be more appropriately funded from the Commonwealth Budget. In any event these research funds should continue to be available, at least at the current level.

RESEARCH MANAGEMENT WITHIN SOUTH AUSTRALIA

6.33. Over the past five years, a series of major initiatives have improved the management of research within SAGRIC. These initiatives have included the regionalisation of research, the development of a Research Policy Advisory Committee, the institution of periodic reviews of specific disciplinary or industry research and the development of a project-based management system within the Department. (The latter development has complemented the subsequent introduction of Programme Performance Budgeting for the entire South Australian public service). These initiatives have been introduced with the aim of ensuring that the research being carried out is relevant to producer and industry needs, is effectively and efficiently performed, and is subject to regular and critical review.

Regionalisation

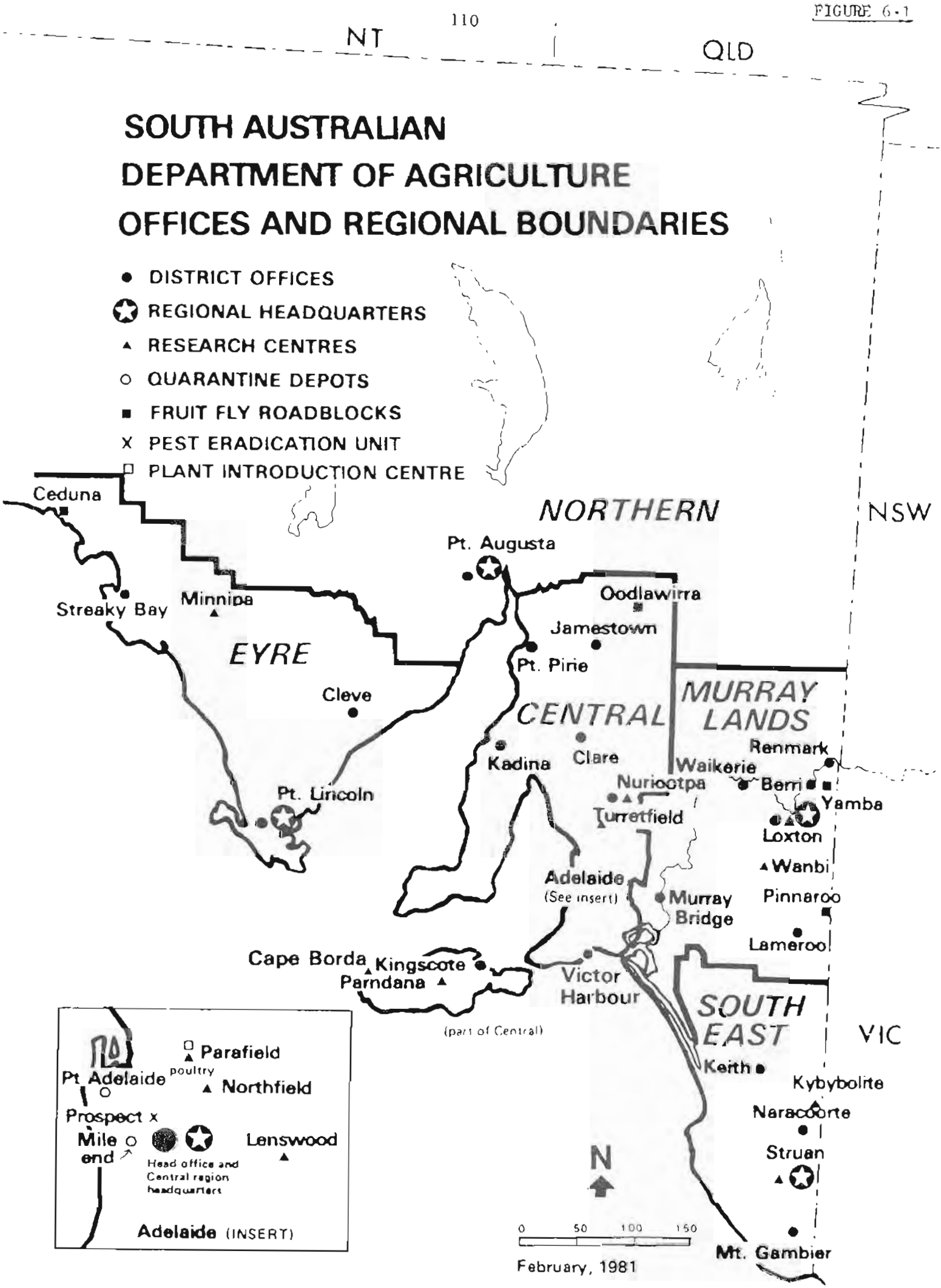
6.34 Research resources and staff in the principal agricultural regions of the state along with local extension staff, have been transferred to regional management. The regions and district offices of SAGRIC are shown in Figure 6.1. Previously technical direction of research centred on senior staff in Adelaide. Despite their best efforts, long chains of communication to widely separated areas of the state made it difficult to effectively manage diverse research projects. The appointment of Principal Research Officers to assume responsibility for the management of research in the South East, Central, Murray Lands and Eyre Regions, and to develop close links with local industry leaders has already shown significant benefits in staff morale and motivation and in the quality and quantity of research being carried out. This is especially evident from the increased numbers of externally funded projects being attracted to research groups now under regional management. While the number of Rural Industry Research Fund (RIRF) projects awarded to SAGRIC doubled in the period 1978-79 to 1981-82, the number awarded to research groups under regional management increased by 250 per cent in the same period. (It may be noted that in the one remaining region, the Northern Region encompassing the pastoral areas of the State and based in Port Augusta, there is little research being carried out, and no research structure has yet been developed).

6.35 Despite the thrust towards developing regional research a basic research capability in specific plant, animal and soil disciplines has also been retained. Officers working in these areas remain attached to the respective SAGRIC Divisions, and are located either in Adelaide or at laboratories and research centres in the metropolitan area at Northfield, Parafield or the Waite Institute.

Research Policy Advisory Committee

6.36 To provide an independent source of advice on South Australia's research needs and how well they are being met by SAGRIC a Research Policy Advisory Committee has been established under the chairmanship of the member of the Departmental Executive responsible for research (currently the Director-General). The eight-person committee includes Departmental, University, CSIRO and industry

FIGURE 6·1


SOUTH AUSTRALIAN
DEPARTMENT OF AGRICULTURE
OFFICES AND REGIONAL BOUNDARIES
DISTRICT OFFICES
REGIONAL HEADQUARTERS
RESEARCH CENTRES
QUARANTINE DEPOTS
FRUIT FLY ROADBLOCKS
PEST ERADICATION UNIT
PLANT INTRODUCTION CENTRE
NT
QLD
NSW
VIC
NORTHERN
EYRE
CENTRAL
MURRAY LANDS
SOUTH EAST
Ceduna
Streaky Bay
Minnipa
Cleve
Pt. Lincoln
Pt. Augusta
Oodlawirra
Jamestown
Pt. Pirie
Kadina
Clare
Nuriootpa
Turretfield
Waikerie
Renmark
Berri
Yamba
Loxton
Wanbi
Pinnaroo
Lameroo
Adelaide
(See insert)
Murray Bridge
Victor Harbour
Cape Borda
Kingscote
Parndana
(part of Central)
Keith
Kybybolite
Naracoorte
Struan
Mt. Gambier
Parafield
poultry
Northfield
Pt. Adelaide
Prospect
Mile end
Lenswood
Head office and Central region headquarters
Adelaide (INSERT)
N
0 50 100 150
February, 1981

representatives. It has already completed reviews of poultry industry, weed science, citrus industry and field crop improvement research using small review teams, and is currently examining agricultural economics and ruminant industry research and the general operations of the Department's research centres. It has also sponsored major workshops for Departmental and industry participants on both systems research and the future research needs for the S.A. dryland farming areas. These activities have provoked considerable interest and worthwhile contributions from industry, and have helped identify opportunities for making resource allocation changes within SAGRIC.

Industry Research and Development Interest

6.37 As a result of the foregoing changes, there is evidence of considerably more industry interest in agricultural research. The U.F. and S. has established its own Research and Review Sub-Committee, and has initiated voluntary levy collections from producers in the pea and small seeds industries. It is currently investigating the possibility of introducing an additional state levy in one of the major industries already providing significant research funds under Commonwealth statutory levy legislation. In addition, SAGRIC has begun servicing an increased number of projects on a directly contractual basis for sectors of industry over the past five years. Those participating include poultry, mandarin, agricultural and veterinary chemicals and livestock industries.

6.38 It is concluded that the trend for the rural industries to have a closer involvement in research management decision-making and to accept greater responsibility for the direct funding of research by SAGRIC will markedly increased in the next decade.
While generally commending these developments, it is necessary to be aware that those industries with a greater cohesiveness and corporate identity are more likely to be able to secure additional funding from their members. The availability of supplementary funding from such industries will not necessarily be a reflection of the greatest needs for additional services to agriculture.

RESEARCH CO-ORDINATION AT NATIONAL LEVEL

6.39 There is an increasing appreciation within South Australia of the need for

greater co-ordination and rationalisation of agricultural research within Australia. The establishment of the Commonwealth Council for Rural Research and Extension (CCRRE) was valuable for research organisations, particularly for state departments of agriculture because it stimulated an examination of their total research and extension effort on a national basis. Standing Committee on Agriculture (SCA) worked closely with CCRRE during its existence, and has the resourcefulness to continue the initiatives which were inherent in the establishment of the Council.

6.40. SCA through the state departments of agriculture and CSIRO, commands about 85 per cent of Australia's agricultural research resources. It has already initiated further development of the CCRRE reviews, and has established additional reviews into new areas of research. The further development of the CCRRE reviews has already generated a diversity of responses from encompassed research groups ranging from strong support to denial of SCA's competence and responsiblity. The fact is that resource constraints are increasing and there is a need for a responsible body to assume accountability for the nation's agricultural research, however unpalatable that may be to the nation's agricultural research institutions.

6.41. It is recommended that SCA be recognised as having the responsibility for carrying on and developing the philosophies and responsibilities which the CCRRE was seeking during its existence.

6.42. South Australia confirms that it supports the co-ordination and rationalisation of research at a national level.

EXTENSION SERVICES

6.43. In Australia, government extension services have tended to be designed around the 'expert' concept. In the sixties and seventies many advisers undertook training in social skills and knowledge. The current training needs are to develop a system-oriented entrepreneurial role in extension, where extension services are capable of identifying problems and needs and quickly mobilizing resources to meet them. This role must be developed in conjunction with farmers so that the problems being solved are those the farmers perceive as the real problems. Extension officers do require a thorough knowledge and understanding

of farming technology. It should cover the systems of farming practised in their district and not only parts of that system.

6.44. One result of the adoption of this role is that the distinction between research/resource/extension staff is becoming more blurred.

6.45. Harris et al. (1974) drew attention to the need to develop a system capable of providing whole farm advice in a co-ordinated way at the district level. Since then, there has been a major change in South Australia towards a philosophy of providing extension on a whole farm basis. A series of whole farm management training programmes were run for extension officers on an in-service basis in the period 1977-80. These, coupled with the continuation of a programme of offering formal extension training to advisers at the University of Melbourne and Hawkesbury Agricultural College, the restructuring of extension services to a regional framework as previously described, and the greater provision of extension services on a group rather than individual basis have resulted in a significant change of emphasis in the delivery of these services.

6.46. Subjective judgement during a period of constrained resources suggests that these changes have resulted in a more effective extension service.

Extension Resources

6.47. The fact remains that resources applied directly to extension remain less than those applied to research. The 104 professional officers engaged in extension with SAGRIC, remain slightly lower in number than the 129 officers engaged in research. Furthermore, the number of extension professionals has increased by four in the past five years compared with an increase in research officers of ten. This does not reflect an explicit policy of promoting research at the expense of extension services, but is due substantially to the availability of external funds for research. In maintaining a balance between extension and research it is recognised that many factors need to be taken into account, including the changing needs of agricultural industries and the availability of industry funds for different activities. Further, research programs require approximately twice the technical and other support services required by extension programs.

6.48. The South Australian Government assumed responsibility for about 70 per cent of the extension resources previously supplied by CESG. Since the demise of that grant, SAGRIC has had almost no extension staff on external funds. By contrast, there are 55 staff members externally funded by various research funds.

6.49. There is some evidence that a number of the rural industries are becoming aware of the imbalance of supplementary support between extension and research. Informal discussions suggest that some industries are reaching a point where they may be prepared to support extension-oriented positions to help promote the improved flow of information to farmers as well as the research positions already supported through the various research levies. Initially such positions might be to enhance research-extension liaison, but ultimately direct advisory positions might also become attractive for funding.

6.50. The Commonwealth has been under substantial criticism since it ceased providing support through CESG. If the continuation of Commonwealth support of research can be justified by the benefits so generated it may perhaps be argued, from one point of view, that some support from the Commonwealth level should be given to agricultural industries for extension services. Measures of benefits already gained from the Commonwealth's involvement in research in fact are derived from estimates of the adoption of new technology, in turn dependent both on the success of the research itself and of the extension communication of that research. In a similar way to research investments, the nation, including consumers, will also benefit from the adoption of new technological improvements through having more effective extension services. On the other hand, the South Australian government, for both reasons of political philosophy and budgetary efficiency is in general opposed to specific purpose or "tied" payments from the Commonwealth and welcomes moves to transfer appropriate functions to the States and to "absorb" tied funds into general purpose funds. It would not, therefore, support a return to previous arrangements. It would, however, welcome any steps towards making current funding arrangements more flexible, for example, by allowing funds now available for research to be used for both research <u>and</u> extension. Under current arrangements, there is a danger of imbalance between the two functions.

6.51. A further source of support at community level for additional agricultural extension services could be the wider use of special rating or levy powers within local government or other defined areas. Provision already exists within South Australia for levies to be declared on stockowners to supplement veterinary services within gazetted districts in terms of the South Australian Veterinary Districts Act, 1940. Such projects should also be eligible for matching Commonwealth support.

6.52. It is recommended that consideration be given to developing constitutionally acceptable mechanism for matching Commonwealth funds to be provided to support these industries, regions or districts which are prepared to provide supplementary funds for extension services.

6.53. It is also recommended that greater public appreciation should be generated of the extent to which the rural industries do already fund many of the services provided by government through departments of agriculture. This will allow State governments to take greater cognizance of funding sources when developing their total public service management policies.

6.54. It is likely that services by government advisers to individual farmers will continue to be replaced by services provided in group discussion and group learning situations. Despite this trend there will be a continuing need for farmers to have access to some individual advisory services. The number of private agricultural consultants operating in South Australia is small. In 1980 it was estimated that there were six consultants; this contrasts with a peak of up to 30 consultants servicing about 22 groups of farmers in the mid-1960s. To some extent the decline may be attributed to the trend for consultants to undertake lucrative overseas contracts at the expense of local consulting.

6.55. Farmers can expect that there will be increasing pressure for them to be responsible directly for the cost of services provided to them specifically as individuals. In South Australia the government is encouraging agencies to charge for identifiable individual services on a fee for service basis. This trend raises the question of the supply of private consulting services and whether there is a need to encourage the entry of more consultants into local consulting to complement departmental services.

Co-ordination of Extension

6.56. There is currently only limited co-ordination of extension services between the states, made the more difficult by their differing technical and environmental needs. Nevertheless there are isolated examples of co-operation, primarily involving technical publications, where for example one state chooses to adopt a fact sheet prepared by another rather than repeat the procedure of preparing a new publication from first principles. The states are also co-operating through the SCA sponsorship of the Australian Bibliography of Agriculture.

6.57. There are a few existing rationalisations for the provision of advisory services. For example, SAGRIC provides advisory services to a small group of almond growers in north-western Victoria under arrangements with the Victorian Department of Agriculture and almond growers. With the likelihood that new electronic technology will become increasingly important in the provision of extension information, greater co-operation and rationalisation between the states will become essential.

6.58. The need for this co-operation was never effectively addressed by CCRRE. As in the case of research, it seems reasonable that responsibility for co-ordination and rationalisation of extension be left firmly in the hands of SCA.

TECHNICAL CHANGES IN EXTENSION

6.59. The role of information services in Government extension may be defined as:

> 'to facilitate the flow of information and access to information by staff, the media and clients'.

One of the major problems faced by the media, consultants, private industry and a significant proportion of farmers is that while the information they need often exists gaining access to it is a major problem. New computer and telecommunication technology is available but not yet harnessed to provide the ready access required by active information seekers. Within a decade it is possible for more specialist support staff to be engaged in data preparation, storage, and soft-ware development so that what is known can be readily accessed and used by the media, extension professionals both government and private, agri-business and those farmers who are active information seekers.

6.60. Main frame computers were first used in Australian agriculture during the 1960s. During the 1970s the range of mini- and micro-computers available has expanded dramatically and costs have fallen sharply. A rapidly growing range of soft-ware programmes is available for farmer and extension officer use. An increasing number of farmers are buying small computers to assist their record keeping, farm management decision-making and financial planning. The next decade will bring more widespread access to mainframe computers with increased opportunities for extension officer and farmer use, particularly in gaining access to information data bases. As terminals become cheaper and more versatile, more will be installed in regional and district centres. Decentralised commercial and government agencies will then be able to make much greater use of computer networks and data services.

6.61. In telecommunications the "Video-tex" system currently being developed in Australia, based on Britain's "Prestel", offers a completely new alternative for the provision of basic technical data to farmers. Rural people would benefit from the development of one national system of this kind requiring the purchase of only one set of equipment for accessing data via the telephone network on to their television screens. Such a service, enabling immediate call up of wool, stock, crop and futures market prices, technical data on herbicide and pesticide use, and the cost of purchased inputs, would be of great advantage to primary producers. It would have the potential to replace much of the specialist extension literature now produced by departments of agriculture.

6.62. A corollary to the introduction of new data processing and communication technology is that farmers and extension officers will require training in how to access data and interpret it. Such training should result in farmers becoming more independent self-reliant and active in their information seeking. Training in groups is also more efficient than servicing individual enquiries. Likewise, many extension officers are not adequately trained to utilize new communications technology. It has tremendous potential for increasing the productivity of extension officers. Calculation of partial budget, discounted cash flows, gross margins, whole farm plans, optimum farm development strategies and so on can all be handled more rapidly with suitable soft-ware programmes, leaving more time for extension officers to spend in discussion with farmers.

6.63. As knowledge-based organisations, departments of agriculture will be stimulated to require much greater access to outside sources of data and at the same time be significant contributors to a wide range of information sources which can be accessed by staff, rural industry people and the farming community.

REGULATION

6.64. Amid a prevailing general South Australian government philosophy towards deregulation and the opportunities which that brings for encouraging greater entrepreneurial development, there remains a strong commitment towards resource protection by farmers.

6.65. Most are only too conscious of the potential impact of the introduction of exotic pests and diseases into Australian agriculture. Within South Australia alone, the introduction of four new insect pests (sitona weevil, spotted alfalfa aphid, blue green aphid and pea aphid) in the past ten years has seriously jeopardised the dryland ley-farming system by reducing the establishment, vigour and survival of the Medicago spp. upon which it depends.

6.66. The importance of maintaining our generally good international record in agricultural markets through being able to guarantee freedom from a wide range of pests and diseases in our products is also a cornerstone of Australian agricultural policy.

6.67. Farmers have shown a willingness to accept new regulatory programmes such as those currently proceeding to clear Australia of tuberculosis and brucellosis. As overseas buyers continue to increase their product standards, further regulatory programmes are likely to be requested. Furthermore, farmers have come to accept the costs of these services, or for example the Brucellosis and Tuberculosis Eradication Campaign which is largely funded by a levy paid by farmers at the time of livestock slaughter.

6.68. There is evidence that farmers will also support the production of regulatory services as a direct aid to increased efficiency of production. One example of this is the S.A. Mastitis Cell-count Monitoring service which was introduced in 1977. Since that time, the mean cell count of all South Australian dairy cows has fallen from 610,000 cells/ml to 454,000 cells/ml. A fall of this level leads to an increased production of up to 14 kg/cow per year. Spread across the South Australian dairy herd, the increased productivity from the Cell-count Monitoring Service has been worth about $5 million per annum. The cost of the service in 1980-81 was $49,000.

6.69. Although a general philosophy of deregulation has much to offer the community at large, the benefits from continuation of a regulatory base for the protection of the rural environment, albeit imposed from an extension rather than enforcement viewpoint, appears to justify the costs involved, and is recommended for the rural industries.

AGRICULTURAL EDUCATION

6.70. Formal agricultural education is provided in South Australia at the tertiary level by the University of Adelaide and Roseworthy Agricultural College, at the secondary level by a number of schools, the most specialised of which is Urrbrae Agricultural High School, and at the further education level by the Department of Technical and Further Education. SAGRIC has no direct responsibility for providing education, though it provides a variety of minor assistance to other educational bodies. Such assistance includes providing officers to lecture on occasion at University, Roseworthy and DTFE courses and arranging for parties from schools to visit research centres.

6.71. There are no residential vocational agricultural schools in South Australia.

University of Adelaide - Waite Agricultural Research Institute

6.72. The Faculty of Agriculture in the University of Adelaide is located at the Waite Agricultural Research Institute, Glen Osmond.

6.73. The Waite Institute as well as being a training institution has developed a world reputation for the excellence of its agricultural research. Like many university institutions, it is understood to have been operating under increasing financial difficulties, and competition for external funds has become increasingly severe. It has sought special recognition from the Prime Minister as a national research institute. The South Australian Government supports the Waite Institute in seeking this recognition.

6.74. There had been no direct South Australian Government funding of the Waite Institute for many years until 1981 when the State assumed responsibility for the salary of a specialist in plant breeding who had been funded for some fifteen years previously by the Wheat Industry Research Council. This action was in direct recognition of the specific value of the research he was performing in breeding wheat varieties for South Australian use.

6.75. There has been a quite limited demand by the State Government for graduates in agricultural science over the last 2-3 years due to staffing and resource constraints. However, a succession plan established for the Department of Agriculture has established that approximately one-quarter of the staff are anticipated to reach retiring age by 1991, and about forty new graduates are likely to be recruited among the replacement staff. The majority of these would be expected to come from Waite Institute graduates.

6.76. Despite the fact that there is now a generally adequate availability of trained teachers for primary and secondary education, there will continue to be a demand over the next few years for agricultural teachers with a basic tertiary training in agriculture supplemented by formal teaching qualifications.

6.77. The Waite Institute also provides a valuable role as a provider of specific post-graduate training for research staff in the Department of Agriculture. It has been recent government policy to support such staff on full salary while undergoing this training.

6.78. No veterinary science training is available in South Australia. There appears to be little justification for this discipline to be added to tertiary training in South Australia as veterinary faculties are now established in all other mainland states.

Roseworthy Agricultural College

6.79. Roseworthy Agricultural College is established by the Roseworthy College Act, under the control of a College Council, a majority of whose members are appointed by the South Australian Minister of Education. It is funded by the Tertiary Education Commission

as an autonomous College of Advanced Education (CAE), but prior to 1974, was funded and operated as a separate department of the South Australian Government.

6.80. Since becoming a CAE, the College has embarked on a major programme to expand student numbers from 165 to 400, and has broadened the fields it has covered from agriculture and oenology to also include natural resources and horse husbandry.

6.81. Since Roseworthy College has had a long history of research activities, especially in wheat breeding, and as Commonwealth CAE funds are unable to be used for supporting research, arrangements were made for the South Australian Government to continue to fund approved research activities at the College after it became a CAE. The projects currently funded cover wheat breeding and small lot winemaking. Project applications are examined each year by an advisory committee appointed by the Minister of Education. The value of this support in 1981-82 is $227 523.

6.82. The South Australian Government considers that provisions to support research of specific interest to the state as is done at Roseworthy and the Waite Institute represent good use of already extant facilities and expertise. Various provisions have been made to co-ordinate this research with other State-funded research, and are evidence of South Australia's support for rationalisation of research.

Secondary Education in Agriculture

6.83. Agricultural Studies is currently taught in 50 South Australian schools, from years 8 to 11. Six non-government schools also teach agriculture. Of the Education Department schools, six teach an additional year 12 course on this topic. The courses are designed to meet the needs and interests of a wide range of students from non-farming as well as farming situations. Agricultural Studies provides students with an opportunity to develop an understanding of the farm and the natural environments, gain experience in

growing plants and raising animals, observe the application of scientific principles in solving practical problems and acquire knowledge and skills useful in later life. Although in earlier years there was some diversity of approach towards developing agricultural studies courses, current policy has been to establish a standard curriculum which provides the core of the studies.

6.84. The Junior Secondary Agriculture Studies course (years 8 to 10) occupies about 10-15% of lesson time of the student. At the conclusion of the course, it is expected that students will: -

- understand some of the important scientific, managerial, and economic principles underlying the production of crops and animals and recognise that agricultural practices are based on the application of these principles.

- make accurate observations of natural phenomena.

- apply the principles studied through problem solving exercises.

- perform simple operations relating to plant and animal production.

- realise the importance of the agricultural industries in the economy.

- understand agricultural information presented in a variety of forms.

6.85. The Senior Agricultural Studies course (years 11 to 12) extends the aims of the junior course and deals more specifically with management, economics, sociology, agricultural industries, politics, ecology and the science of agricultural production.

6.86. Quite separately from the general studies in agriculture, there is also an increasing demand for specific vocational training in agriculture in years 11 and 12. This is designed to prepare students for practical agriculture or horticulture or for

employment in the agricultural service industries. The first South Australian course developed to meet this demand was the Urrbrae Certificate in Agriculture, which commenced in 1968. This course caters for a wide range of agricultural interests and enrolls about 70 new students each year. Approximately 75 - 80% of the formal course work is specifically agriculture-oriented.

6.87. Subsequently, a similar course was commenced at Cleve in 1975, with emphasis on the agricultural systems of Eyre Peninsula, and more recently vocational agriculture courses have also been instituted at Minlaton on Yorke Peninsula and at Lucindale in the South East of South Australia. There is strong local community pressure for this type of course to be available more extensively across the State.

6.88. Some current federal policies in education hamper the development of courses for which there is the greatest demand, and may also inhibit the development of standard core curricula. For example, Schools Commission Innovation Grants are made directly to teachers, bypassing the Education Department and its curriculum directorate. Whilst these arrangements may well encourage innovation for its own sake, they do not necessarily lead to a logical consensus development of new course material.

Further Education in South Australia

6.89. Further Education in South Australia is conducted by the Department of Technical and Further Education (DTFE). Community Colleges and Centres have been established in 18 city and suburban locations and in 14 country towns. In 1980, the DTFE had 149 000 enrolments for its courses. The distribution of these by Tertiary and Further Education Commission streams is shown in Table 6.3 These data show that over one-third of the further education enrolments are in general interest-enrichment courses.

TABLE 6.3: Further education course enrolments according to Tertiary and Further Education Commission streams, South Australia, 1980.

TAFEC Stream	No. of enrolments
Professional	339
Para-professional	31 477
Basic trade	9 095
Other vocational	28 445
Preparatory	27 811
General interest enrichment	52 270
TOTAL	149 437

Source: 1980 Annual Report, S.A. Director-General of Further Education.

Further Education in Agriculture

6.90. Demands for further education in agriculture have been influenced by a number of trends. In commercial agriculture, there has been a gradual decrease in the number of farmers, but an increase in the level of education of the farming community. Despite this, farmers remain under-educated relative to the general Australian population and to their counterparts in many other developed countries. Only 4-6% of current practising farmers in Australia have received any formal post-secondary education. In some Western countries, the comparable figure may be as high as 80%. Changes in population centres, with regional towns expanding at the expense of smaller district towns, have resulted in education becoming located at regional centres along with other traditional sources of information for farmers such as stock and station agents, banks and agribusiness.

6.91. Partly off-setting the declining number of commercial farmers is the increase in part-time and "hobby" farmers. Their agricultural education requirements are quite different to commercial primary producers. The part-time farmer is characterised by having a higher standard of formal education and less experience in practical farming skills than commercial farmers.

6.92. It is essential that the further education courses provided for commercial farmers and part-time farmers be oriented towards the differing needs of the respective groups. The courses must change with the changing needs of the particular groups. Furthermore, the times at which courses are provided must take account of the differing daily and seasonal work patterns of the two groups.

6.93. There is a risk that formal post-secondary courses may represent an inefficient use of financial and manpower resources if they are poorly attended or are dominated by non-vocational participants.

6.94. Courses currently offered by DTFE can be characterised into four main types, viz: -

i) Certificate Courses for specific technical areas, and the more general course in Rural Studies.

ii) Certificate in Farm Practice, a course which has been attuned specifically to farmer perceptions and needs for vocational training with a practical orientation.

iii) Short courses in specific skills, e.g. welding, farm mechanics; and

iv) Enrichment courses.

6.95. Enrolments for the principal further education certificate courses which impact directly or indirectly on agriculture are given in Table 6.4. The Certificate course in Farm Practice has been widely acclaimed in the rural community, with pressure to expand its availability to regions where it is not currently offered. By contrast, there is evidence that other certificate courses, though having much higher enrolments, are less successful and may come to be seen primarily as additional sources of "enrichment" opportunities by those interested in but not commercially engaged in agriculture.

TABLE 6.4: Further education enrolments in courses related to agriculture, South Australia, 1980.

SUBJECT	COURSE ENROLMENTS 1980
Animal Care Certificate	77
Buttermaking course	2
Certificate in Rural Practice(Rural Studies)	12
Certificate in Horticultural Practice	15
Cheesemaking Certificate	6
Equine Studies Certificate	56
Meat Inspection Certificate	155
Milk and Cream Grading Certificate	1
Milk and Cream Testing Certificate	18
On Farm Training Course*	48
Rural Studies Certificate	1 304
Stock and Station Agents Certificate	17
Vertebrate Pest Control Certificate	56
Weed Control Certificate	152
Wool Classing Certificate	100
TOTAL	2 019

Source: 1980 Annual Report, S.A. Director-General of Further Education

* Now retitled Certificate in Farm Practice

Skills Training in Agriculture

6.96. Commercial farmers have shown that they favour the further development of courses which combine a sound technical education in basic agriculture with the opportunity to develop the personal skills necessary to become a successful rural producer. Combination of the Certificate Courses in Agriculture taught at secondary level with the DTFE Certificate Course in Farm Practice would be one way of training potential commercial farmers. However, some co-ordination of secondary and further education would be required.

6.97. Within South Australia, the UF and S has, since 1978, been pressing for the recognition of some non-indentured form of education to provide basic skills for those likely to be employed on the land. There is currently, however, no Commonwealth support for skills training in agriculture. The DTFE Certificate course in Farm Practice could form the basis of such skill training, but has thus far been developed and operated almost entirely without Commonwealth help.

6.98. The Commonwealth currently supports apprenticeship skills training for over 100 industries by means of the Commonwealth Rebate for Apprentice Full-time Training (CRAFT) Scheme. This scheme provides rebates to employers to offset the loss of work while the trainee is at formal courses, provides allowances to trainees studying away from home, and also provides supplementary rebates to employers when the trainee is securing off-job training at another venue and is not thereby able to make a productive contribution to his employer, even though still on the payroll. In South Australia, the State also provides apprentice accommodation and travel subsidies.

6.99. The UF and S has reviewed the possibility of developing an agricultural apprenticeship scheme for training farm workers, but considers that formal apprenticeship schemes are not appropriate in agriculture for a number of reasons. These include the need to develop diversity of experience from a number of trainers in different districts, the need to actually live on the property rather than be a commuting trainee as in a conventional apprenticeship,

the lack of formal qualification among many of the highly skilled practitioners who would provide the training in farming practices (less than 8% are formally qualified), the seasonal nature of many of the skills to be learned, and the difficulties of co-ordinating formal course work with skill training in a diverse range of environments.

6.100. Statutory provision has recently been made in South Australia for the development of non-indentured skill training courses where a formal contract of training can be entered into by a trainee with an employer. This is achieved under the South Australian Industry and Commercial Training Act 1980 which replaces the former Apprentices Act, and is administered by the S.A. Industry and Commercial Training Commission using advisory committees for specific industries. (These committees are, where possible, combined with the Federal industry training committees established under the aegis of the Commonwealth Department of Employment and Youth Affairs).

6.101. Provision exists under the South Australian Industry and Commercial Training Act to gazette approved non-indentured skills as "declared vocations", allowing the formalisation of the conduct of training and the determination of the requirements for entering into contracts. One area where this form of non-indentured skills training is being considered is in the field of agriculture.

6.102. Conventional apprenticeships continue to be overseen by the new South Australian Industry and Commercial Training Commission, and can be supported by CRAFT grants. "Declared vocations" based on a non-indentured contract are not recognised for CRAFT support, hence limiting in fields such as agriculture the extent to which employers can afford to act as trainers. The South Australian Government has initiated approaches to the Commonwealth to have non-indentured "declared vocation" skill training also eligible for CRAFT support.

6.103. A further aspect of skill training is the development of Group Training Schemes in which industry associations such as the Master Builders Association and the Metal Industries Association act as employers of trainees and arrange their placement in industry. A similar mechanism could also be developed through rural producer associations, but only if the skill training were recognised for CRAFT support.

6.104. It is recommended that CRAFT support be available for approved non-indentured skill training in agriculture.

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7. AGRICULTURAL MARKETING

7.1. INTRODUCTION

During the 1980s farmers and governments will need to extend their understanding of changing market characteristics and opportunities. Historically farmers have distrusted and resented marketing intermediaries. Poor prices for farm products have often been blamed on manipulation by intermediaries. Often farmers have sought remedies through extending their collective control of marketing processes, either through co-operative organisations or government intervention. In doing so they have not always recognised that, whoever controls the marketing process, many of the same tasks have to be carried out. Whether farm products are sold through farmer controlled outlets or independent intermediaries it is important that the supply of products matches trends in demand and that marketing operations are conducted efficiently.

7.2. Government intervention in agricultural marketing covers a wide range of activities, including setting quality, health and other standards, assisting the collection and dissemination of market information, supporting promotion campaigns, providing a legislative basis for a variety of marketing boards and schemes, most of which are influenced substantially by growers, and attempting to shape patterns of international trade.

7.3. The National Farmers Federation has recently encouraged farmers to examine critically the costs and benefits of government activity in marketing. This is timely as current expressions of concern about the extent of government involvement in social and economic life have included harsh criticisms of agricultural marketing arrangements.

7.4. As mentioned in para. 2.12. Particular concern has been expressed about the accountability of statutory marketing authorities and the efficiency of their operations. Although marketing legislation has usually made provision for ministerial responsibility in some form, traditions of substantial practical independence have been established. Strong pressure can now be expected against this tendency. Marketing authorities will need to pay due regard to their responsibility both to farmers and to the public. They will also need to demonstrate their efficiency in carrying out marketing tasks. The recently announced review of statutory authorities under the control of the Minister for Primary Industry provides an opportunity to clarify future directions in this field.

7.5. This section examines marketing issues under five main headings:

i) price determination
ii) competition and market organisation
iii) product specification
iv) market information, and
v) promotion.

7.6. PRICE DETERMINATION

The significant role of governments in influencing commodity prices has been defended in terms of increasing the bargaining power of producers, stabilising prices and increasing producers' incomes.

7.7. However, intervention has involved costs as well as benefits. As export markets are a major outlet for agricultural produce, pricing policy needs to take into account production effects and the allocation of products between export and domestic markets. Government intervention to vary domestic prices from export prices has resulted in direct subsidisation between producers and consumers and encouraged the misallocation of resources.

7.8. In export markets farmers are price takers. In domestic markets demand for agricultural products is mainly determined by population growth, real incomes, taste and the price of substitutes. Relative farm product prices affect the mix of products demanded over time. The effects of Government intervention on these forces need careful consideration.

7.9. A major issue in the 1980s will be the justification for continuing Government intervention in price determination. The costs and benefits of intervention should be examined carefully, as should different approaches to intervention. Such appraisals should be made in terms of economy-wide objectives and encouraging the most efficient use of farming resources.

7.10. COMPETITION AND MARKET ORGANISATION

Price determination is closely affected by market organisation and the degree of competition.

7.11. Government Intervention

Farmers have often sought "orderly marketing" arrangements to "stabilise" prices, alter bargaining positions, gain economies in handling, processing and distributing goods, or to organise activities uneconomic for individuals, for example, promotion and market research. Arrangements include producer co-operatives, statutory marketing boards and government instrumentalities. The impact of such arrangements on markets has varied widely. The Australian Wheat Board is an example of a statutory board which has greatly influenced the market, as it has monopoly buying and selling powers on behalf of producers.

7.12. Statutory marketing arrangements and other forms of government intervention in marketing should be reviewed regularly in terms of efficiency in the use of resources, cost effectiveness and productivity. Government sponsored monopolies require examination in relation to the possible benefits of competition, the effects of concentration of market power (including effects on market stability and the expansion or contraction of markets) and income effects.

7.13. Vertical Integration and Contract Buying

Developments at the retail level of the food distributive chain present primary producers with a challenge. Large retail chains currently require merchandise of suitable quality, in consistent and uniform supply, at relatively stable prices. If this challenge is not met by primary producers retailing organisations may try to obtain more control over farm production than is yielded by the normal price mechanism. Such control is exercised through the integration of the processing or retailing firm with primary producers.

7.14. The reasons underlying the growth and development of vertical integration are varied. One motive is to reduce uncertainty as to the quality, timing, volume and price of production. Another important, though less general, objective is to secure the more rapid adoption of new technology, for example broiler chicken production, or the more rapid expansion of the production of a relatively new commodity, for example oil seeds.

7.15. Producers affected by vertical integration face four adjustments:

i) The trend towards large scale, more specialised operations will be accelerated. Integrating firms will tend to favour large producers in their selection of new contract partners, and to encourage the expansion

of production by existing contractors. Economies of scale in production, and thereby lower contract prices, are thus achieved, while the costs of assembly and transport, and of technical and credit supervision, are reduced.

ii) The rate of adoption of new techniques will be faster, and the pressure on technologically backward producers will be correspondingly increased. Integrating companies are likely to increase their research expenditure on farm production but, more importantly, research results tend to be more swiftly and efficiently put into practice partly because of the compulsive power inherent in the contract.

iii) Connected with these two points, capital intensification is likely to be encouraged by the combined price certainty and access to credit provided by the contractual arrangements.

iv) A final, and particularly important adjustment response by growers to the growth of vertical integration in agricultural production relates to the changed role of management, with more emphasis on production stability and quality control, and less on the functions of marketing and purchasing. Contracts generally absolve the farmer from the responsibility of deciding when and where to sell and buy, but require management techniques to be adjusted, often in a closely regulated way, to pay more regard to achieving a target level of quality, output and time of harvesting.

7.16. The present extent of vertical integration is unclear. Large retail chains buy the greater part of their vegetables and poultry on contract. It is likely that contractual integration is virtually complete in meat chickens, processing vegetables, sugar and canning fruits. It appears that integration is increasing in pig, poultry and wine grape production but not, as yet, to a marked degree in beef and sheep meat production.

7.17. In South Australia in 1980 it is estimated that 60 per cent of fruit and vegetables bypassed the wholesale market as a result of contracts between retailers and producers. From a grower's viewpoint contracts are attractive in terms of offering an assured outlet for produce (enabling better planning of production and overall business) and more efficient use of time (c.f. being a grower seller in the wholesale market). Against this growers may not receive a guaranteed price. Indeed the price may be less than wholesale market prices because of supermarkets' superior bargaining positions.

7.18. From an industry point of view, there may be considerable concern (as in South Australia at present) that with more produce going outside the wholesale market, price determination both within and outside the wholesale market may be inadequate because of insufficient competition.

7.19. In view of the marked development of contract marketing in recent years and concern about its implications for the bargaining position of producers, it is important that more adequate information be collected about the extent and consequences of this trend. This should be done on a comparative basis for all States.

7.20. Centralised Marketing

Pressures to centralise marketing of some primary products are becoming stronger. In such cases it is important to examine not only the overall costs and benefits of changes but the effects on regional economies. Without the agreement of regional interests, the implementation of centralised marketing will be difficult.

7.21. Currently centralised wool selling is being examined, under which the selling functions would be transferred to central locations but the wool receival, handling, storage and dispatch functions would stay at their present locations. A six month trial was proposed for the centralised selling of wool warehoused in Adelaide and Brisbane, but this was later cancelled.

7.22. The proposal failed because the objectives of the trial were not legitimised by a rigorous background study and important interests were not persuaded that the benefits of a trial outweighed the costs.

7.23. Before further proposals for centralised marketing are made, for wool or for other products, appropriate studies need to be conducted. Regional interests will need to be assured that such studies consider the local costs of change as well as overall benefits.

7.24. PRODUCT SPECIFICATION

During the 1970s, considerable effort was spent on developing more objective methods of product specification. Producer funds together with government revenue were committed to schemes such as carcase classification. Some progress has been made with specifications for fruits, vegetables and pigs. However, for many products, specification still remains subjective.

7.25. During the 1980s, consideration needs to be given to whether funds spent on developing grading and classification schemes are matched by long run benefits in the marketing chain. The effects on resource allocation, employment, pricing and operational efficiency must also be considered.

7.26. Further, the economics of the actual specifications must be considered. Optimum numbers of classes or grades must be sought together with the optimum types of produce qualities specified. Criteria for specification should reflect price differentials which the market recognises.

7.27. The use of funds from producer levies for product specification needs strict economic justification. In recent years pressure has been applied by producer groups on Government bodies to demonstrate the benefits of the use of funds for beef classification. Such pressures are likely to continue during the 1980s.

7.28. Listed below are several issues related to carcase classification which must be considered:

i) which criteria significantly affect the value of carcases, and therefore which should be measured,
ii) how should the selected criteria be measured and what degree of accuracy is required,
iii) how should the criteria be grouped into classes,
iv) how should such information be used,
v) who should do the classification and who should pay,
vi) is the effort worth the cost?

7.29. Governments have also been involved in regulating product quality standards in Australia. Quarantine, weed and pest controls, variety controls and health standards affect both domestic and export sales together with imports of agricultural produce. The continued need for many of these regulations and controls should be closely examined. Often they have been used as marketing barriers between States.

7.30. In relation to varietal controls, new wheat varieties have often not been released to farmers unless they received formal approval from departments of agriculture. Allowing the market to allocate price premiums could be considered as an alternative to such regulation.

7.31. Regulations and controls need to be reviewed in terms of their effects in fostering market orientated mechanisms, producer initiatives, productivity gains (for example, through access to improved genetic stock) and efficiency in resource use.

7.32. MARKET INFORMATION

Given the dynamic nature of agricultural markets farmers and consumers require information on prices, new markets, changing technology, supply and demand. This is a continuous process involving information from the domestic and overseas markets. Individuals in the market are not normally able to collect and analyse the vast quantity of market information necessary to make effective decisions. A major marketing issue in the 1980s will be the provision of market information and the role of Government in this marketing activity.

7.33. In the past, marketing information has been provided by State departments of agriculture, federal and state marketing boards, the BAE and rural media. By providing public information the opportunity exists for all market participants to use available information in decision making. This encourages fairer competition, reduces uncertainty, and increases market efficiency.

7.34. Although Governments in the past have played a major role in market research and provision of market information, in the 1980s an issue will be whether private enterprise can provide a similar level of service more efficiently. Less involvement by government in some areas, for example domestic livestock and horticulture market reporting, and the provision of economic incentives to private enterprise to provide market information, may be a less costly method of supplying information. This may be especially true for domestic market information. For these reasons, SAGRIC has not directly provided a market reporting service.

However SAGRIC and the Stock Journal have co-operated in arrangements for a livestock market reporting service in South Australia. Two Stock Journal reporters cover the sheep, cattle and lamb markets at Gepps Cross, Millicent and Mt. Gambier. Information is reported in a standard format together with information provided by the Victorian Livestock Marketing Reporting Service. Other news organisations may make arrangements with the Stock Journal for access to its information. SAGRIC accredits the service provided it meets specified standards, monitors the performance of reporters, and periodically conducts exercises to check the accuracy of estimates of carcase weight and fatness. SAGRIC also provides reserve reporters, training for new reporters and relevant extension information.

7.35. Export markets provide a major outlet for Australian agricultural products. It is important that producers are made aware of trends in world supply, demand and price in order to make production and resource allocation decisions. Research into developing markets and new product market potential is also important. The export marketing of some agricultural products has depended on high levels of government involvement in activities such as government to government negotiations and agreements, maintaining access to markets, export incentives and promotion. The costs and benefits of such activities must be examined.

7.36. Possibilities exist for co-operative or group action by farmers with the assistance of governments to finance collection, analysis and circulation of their own market information. Economic incentives such as market development grants could be used by governments to encourage such activity.

7.37. PROMOTION

Promotion of agricultural products (advertising, public relations and sales drives) is often seen as a panacea for an industry's marketing problems. However, the role of promotion is frequently misunderstood. It should not be considered in isolation, but as one part of a market-oriented approach. The use of funds in promoting agricultural products will be an important marketing issue. Related to this will be possible government involvement in either directly organising promotion or funding industry promotion campaigns.

7.38. In domestic markets there is little scope for using promotion to increase total food consumption as food consumption is directly related to population growth. Promotion of specific products, if successful, serves only to change the mix of products consumed in Australia. While particular producer groups may find promotion to their advantage, little justification exists for government involvement in promotion of specific products in favour of other products.

7.39. Generally there is too little evaluation of promotion campaigns. Marketing audits should be used more extensively to ascertain whether increases in sales (or the maintenance of sales which otherwise might have fallen) have more than covered the costs of promotion.

7.40. If supporting promotion campaigns, Governments should consider the whole agricultural sector, rather than simply just one industry. Substitution effects between commodity groups as well as products should be analysed. If no overall gains can be seen for the whole sector the value of promotion is doubtful.

7.41. In export markets the role of promotion is also an issue. It will be important to maintain traditional export markets as well as develop new markets. Evaluation in terms of long term benefits such as growth, stability and increases in total industry revenue will be important in decisions involving promotion expenditure.

8. TRANSPORT

8.1. In analysing transport systems for agricultural products it is becoming increasingly important to adopt wider frames of reference. Relations between intrastate, interstate and overseas systems are becoming more complex. This section examines these relationships, assesses the impact of deregulation of the South Australian transport system, and illustrates the utility of analysis from a national perspective by reference to the needs of the livestock and grain industries.

8.2. INTRASTATE TRANSPORT

With regard to agriculture, the main forms of intrastate transport are sea transport and land transport. Sea transport, once of major significance because of the development of the State's agriculture close to a coastline of 1100 km length, is now largely confined to a single vessel. This is the deficit - funded roll on/roll off M.V. "Troubridge", owned by the South Australian Government since 1972 and managed by R.W. Miller and Company for the South Australian Highways Department. This vessel provides virtually all heavy freight services to Kangaroo Island with a basic three-times-weekly service from Port Adelaide to Kingscote. In addition to supporting the agricultural industries on Kangaroo Island, the vessel also accommodates significant tourist traffic. A single weekly service is also provided from Port Adelaide to Port Lincoln, primarily for the carriage of new vehicles, cement, oil, distillate and superphosphate to Eyre Peninsula. Until recently ketches provided significant freight of superphosphate to Kangaroo Island as back loading to gypsum. They make little other contribution to the island's agricultural freight services.

8.3. Although it had been proposed (Director-General of Transport 1976) that a new vessel be constructed to replace the "Troubridge", it was ultimately decided to continue the operation of that vessel for the time being. Whilst passenger traffic is primarily

catered for by air, the "Troubridge" remains the single link upon which the Kangaroo Island agricultural economy almost totally depends. There are very few other areas of Australia where a major agricultural area depends so much on a single vehicle for all its produce transport. Although alternative modes to the roll on/roll off vessel have been investigated, including landing ships and hovercraft, there appears to be little technological advancement in sight to improve the present single freight service. Consequently Kangaroo Island is likely to continue to operate at a significant freight disadvantage compared to the remaining agricultural areas of the State.

8.4. Land freight is provided by road hauliers and railways (Australian National) with farmers also doing a significant proportion of their own carrying, usually in the role of ancillary carriers.

8.5. The South Australian freight industry is unusual compared with those of other States in that it has been totally deregulated since 1963. Freight transport within South Australia was regulated from 1930 to 1963 by the Road and Railways Transport Act which sought to protect the railways (then state-owned as the South Australian Railways, SAR), thereby protecting the jobs of people engaged by the State to provide essential services of historical importance and whose interests were backed by the demonstrated strength of the national railways unions. The Act provided for the co-ordination of passenger and freight transport by railways and by vehicles used for carrying passengers and goods on roads, and for the control and licensing of persons operating such vehicles over "controlled routes". Licences and permits were generally not granted by the Transport Control Board where satisfactory railway service was available. The prime purpose was to maintain railway revenue, the principal source of which was the rural sector. Some agricultural commodities such as milk and grapes were exempt. Restraints were less than in other states due to a clause in the Act which gave the Transport Control Board no control over "ancillary carriers" who carried their own goods - an increasingly common practice among farmers.

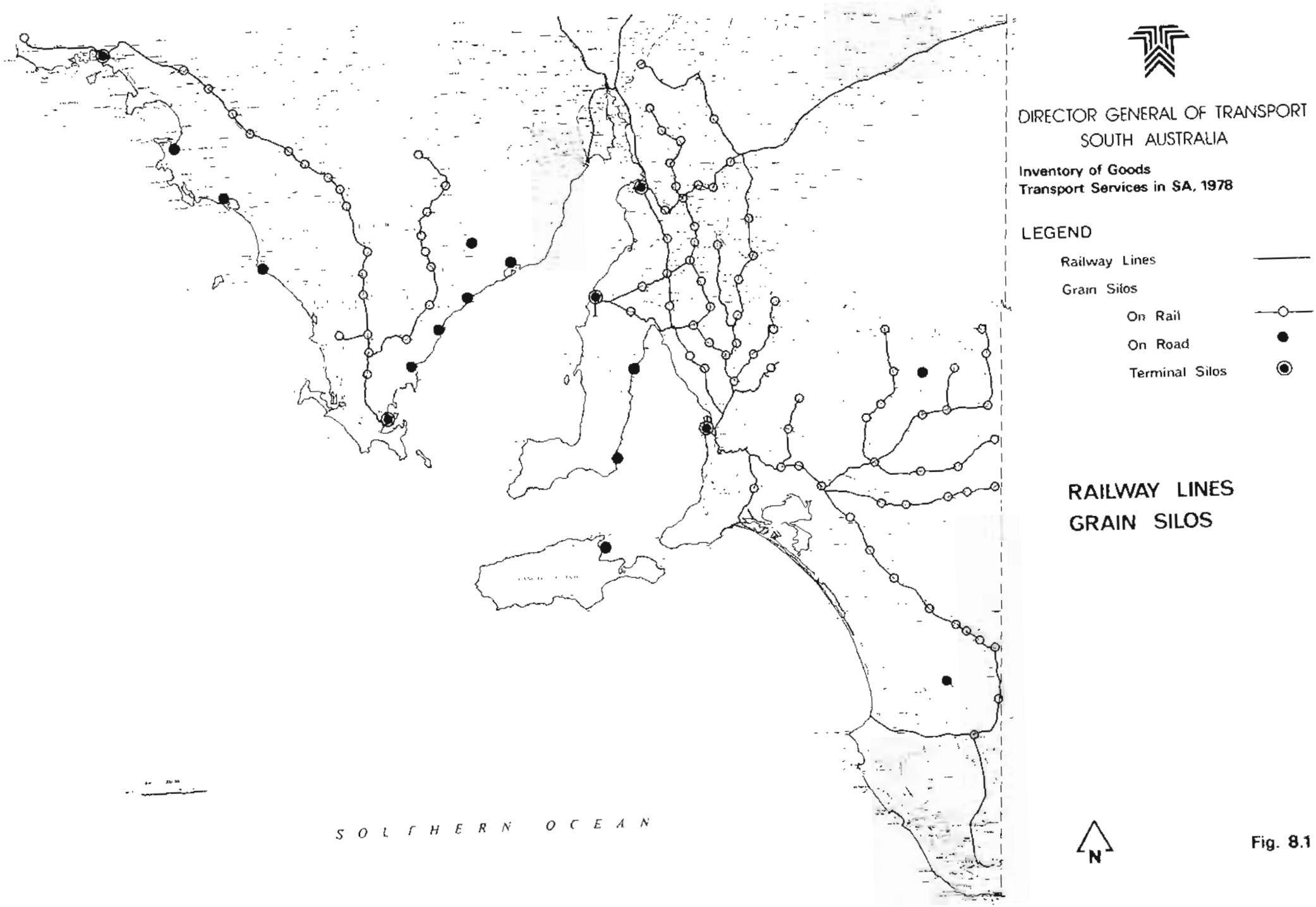
DIRECTOR GENERAL OF TRANSPORT
SOUTH AUSTRALIA
Inventory of Goods
Transport Services in SA, 1978
LEGEND
Railway Lines
Grain Silos
On Rail
On Road
Terminal Silos
RAILWAY LINES
GRAIN SILOS
SOUTHERN OCEAN
N

Fig. 8.1

8.6. The first impact on the legislation occurred with the Hughes and Vale case in 1954 freeing interstate trade from State regulation. The effect on South Australian agriculture was that much of the produce in the South East of the State was directed to Victoria.

8.7. Other influences over agricultural freight included controls on axle loadings and vehicle dimensions, which were generally more liberal than other states except the Northern Territory, and the passage in 1955 of the Bulk Handling of Grain Act which established South Australia's bulk handling system. Introduction of bulk handling tended to contribute unintentionally to the diversion of grain haulage from the railways. Since it has been estimated that more than half the silos were erected within 70 km of sea terminals (see figure 8.1), farmers were attracted to deliver directly to a sea terminal to obtain a significantly higher price through avoiding freight differentials. They could also back load superphosphate. It is significant that more grain is delivered directly from farms to the sea terminal at Ardrossan than any other port in Australia.

8.8. Pressure from rural interests, particularly because of railway service limitations and damage to produce, especially livestock, led to the deregulation of the intrastate road transport industry in 1963, South Australia being the first state to introduce such a policy.

8.9. The effect of deregulation after ten years was examined by McDonell (1974) for the Bureau of Transport Economics. It was concluded that the goods transport industry in South Australia had adjusted so that, broadly, each transport mode was performing the tasks for which it was best suited and that co-ordination between transport modes was increasing. It was also notable that much of the South East freight traffic which had been diverted to Victoria from 1954 was brought back to Adelaide after 1963.

DIRECTOR GENERAL OF TRANSPORT
SOUTH AUSTRALIA

Inventory of Goods
Transport Services in SA. 1978

LEGEND

Local Carriers ○

Two Or More Local Carriers ●

Numerous Local Carriers ◉

LOCATION OF COUNTRY BASED CARRIERS

N

Fig. 8.2

8.10. The road transport industry had moved quickly to supply unsatisfied needs. A network of small independent carriers developed throughout the State (Figure 8.2).

8.11. The SAR modernised its equipment, trimmed its staff, and developed more aggressive marketing and pricing practices and better rail-road co-ordination. It was concluded that these changes might have been much more difficult and taken longer to achieve without the presence after 1963 of the constant and obvious influence of road competition. Whilst it was not possible to quantify the specific effects of total deregulation, it is clear that its introduction brought advantages to the South Australian agricultural sector and the community as a whole. Similar benefits may be obtainable in other States.

8.12. INTERSTATE TRANSPORT

This aspect has been effectively deregulated since 1954. Since then, major improvements in efficiency have been made to road transport through the introduction of larger, more labour and fuel efficient vehicles and the provision of an improved national highway network.

8.13. Technical advances following the formation of the Railways of Australia network have significantly improved interstate rail freight efficiency. Completion of a standard guage line into Adelaide should provide further benefits. South Australia supports completion of the Alice Springs - Darwin rail link following the recent opening to traffic of the standard guage Alice Springs line. Reduced travel times on this new line have greatly improved marketing for northern pastoralists although availability of stock vans is still inadequate for present services.

8.14. OVERSEAS TRANSPORT

Despite provision of a container terminal in Adelaide, a major portion of container traffic destined for Adelaide bypasses Port Adelaide in favour of Melbourne. Some 50,000 boxes of about 15 tonnes capacity, much of agricultural origin, are exported or imported annually through Melbourne for South Australia. The additional cost of about $200 per box is loaded into the shipping costs paid by importers and exporters. The South Australian government has carried out detailed studies to show that it would be economically advantageous if this traffic were handled through the container terminal at Port Adelaide (Department of Marine and Harbors, 1979).

8.15. A significant proportion of Australia's agricultural exports continue to be carried by conference line shipping, estimated at 90 per cent of total production in the case of wool, meat and dairy product exports. Boyer (1980) has reviewed the cartelised nature of Liner Shipping Services and concluded that there is no justification for continuing to shield shipping from competition. Free competition in shipping could reduce costs and increase overall export trade with benefits to the Australian community.

8.16. There has, since 1976, been a major increase in shipping using South Australian ports for the live sheep export trade. Ship size has been increasing rapidly to the point where vessels must exceed 100,000 sheep capacity to effectively service this trade. It is also notable that over half of the approximately 2 million sheep exported annually from South Australian ports come from Victoria and New South Wales, highlighting the improvements made possible in handling large consignments of livestock from interstate.

8.17. Whilst only limited changes have been made to shipping arrangements for the grain industry in the past five years, it is likely that this shipping will have to continue to increase with projected increases in grain production and exports in the 1980s. It has been anticipated that additional production might bring capacity pressure on loading ports, increasing costs through higher demurrage charges due to port congestion (O'Brien, 1980).

8.18. Significant increases in the average levels of production of barley and wheat in South Australia in the last three seasons, coupled with a three-fold increase in field pea production, have indeed placed pressure on existing storage and transport facilities at harvest time. Farmers, through innovations in field operations, have been able to move large quantities of grain to country elevators faster than the handling authorities can move grain to country and sea terminals. This has encouraged on-farm storage and the use of road transport. The advent of collapsible steel container bins may play an important part in future transport/storage operations. However the extent to which these developments will relieve pressure on the system is not yet known.

8.19. Further, an increasing range of crops and marketing innovations requires greater segregation of grain. This has placed additional pressure on storage facilities. Grain handling authorities are now faced with problems of -

- the number, size and location of additional grain handling facilities
- the extent of substitution between rail and road transport
- the advantages (if any) that alternative grain distribution/storage systems may offer.

8.20. It is important to develop a transport/storage system which will minimise the cost of distributing grain output. This has been considered mainly from a regional or State point of view. However, from the viewpoint of allocative efficiency at the national level there are now probably benefits to be gained from evaluating these issues in terms of a national grain storage and transport system rather than in terms of individual state grain handling systems.

8.21. FUEL COSTS

Much attention has been given to the impact of rising fuel prices over the past five years. However, fuel costs are likely to constitute only 5 - 10% of the total input costs of agricultural transport. Furthermore, fuel cost rises have been lower over the past 18 months, such that once again there is evidence of a reduction actually occurring in the real costs of fuel. While fuel price and availability for the transport of agricultural produce remains an important issue, this issue has probably been given disproportionate emphasis in recent years.

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9. ISSUES IN TRADE POLICY

9.1. PATTERN OF RURAL EXPORTS

A significant proportion of agricultural income depends upon overseas sales of agricultural commodities. Exports of agricultural commodities account for approximately two thirds of the total value of overseas exports from South Australia. In 1979/80 the total value of agricultural exports amounted to $1.05 billion. Of this total, cereals accounted for more than half.

9.2. Over the past two decades the direction of Australia's trade has changed dramatically. In the early 1950's over 70 per cent of trade in agriculture was with the U.K. and Europe (now EEC). The pattern of South Australian trade in agricultural products has shifted to the extent that in 1979/80 less than three per cent of trade in agriculture was with the EEC.

9.3. With the decline of the European market Australia has been forced to develop new markets as well as expand other existing markets. The most significant development in South Australia's trade pattern has been the emergence of China and the Middle East as major markets for food exports. Markets have also been secured in the newly industrialized developing countries of Asia (Korea, Taiwan, Hong Kong, Singapore). However, limited efforts have been made to enter markets in other Asian countries, such as the ASEAN nations, which have impressive growth rates relative to other third world countries.

9.4. The main issues appear to be whether to focus on the development of new markets through the formation of formal regional trading relationships, such as a free trade zone for Asia and the South Pacific, or alternatively, for Australia to foster bilateral trade relationships and agreements with individual Asian countries. It could also be argued that as the Asian region is of strategic importance to Australia the development of regional trade relationships would assist strategic objectives.

9.5. To achieve any of these trade goals Australia would need to be prepared to absorb increasing imports from Asia and the Pacific Basin. This would necessitate widespread dismantling of current trade barriers and changes in domestic protection policy.

9.6. IMPACT OF TRADING POLICIES OF MAJOR FOOD IMPORTERS

The changing pattern of Australia's agricultural trade has also been shaped by restricted market access arising from the domestic agricultural policies of food importing countries. Australia has over recent times been denied access to, or has had access restricted to markets in the EEC, USA and Japan. A more disturbing feature of domestic agricultural policy of these major food importers has been the impact on third markets of disposal of domestic market surpluses.

9.7. In addition export subsidies provided by the EEC, USA and NZ also affect the competitiveness of Australian exports. One important issue is whether Australian rural exporters should be given reciprocal compensation for loss of markets and/or additional export incentives. The latter would certainly be contrary to Australia's own interest of freer trade and reduced protectionism.

9.8. WORLD TRADE BARRIERS

Generally trade barriers are either based on tariffs or involve a multitude of non-tariff barriers such as export subsidies, import quotas, quarantine standards and trade sanctions. The provisions of the General Agreement on Trade and Tariffs (GATT) have recently been reviewed and while there have been some limited successes in securing a progressive lowering of tariffs these successes have been offset by a proliferation of non-tariff barriers which have a far greater effect on trade growth relative to tariffs. Australia is currently a signatory to nearly all GATT conventions on non-tariff barriers. The States have had to carry the prime administrative burden of implementing many of the GATT conventions particularly those relating to standards and government purchasing policies.

9.9. An important issue is the role trade sanctions have had on rural export opportunities. Recent history amply demonstrates that trade sanctions have seldom been successful in achieving their desired effect. They are easy to circumvent and create friction between supposed allies.

9.10. INTERNATIONAL TRADE POLICY

Australia has generally become a member of many International Commodity Agreements (ICA's) conducted under the auspices of the United Nations Commission on Trade and Development (UNCTAD) (e.g. sugar, coffee, rubber and tin). However, many ICA's have not been successful in promoting trade and in reducing price fluctuations in world markets. Invariably the main reason for failure is non-participation by major trading countries such as the USSR, USA and EEC.

9.11. Associated with ICA's is the Common Fund which has the main objective of providing a suitable mechanism for financing buffer stocks to support the price stabilization arrangements of ICA's. The main issue is the cost effectiveness of international buffer stock schemes in achieving their objective of price stability. The Common Fund might be more effectively utilized in promoting export diversification and export market development schemes in less developed countries than in financing buffer stocks. In addition, alternative sources of finance are available, such as the International Monetary Funds export credit scheme which could be used to assist exporters whose export earnings have suddenly dropped.

9.12. Australia can point repeatedly to the benefits of a gradual lowering in trade barriers. But to achieve the aims of a freer trade in agriculture there must be some willingness to negotiate reductions in assistance to manufacturing industry. The extent to which this can be achieved is inevitably bound up with domestic, industrial and commercial policy.

9.13. FOOD AID AND SECURITY

Australia has boosted its direct assistance to less developed countries to about 0.48 per cent of GDP which is well above the OECD average of about 0.3 per cent. The target policy of the OECD is to increase direct assistance by member countries to less developed countries to 0.7 per cent of GDP. The form of assistance will probably be directed more towards expanded food development projects relative to direct food grants.

9.14. This raises the issue of the extent to which Australia is prepared to assist with food production in less developed countries at the expense of food exports. However, given the lag in stimulating food production and the expected benefits from technology transfers of a capital nature, donors will probably benefit more than recipients at least over the short to medium term.

9.15. ECONOMIC RELATIONS WITH NEW ZEALAND

Particular consideration should be given to the objectives of trade relations with New Zealand.

9.16. Australia and New Zealand presently have a limited free trade agreement, New Zealand Australia Free Trade Agreement (NAFTA), which first became operational in 1966. This agreement which provided for the phasing out of duties and quantitative controls on specified goods, traded between the two countries, has tended to lose momentum in expanding the range of products covered. A longer term, more easily administered agreement is required which will result in a minimum of government involvement.

9.17. In March 1980 the Australian and New Zealand Prime Ministers reached agreement on a framework for detailed examination of arrangements for a closer economic relationship (CER). This relationship will be all-encompassing and include farm and non-farm goods and capital. CER will attempt to liberalize trade between the two countries gradually and progressively.

9.18. This will be achieved by:

- removing quantitative restrictions on imports by 10 per cent per annum
- phasing out tariffs on imports over a five year period.

9.19. Because of the similarity in rural production and export orientation of the Australian and New Zealand agricultural sector, agricultural trade between the two countries has been relatively small. For the five year period to June 1978, 9 per cent of trade was in food and live animals. Alcoholic and non-alcoholic beverages, tobacco and inedible crude materials (e.g. wool and wood) made up a further 7 per cent of total trade.

9.20. The major factors of concern in relation to CER are dairying (particularly in Victoria and Tasmania; implications for South Australia are discussed in Chapter 5) and horticulture - intensive agricultural enterprises which will face increased competition from New Zealand imports. In extensive agricultural products like wheat and wool, Australia has advantages.

9.21. The possible areas of policy change will include:

- tariff reductions
- quantitative import restrictions
- price support and income stabilization schemes
- export incentives
- transport and production concessions
- monopoly buying and selling.

9.22. However, the relative competitive positions will in the long term be determined largely by macro-economic factors such as:

- inflationary trends
- resource and commodity boom effects on exchange rates
- relative measures of domestic protection.

9.23. While Australia as a whole would benefit from C.E.R. with New Zealand some sections of the rural community would be disadvantaged because of the greater efficiency of production in New Zealand (e.g. dairying). Some of the pricing policies that are responsible for maintaining these relatively higher cost industries in Australia will need to be re-appraised under a policy of freer trade.

9.24. In considering the benefits of C.E.R. it should also be borne in mind that there is no special economic reason for developing exclusive trade relations with New Zealand. Other areas of the world, such as the Middle East and South East Asia, have far more potential for trade than any potential trade gains derived from C.E.R. with New Zealand.

9.25. NEED FOR DOMESTIC ADJUSTMENTS

The domestic adjustment implications of changing patterns in rural exports should also be considered. Where increased exports affect adversely perceived levels of domestic activity, for example in processing industries, affected interests are likely to protest.

9.26. Live Sheep Exports

This is illustrated by trade union responses to the growth of the live sheep export trade. In response to appeals from the Australian Meat Industry Employees' Union (AMIEU) about declining employment for slaughtermen the Australian Council of Trade Unions (ACTU) resolved that importing countries should accept one mutton carcase for each live sheep imported. Industrial action by members of the AMIEU has made plain the claim that exports place their jobs at risk. However, farmers have benefited from the live sheep trade. Employees in other associated fields have also benefited. The chief difficulty is that jobs created for other workers do not help slaughtermen with declining job opportunities.

9.27. The gross value of live sheep exports has grown from almost zero in the early 1970s to an estimated $157 M. in 1980-81. About a third of the export value of sheep and sheep meat is now from live sheep. In 1980-81 5.4 M. sheep were exported.

9.28. Shearers have benefited from some extra employment because sheep for live export are normally shorn before shipping. Millers supplying feed for feeding on ship have a valuable new outlet. It is estimated that nearly 100 000 tonnes of feed is supplied each year Australia-wide at a value of about $12 M.

9.29. South Australia has obtained direct benefits not only from exporting its own sheep but also from providing services for the export of sheep from other States. In 1980-81 of the 1.9 M. sheep exported from South Australia only 1 M. were from South Australian flocks.

9.30. However, the processing sector of the meat industry is presently suffering from low utilization and low financial returns. Some abattoirs have closed and others are working short weeks. Stopping, or at least restricting, live sheep exports is seen by affected trade unions as a means of providing more work for their members. It is suggested that if these sheep were not exported they would be slaughtered in Australia. In reply, it is contended that the live sheep trade has changed the size and structure of the sheep population, resulting in more sheep and lambs being marketed.

9.31. Examination of slaughterings, the composition of the sheep flock and changes in the size of the flock suggests that because sheep numbers are higher now due to improved profitability, the live sheep trade is not as detrimental to the processing sector as may be thought at first sight. It is suggested that the live sheep trade initially reduced slaughterings but as sheep producers responded to the market with a higher ewe proportion and increased sheep numbers, the effect on slaughterings has become minimal.

Further, it is suggested that a major reason for abattoir problems is the decline in cattle numbers and slaughtering (Department of Agriculture, South Australia, 1981).

9.32. The introduction of quotas as proposed by the ACTU would have a significant detrimental effect on the trade. It has been estimated that in 1979-80 a requirement to export one carcase for each live sheep to countries importing sheep would have reduced exports from 5.6 M. to 1.8 M. sheep (Department of Agriculture, South Australia, 1981. See also Miller, 1978).

9.33. Prospects for increasing carcase exports to the Middle East are not immediately promising. However, the live sheep trade may itself be of limited duration if the Middle East turns to importing livestock and grain for use in feedlots.

9.34. It will be important for the whole sheep meat industry to examine the longer term prospects for meat-related trade to the Middle East. The interests of all parties in Australia will need to be considered, with particular attention to facilitating adjustment for those not sharing in the benefits of the trade.

9.35. Similar adjustment pressures are present in other industries and the live sheep case illustrates the need for careful consideration of the interests affected.

REFERENCES - Chapter Nine

Department of Agriculture, South Australia, Report on the Australian Live Sheep Export Trade, Adelaide, 1981.

G. Miller, "Examination of the Employment Implications of Live Sheep Exports: Findings of the Examination", Journal of Wool Technology and Sheep Breeding, December 1978.

10. MANAGEMENT OF AGRICULTURAL RESOURCES

10.1. The need for the active management of South Australia's agricultural resources to encourage efficient resource use and conservation is recognised prominently in SAGRIC's objectives (see Chapter Six). Management programs require sustained effort in research, regulation and extension. Commonwealth, State and local levels of government are involved, together with farmers and industry and community groups.

10.2. With continuing pressure on financial and human resources in government, the efficient management of agricultural resources requires close attention to the co-ordination, integration and evaluation of policy measures.

10.3. The principal issues involve the use and conservation of the land, soil, water, plant and animal resources upon which agriculture is based. The extent of effort expended on particular measures tends to vary with market forces, changing technology, and community expectations. In recent years greater attention has been given not only to the efficient use of resources but also to more general conservation questions.

LAND RESOURCE MANAGEMENT

10.4. Land Tenure

The policy of the South Australian government is that in the settled areas freehold title is the most appropriate tenure for agricultural lands. A program of conversion of Crown tenures to freehold title is administered by the Department of Lands, with the initiative for conversion resting with lessees. It is now possible to obtain freehold title to Irrigation Perpetual Leases. The Irrigation Act was amended and this power introduced in January 1982. It is government policy to permit market and other economic forces to regulate the transaction of interests in agricultural land, thus permitting more ready progressive entry to, and withdrawal from agricultural production. In the arid zone the policy is to

retain the fee simple of the land via a leasehold system, subject to specific uses and other reservations with the Crown exercising broad management control by way of covenants in leases. Enterprise productivity and viability are actively monitored and the powers of the Minister of Lands to control transactions of interests in the arid zone are exercised to the extent necessary to maintain industry and enterprise prosperity and viability, as well as resources vigour and condition.

10.5. Soil and Land Use

South Australia, along with the other States and the Commonwealth was involved between 1975-77 in a collaborative study of land degradation and soil conservation in Australia at the request of the Commonwealth Government. The findings of the study are summarised in A Basis for Soil Conservation Policy in Australia - Report 1. An expanded and intensified program of soil conservation was recommended. The report advocated a National Soil Conservation Program which would receive financial assistance from the Commonwealth. These recommendations were accepted by the Commonwealth in a statement, in the House of Representatives in 1979, by the then Minister for National Development, Hon. Kevin Newman.

10.6. In 1981 the Commonwealth, following the Review of Commonwealth Functions, determined that all policy and administrative matters for soil conservation programs be the responsibility of individual States. Commonwealth funds which were to be allocated in 1981-82 specifically for the initiation of the National Soil Conservation Program would be included within general revenue grants to the States and similarly incorporated in future years.

10.7. Standing Committee on Soil Conservation considered the impact of this decision at its last meeting. The Committee accepted the responsibility of States to carry out soil conservation operations, but recommended that the Commonwealth should continue to support the national commitment to soil conservation through recommendations 46, 48 - 51 of Report 1. These involved co-operation on inter-

governmental matters, provision of a secretariat, evaluation of land degradation and soil conservation issues of national importance, and co-ordination of research.

10.8 Soil and water conservation measures are a community responsibility also, a point strongly made in Farm Focus: The 80s by the National Farmers Federation.

10.9 The magnitudes of the soil conservation and land degradation problems have not diminished in recent years. In fact they have continued to intensify in South Australia, as in other States, as a result of an increase in the area of cropping, the extension of cropping into marginal lands and the increase in siltation and pollution in the higher rainfall areas.

10.10. South Australia has relatively small areas of agricultural soils with good rainfall and it is vital that the agricultural productivity of these areas be maintained. The main issues are the control of water and wind erosion, the maintenance of soil fertility through pastures, grain legume crops and fertilizers, and the reduction through reduced tillage in the degradation of soil structure. Whilst most of SAGRIC's service work is associated with the building of contour banks, the engineering input to soil conservation in South Australia is less than the agronomic input. Even so there needs to be a two-fold increase in the annual area of banking if there is to be any significant decrease in the water erosion problem by the end of the century.

10.11 South Australia recognises that group conservation schemes are more effective in preventing erosion and degradation than servicing individual farmers. This State has shown the value

of such schemes, developed in conjunction with district Soil Conservation Boards in the Mid-North region. However, both the number of Boards and the number of group schemes involving individual landholders and the community generally should be increased. The community should be encouraged to support conservation schemes through the introduction of local levies. To achieve this objective, there is a need for more conservation extension officers trained in understanding the attitudes of land users and the community.

10.12. A major part of the area of South Australia is arid rangeland. Report 1 indicates that 20 per cent of the area used for arid land grazing has severe erosion. South Australia believes that there is a need for increased activities in these areas to carry out soil and vegetation resource surveys and to develop systems for monitoring range conditions in order to define management criteria that will permit a sustainable use of this area.

10.13 While no doubt the Commonwealth will continue to be involved to some extent in some of these matters through basic research by the CSIRO, South Australia, on balance, supports the view that decision making on and the financing of soil conservation and related functions should be the responsibility of individual States.

10.14 Phosphate Policy

Superphosphate is by far the most widely used fertilizer in South Australia and has played a significant role in improving productivity of both crop and pasture production. Approximately half a million tonnes of superphosphate are used annually in South Australia. This represents about 85 per cent of the use of fertilizers in the State.

10.15. Superphosphate costs have risen from $50 per tonne in 1976 to over $84 in 1981, an increase of nearly 70 per cent. Despite price increases, consumption of fertilizer in South Australia increased by 33 per cent between 1976 and 1979 (from 440,430 tonnes in 1976 to 533,975 tonnes in 1979).

10.16. Over time, the proportion of fertilizer usage in pastures has declined relative to cereal grain crops from 52 per cent in 1970 to 42 per cent in 1979. This decline reflects the downward trend in the ratio of prices received between animal products and cereal grains in this period. This has resulted in a reduction in the pasture phase. In addition to these economic factors there are several agronomic factors which also have contributed to the declining proportion of superphosphate used on pasture, including:

- increased intensity of cropping
- higher yielding varieties of barley requiring similar superphosphate dressings as wheat.

Of these trends perhaps the narrowing of rotations and the trend towards continuous cropping are the main agronomic factors responsible for the declining use of phosphate on pasture lands. Other technological changes influencing cropping intensity, such as reduced tillage methods in which farmers have substituted chemical weed control for mechanical methods, stem from the increase in fuel prices. However, farmers have been reluctant to reduce fertilizer applications with the increase in cropping and usually maintain a constant superphosphate/yield ratio.

10.17. There will be an increased need for supplies of phosphate rock at a time when traditional sources are declining. In view of the variability in composition and quality of the phosphate rock available elsewhere in the world, there is a need for a national policy to advise industry, landholders and the community on phosphate use. In any policy it is necessary to take into account the availability of phosphorus in different soil types, for example fertilizer produced from Duchess supplies contains phosphorus available to plants in acid soils, but not in alkaline soils, the dominant soils in South Australia. Farmers

in South Australia obtain supplies of superphosphate from interstate as well as within the State. It is desirable therefore that a uniform system of registering and analysing the content of phosphate fertilizers, including the level of impurities such as copper and zinc, should be introduced. It is important that farmers are able to make informed decisions about superphosphate use and to match the application of superphosphate, trace elements and other fertilizers with the needs of their particular soils.

10.18. Protection of Rural Land

The basis for examining this problem and developing policy is a land capability inventory. Different types of land use often transcend State boundaries and parts of the same catchment, for example, may have different forms of land use in different States. Land use can generate problems of degradation, siltation and pollution. It is desirable that the States, together with the Commonwealth where appropriate, define uniform policies which prevent deterioration of the land.

10.19. While land may be prime for agricultural use, land near metropolitan areas is also prime for a large number of other uses, which can usually provide a higher return on capital than can agriculture. Agricultural land can be very attractive scenically and provide 'open space' for residential and industrial areas, but it can only be preserved as such if the community, through the Government is prepared to pay for it.

10.20. Land capability mapping is the basis for planning for alternate uses. A major concept in planning is to separate those areas where land use will not permit a return to agriculture, for example, housing and industry, from those areas which can be returned to agriculture, for example army reserves, parks and horse studs.

10.21. In South Australia, responsibility for planning has been given to District Councils within the Metropolitan and Outer Metropolitan Planning areas but outside of these, market forces are the major determinant of agricultural land use.

10.22. While most of the conflicts that arise in land use can only be resolved by local groups working with State government authorities, Commonwealth encouragement of comparative research and dissemination of results would be useful.

10.23. National Parks

Reservation of conservation and recreation parks expanded rapidly during the 1960s through to the mid 1970s. In South Australia, in 1962 there were only 19 parks totalling 234 000 ha. In 1980 there were 202 parks totalling 4 370 000 ha or 4.4 per cent of the State.

10.24. During this expansion period, primary producers were critical of the high priority given to land acquisition in contrast to land management. Particular concern was expressed about weed harbors, the lack of bushfire protection measures, inadequate fencing programmes and ineffective control of fauna resulting in damage to crops and fencing.

10.25. However, budget initiatives involving increases in the level of manpower (60 per cent) and financial resources (100 per cent) over the last two years are now taking effect. The establishment of regional consultative committees is also a positive step towards resolving many of the conflicts occurring at the interface between agricultural land and conservation reserves.

10.26. The establishment of more regional consultative committees and the development of district groups to provide more localised involvement and wider management expertise would further improve the basis for resolving conflicts.

10.27. Conservation and Agricultural Development

The impact of agricultural development upon the native flora and fauna of South Australia has obviously been substantial - as reflected in vegetation clearance figures in an Interdepartmental Report "Vegetation Clearance in South Australia", 1976. In

total some 75 per cent of the agricultural region of the State has been cleared of native vegetation, with regional clearance figures exceeding 90 per cent in the older settled areas such as Mt. Lofty Ranges/Adelaide Plains, Yorke Peninsula and the Lower South East. Even areas now regarded as agriculturally marginal have been extensively cleared; e.g. over 80 per cent of the Murray Mallee region. Much of this clearance has been actively encouraged by both State and Commonwealth Governments - for example through the joint Commonwealth/State War Service Land Settlement Scheme and through a broad range of incentives under the Income Tax Assessment Act.

10.28 Largely as a direct result, approximately 40 per cent of plants native to South Australia are now rare or endangered and associated fauna has suffered to the extent that over 20 per cent of native mammal species are extinct while similar proportions are rare or endangered. Both wetland and dryland habitats have been extensively degraded.

10.29. This is not to say that agricultural development should not have occurred, but rather that it would have been desirable for greater consideration to have been given to balancing production and conservation objectives. Present and future agricultural management practices should take greater account of their impact upon native flora and fauna, and on the environment generally.

10.30. The main mechanism used hitherto for nature conservation has been the reserving of areas under the National Park and Wildlife Act. To conserve a species, however, a "critical mass" is required and despite the recent rapid expansion of the park system, some 24 per cent of the State's native plants (McDonald and Robinson, 1979) and 20 per cent of the native mammal species (Aitkin, 1980) have not been given a permanent base. Given present and likely future resource constraints, the park system is unlikely to take in these species.

10.31. The conservation of native flora and fauna in other States is generally comparable to the above. It is therefore considered that increasing attention should be given to the implementation of off-park conservation measures, at both the State and Commonwealth level. The measures should reflect, for example, the need for retention of areas of native vegetation on private farmland and of bushland corridors between larger areas of vegetation.

10.32. The South Australian Government, through the Department of Environment and Planning, has an ongoing voluntary programme to encourage the retention of native vegetation on private land, through a Heritage Agreement Scheme using the provisions of the South Australian Heritage Act 1978-80.

10.33. The scheme involves the provision of financial incentives to landholders who undertake to protect areas of native vegetation in perpetuity through a legally binding mechanism. The incentives include a subsidy for fencing of scrub areas and rebates upon Local Government rates and taxes, and are financed from the State Government's Heritage Fund. Over 300 applications under the scheme have been received since late 1980 and the programme seems assured of a substantial degree of success.

10.34. This is a significant attempt at off-park conservation, but it is regarded as highly desirable that a national policy on this issue be developed, giving recognition to the need for agricultural land management to consider and reflect land capability in a total sense; that is to take into account the ecological and general environmental values of the land resource as well as its capacity for sustained agricultural production.

10.35. The same comments apply to areas of wetlands, which in the past have been steadily reclaimed for agricultural (and other) uses. Wetlands are particularly valued because of their high species diversity and natural productivity. Both the State and Commonwealth Governments have made some commitment to wetland conservation, but this needs to be extended to the development of a definitive policy and management strategy, based upon more accurate knowledge of the natural communities involved.

10.36. A strong case exists for preventing further substantial clearance of native vegetation in marginal areas. Additionally, careful management of future subdivision is necessary to avoid the creation of uneconomic holdings and investigations are needed to determine suitable means of stabilising the major erosion areas.

10.37. The role of taxation and other Government incentives in encouraging vegetation clearance has already been mentioned. It is apparent that a similar system of incentives could be applied for conservation purposes, for example, tax and other concessions for fencing of areas to protect vegetation and enable natural regeneration; for retention of uncleared areas; for weed or rabbit control in conservation; or for management of wetlands. A review of the Commonwealth Government's involvement in these areas is regarded as both appropriate and desirable.

10.38. Soil and Land Use Research

A land capability inventory is a basic step in understanding the future uses of land in Australia. Research into developing the best farming practices in the different classifications of agricultural land will revolve around systems research, and monitoring changes in soil physical factors and organic matter, soil and water loss, and the efficiency of water use in farm production.

10.39. Some form of co-ordination in relation to standardisation of methods of analysis and interpretation of results would be helpful. This would contribute greatly to the efficient management of national land resources. Such co-ordination need not necessarily involve the Commonwealth; consultation and co-operation between the States could well be sufficient.

10.40. WATER RESOURCES MANAGEMENT

The Commonwealth is involved to varying degrees with the States in the management of water resources that cross State boundaries. The dominant example is management of the River Murray system which involves four States.

10.41. It is appropriate that the Commonwealth should be involved in co-ordinating the planning and funding of investigations which will benefit all users of River Murray water. Currently South Australia's investigational work on the River Murray Salinity Program is jointly funded on a 50-50 basis by Commonwealth and State governments. It is also important that both levels of government have a role in managing the quantity and quality of river water. Joint management should also occur where catchments and underground water basins cross state boundaries, for example in Victoria and the Lower South East of South Australia.

10.42. Within South Australia the main services and investigations regarding water resources are carried out by the Engineering and Water Supply Department (E and WS) and SAGRIC. Administration of water resources takes place under the Water Resources Act and is assisted by the Water Resources Council. The E and WS Department has legislative responsibility but technical responsibilities are shared with SAGRIC. In general the E and WS is concerned with supplying water to properties and removing drainage. SAGRIC is concerned with improvements in irrigation efficiency and crop yields on properties and provides both research and extension services for this purpose. A whole farm multidisciplinary investigation is maintained and interactions between water salinity, soil types, irrigation schedules, drainage flows, climate and crop yields are measured. Close liaison is maintained between both departments and the arrangement is working satisfactorily.

10.43. The arrangement for the management of other water resources in South Australia provides evidence of effective control of resources. Thus water resources in the Adelaide Hills, North Adelaide Plains and South East are managed for supply, quality and contamination by pollutants. Again the E and WS Department has legislative responsibility while SAGRIC provides technical advice and undertakes specific research after consultation with the E and WS.

10.44. SAGRIC also provides services for building small dams on farms to reticulate water for livestock or to irrigate small areas. Initial surveys, preparation of plans and final checks are provided free of charge but the question of charging in the future for these services is under review.

10.45. QUARANTINE

Quarantine requirements of the Commonwealth, individual States and areas within States, are all of vital importance to the maintenance of a strong trading position for Australia's primary products. The maintenance of effective external quarantine is a Commonwealth function. Policy implementation remains the responsibility of the Commonwealth Department of Health, despite the recommendation of a Senate enquiry in 1979 that responsibility for animal and plant quarantine should more appropriately be vested in the Department of Primary Industry. South Australia supports the implementation of recommendation No. 5 of the report of the Senate Standing Committee on National Resources on the Adequacy of Quarantine, (1979, p. 67).

10.46. Operational responsibility for animal and plant quarantine is

10.47. Quarantine policy has moved in recent years from a "no-entry" philosophy to a policy of "assesment of risk and provision of appropriate safeguards", especially in the area of importations of productive animal genotypes. The expanded provision of animal quarantine stations in the mainland States, together with the recent commissioning of Cocos Island Quarantine Station for the pre-entry testing of animals from areas of greater disease risk, will provide Australia's livestock industries with genetic material previously unavailable. The reciprocal accessibility of foreign markets to Australian livestock and products will require constant diplomatic activity to ensure that the gains made in production and the improving health status of the country's livestock are understood by potential importers.

10.48. Quarantine is also practised between and within States, based on State law. South Australia considers it appropriate that, as control or eradication campaigns take effect in various parts of the country, different districts, areas or zones be allocated different quarantine status. The responsibility of each State to meet the expectations of local primary producers is frequently reflected in inter-zone or interstate requirements for the safe movement of both animal and plant products. South Australia endorses this concept, which, for effective implementation, requires the adoption by all States of uniform rules and definitions.

10.49. While a lack of homogenity exists in the "health" status of various parts of the Commonwealth, it is imperative that resources are provided to ensure minimum disruption of programmes providing for reduction or elimination of disease as a trade-limiting factor. The Brucellosis and Tuberculosis Eradication Campaign (BTEC) is due for review before 1984 and it is considered essential that appropriate funding be provided to complete the campaign and strengthen Australia's external trading capability in meat products. The question of funding is currently under review by the IAC. A draft report by the IAC recommends

no change in the method of funding. However, the level of funding approved will affect the target date for completion of the compaign. At the current rate of effort this will be 1992. It will be desirable for consideration of funding options to be related firmly to an agreed target date. It is also considered that access by Australian products to overseas markets will be improved by a policy of "zoning" the country according to the "health" status of the various major primary industry products. The effective operation of a "zoning" system requires monitoring within States or regions and careful assessment of risk of spread around the periphery of established zones. External relations with major trading partners would be enhanced if Australia accepted in reciprocal fashion the concept of zoning within the territorial boundaries of its major trading partners. This concept should be negotiated in advance with such countries. Its safe implementation requires a high degree of trust by the importing country in the integrity as well as the capability of the exporting country in meeting its obligations of effective monitoring and, if necessary, implementation of effective control of movements across zone boundaries.

10.50. Although substantial resources are presently applied to aerial surveillance of the northern coast of Australia major risks are still being taken along the east, south and west coasts of the continent because of the lack of manpower resources and scientific back-up. In South Australia, for example, some quarantine matters at out-ports, and there are eight in the indented coast-line, are handled part-time by Department of Marine and Harbors personnel and others as a minor part of many other duties. Resources are not available for training these officers or for training more permanent quarantine staff within SAGRIC. This is a source of difficulty with regard to grain quarantine. The number of plant research personnel to support quarantine services is also quite inadequate. In South Australia there is one plant pathologist to cover all imports. An entomologist is urgently needed. A group of specialists is operating from Canberra but again numbers are small and inadequate.

10.51. The recent provision in South Australia of updated and expanded facilities for effective quarantine for both productive and companion animals is a vital addition to the resources providing the front-line barrier against deliberate and accidental invasions by exotic pathogens. South Australia, soon to have its own direct international air links with the airport upgrading in 1982, would be pleased to participate more directly in the operational management of the Animal Quarantine Station at Torrens Island. Increased activity at Torrens Island is one possible outcome of the proposed airport upgrading. Increased quarantine manpower with career officers who are fully trained will be needed, to protect properly the State's and the nation's primary industries.

10.52. A major development in support of quarantine is the Australian National Animal Health Laboratory, scheduled to begin operations in 1984. While capital funding has been provided by the Commonwealth, and staff are presently being recruited, the running costs will be considerable. It is important that running costs not be met at the expense of other research and development activities designed to assist Australian primary producers.

10.53. Further work needs to be done on intergovernmental arrangements to define necessary resources and cost-sharing agreements to handle penetration of the quarantine barrier by exotic diseases, both animal and plant.

10.54. South Australia as a Stock Route

South Australia provides market opportunities for substantial numbers of cattle from the arid centre of the continent. The State has to maintain and improve its animal health status while receiving and dispersing live animals from the southern half of the Northern Territory, cattle over which it has little or no direct control. As outlet for approximately 200 000 Northern Territory cattle per annum, South Australia has a vested interest in the health status of livestock in the Territory.

10.55. Very close working relationships have been developed and will be maintained between the animal health authorities in the two jurisdictions. It is important that each authority is aware of the needs and expectations of the other in order to prevent political or technical problems that might otherwise emerge. South Australia expects that the Northern Territory administration will continue to deploy increased resources towards upgrading the health status of N.T. cattle, in order to ensure continued access for their produce to their traditional outlets. The alternative is a "zoning out" of the N.T. cattle which constitute any disease risk to this State's herds, in order to protect South Australia's cattle from embargoes.

10.56. ANIMAL WELFARE

Policy development in animal health and production in the next decade will take place in a climate of increased public interest and awareness of both real and perceived (anthropomorphic) needs of animals. It will no longer be sufficient to assure consumers that specific husbandry and handling practices are of benefit since they permit the production of least-cost human food and animal products.

10.57. While it considers inappropriate the introduction of specific legislation in this area, South Australia has supported and will continue to support, the development and adoption of uniform Codes of Practice for the welfare of animals. The promotion of the adoption of these Codes of Practice should be a shared responsibility of government, animal owners' organisations and responsible animal welfare organisations, and all three should be party to their preparation. It is considered that enshrining such Codes in legislation may reduce the flexibility which will be required to hasten their adoption; it may also reduce the perceived need to do any further investigation in this important area. Codes of practice under regular review are seen as a valid alternative to legislation.

10.58. It is recognised that many currently used animal management practices should be critically evaluated to ensure that, if they are not essential for the productive survival of the animal itself, they are modified. Production economics must not, of itself, be the criterion used to retain traditional animal management practices, if viable alternatives more acceptable

to a critical and informed public are available.

10.59. Governments must be prepared to take the lead in critical investigation of perceived problem areas in order to allay the concern of strongly motivated groups advancing cogent objections to existing practices. Detailed investigations to improve knowledge of the state of welfare of animals should be encouraged, and the results promulgated. Only with effective data can appropriate responses be developed. Such data are lacking presently in many areas of animal welfare.

10.60. CONSERVATION OF ANIMAL GENETIC RESOURCES

The conservation of a farm livestock genetic resource in Australia might be undertaken to ensure that a rare species or breed or strain:

(i) at risk of extinction throughout the world, but found in Australia, is saved in Australia for possible future use both here and overseas, or

(ii) present in low numbers in Australia, yet abundant elsewhere in the world, is preserved in Australia for possible future use here on the assumption that to maintain the resource in Australia would be cheaper than to import through the Cocos Island Quarantine Station or Torrens Island, or that importation, even through Cocos, would not be possible.

10.61. The reason for conserving a species, or breed, or strain of farm livestock which is at risk of extinction is that:

(i) the biological or management environment in which a product is produced may change, and the most efficient production system then may be one involving a different set of genotypes from those presently in use, (for example, marked swing to no-livestock cereal farming), or

(ii) for a new market, a new livestock product may be required - a product which cannot be produced from genotypes presently in general use, (for example, brown/shelled eggs; course lustrous wool; a very "springy" wool), or

(iii) the species, breed or strain may perhaps have a special value, by virtue of its rarity, as an animal for exhibition (for example, Jacob's sheep).

10.62. It is difficult to predict the occurrence of the points raised in paragraph 10.61. (i) or (ii) any great distance into the future, so it is difficult to predict the types of livestock which might be needed. If, however, it were decided to aim to maintain stocks of existing breeds or strains in Australia, special monitoring of the following groups would be necessary at the present time. The breeds or strains are listed in an estimated decreasing order of risk of extinction within each grouping:

Sheep	1. Dorset Down, Shropshire, Wiltshire Horn. 2. English Leicester. 3. Lincoln, Cheviot.
Beef Cattle	1. Highland Cattle 2. Belted Galloway
Dairy Cattle	No breeds at risk at present
Pigs	1. Large Black 2. Wessex Saddleback. 3. Tamworth
Egg and Meat Chickens	1. Buff Orpington, Langshan, Light Sussex, Brown Leghorn, Minorca. 2. New Hampshire 3. Certain strains of White Leghorn and Australorp.

10.63. An Expert Panel on National Preservation of Poultry Genetic Stock appointed by the Standing Committee on Agriculture (SCA) published a report on "The Conservation of Poultry Genetic Material" in 1979. The Panel recommended that steps be taken as a matter of urgency to initiate a national program of conservation of avian genetic material. SCA referred recommendations from the report to an expanded Working Group, which reported to SCA Meeting 125 in February, 1982. South Australia supports acceptance of the recommendations of this

Working Group.

10.64. There is no comparable national interest in the conservation of genetic material to service the industries other than poultry listed in 10.62., nor is there, on the face of it, any need for immediate concern other than perhaps for Highland Cattle and the Large Black pig.

10.65. In any small population of farm livestock being conserved for one of the three purposes in 10.61., it is most important that the rate of inbreeding be kept to a very low level. This is done most effectively by having an adequate number of males as parents in each generation.

10.66, In any further development of proposals for the conservation of animal genetic resources it is important that arrangements be made for costs to be shared by State Governments.

10.67. CONSERVATION OF PLANT GENETIC RESOURCES

A national plan to conserve plant genetic resources has been considered for some years. A detailed plan, prepared by technical experts, was considered by the SCA at its 116th Meeting in January, 1979. A considerable time has since elapsed without further developments.

10.68. South Australia considers that this project should be supported. It is estimated that capital expenditure of approximately $1M. will be needed to begin the project.

10.69. The plan proposes the development of eight major plant genetic collections to be located around Australia. The basis for many of these centres already exists. SAGRIC has been asked to take responsibility for 'Temperate Forage Legumes - Medicago Species and Others'. South Australia is using relatively large resources to maintain the Medicago gene pool which is of national importance in the current urgent need to develop aphid resistant annual legume forage plants. It is also an important basis for Australia's part in transferring agricultural technology to developing countries.

10.70. It was considered that the potential advantages of a national plan include:

i) Increased efficiency and effort in plant breeding resulting from the elimination of duplicate collections as the scheme comes into operation. For example, a survey conducted by the expert panel revealed that there were at least five collections of subterranean clover maintained in Australia at the present time. The replacement of these five collections by one national collection with a complete range of germplasm would allow the individual breeders to concentrate on the development of improved cultivars and would be to the advantage of the nation as a whole.

ii) Increased and more efficient throughput by presently overtaxed quarantine facilities resulting from a reduction in the repeated introduction and quarantine of the same material by different agencies in Australia.

iii) A reduction in the risk of introduction of damaging pest and diseases with the elimination of unnecessary multiple introduction.

iv) A reduction in Australian dependence on often unreliable and politically sensitive overseas sources of germplasm and improved access to those germplasm centres within the international network sponsored by the International Board for Plant Genetic Resources.

v) Enhanced availability of well documented germplasm to all plant breeders in Australia.

10.71. CHEMICAL RESIDUES IN THE FOOD CHAIN

The possible threat to food exports posed by the presence of pesticide, herbicide or growth regulating residues detectable in primary products, is a further field requiring balanced analysis and action.

10.72 It is clear that improper use of chemicals can produce high level residues which themselves are toxic to humans or other creatures in their environment. It is also clear that necessary increases in good production can not at this time be achieved without judicious use of 'unnatural', as opposed to 'biological', products. Future policy may determine that the use of residue-producing chemicals in the food chain is undesirable, and legislators may provide machinery to protect the unsuspecting, and penalise the foolhardy. In anticipation of this desirable goal, development of non-noxious systems resulting in high productivity without environmental hazard must be given high priority.

AGRICULTURAL PROTECTION - PLANT, ANIMAL AND INSECT PESTS

10.73 Responsibilities for the control of plant, vertebrate and insect pests are shared between farmers, governments at local, State and Commonwealth levels, and agricultural and related industry bodies. The sharing of responsibilities may be summarised in the following terms:

i) Farmers - Primary responsibility for control on own farm either on economic or legislative grounds.

ii) Agricultural Production Industries - Funding of research into pest control.

iii) Agricultural Chemical Companies - Development of new pesticides.

iv) Local Government - Local administration, education and enforcement of control of selected proclaimed species, under legislation.

v) State Government - Statewide administration, education and enforcement of control of proclaimed pests. Research and education in all aspects of pest control.

vi) Commonwealth Government - Research (especially in CSIRO), clearance of new agricultural chemicals (National Health and Medical Research Council and Department of Primary Industry), quarantine and funding of the Plague Locust Commission.

General Considerations

10.74 Many species of plants, vertebrates and insects have the capacity to compete with agricultural production. The impact of these is of vast importance. Failure to control pests effectively can cause economic failure of individual farms, of whole crop or regional enterprises, and a breakdown in availability of essential food or fibre.

10.75. The protection of crops and pasture is firstly a job for the farmer. It is good business for farmers to apply effective control measures as a part of normal farm management. There is generally no immediate case to provide direct financial or material assistance to farmers specifically for pest control activities on their own farms.

10.76 It is possible to divide the vast number of pest species into a large group of common problem pests which should be the farmer's responsibility, and a lesser group of pest species where there is, in addition, a clear community interest and where responsibility must be shared between the farmer and the community in general. These are the pests which are "proclaimed" in pest control legislation.

10.77. The common problem pests usually affect only the farm on which they occur. They are usually already widespread through whole farming regions, and the control of these pests is usually technically feasible and economically profitable in the short term.

10.78. On the other hand, the proclaimed pests are usually more aggressive or mobile species with the capacity to spread rapidly to infest or re-infest clean areas. Sometimes these pests are not yet widespread but are still spreading. And in many cases it is not economically profitable in the short term for a farmer to apply control measures - intensive and costly control measures on initial outbreaks are often required to protect whole farms, a region, or the State.

10.79. State Governments have recognised this distinction and have legislated for government financial and administrative involvement in the control of "proclaimed" pests. In South Australia the government has greatly increased its financial contribution to the administration of pest control in recent years, and to some extent to the provision of research and extension services.

10.80. Local government in this State also has a traditional interest in proclaimed pest control, and its involvement is increasing. There is a case for somewhat greater inputs from local government in certain areas of pest control. There is also a case for better integration of local government involvement in the three separate areas of pest plant, pest vertebrate and pest insect control. To this end the South Australian Cabinet has approved plans to amalgamate pest plant and vertebrate pest control under a single statutory authority, and legislation is now being drafted.

Weed Control

10.81. For convenience common problem weeds are referred to as "weeds" and proclaimed weeds as "pest plants", a usage originating from the 1976 Pest Plants Act.

10.82. Pest Plants are again divided broadly into two main categories - agricultural pest plants and community pest plants. The later category contains plant species considered undesirable for environmental, health, road safety and other reasons.

10.83. Weed and pest plant control is a constant problem. Although new control technology is constantly being developed, new pest species are constantly appearing. Even with good management there is no way that the problem will ever "go away" in the foreseeable future. Future efforts must involve continuing, even increasing, government activity.

10.84. In addition to weed control work on their own properties, farmers also contribute funds for research in weed control through statutory production levies. This responsibility has been accepted in South Australia to some extent in the last two years following a review of weed control research needs. Three new industry funded research projects have been started.

10.85. The role of local government (through Pest Plant Control Boards) is in local publicity, extension, surveys and enforcement. The role of the State Government (through the Pest Plants Commission and SAGRIC) is in statewide co-ordination, publicity, education, research and financial management.

10.86. A reasonable relationship exists between the State government and local government. This co-operative area of activity will continue and expand, but it will be important for the State to recognise the dependence of the relationship on the maintenance of financial inputs into the system for the support and maintenance of an effective administrative framework. At the present time the administration costs of Pest Plant Boards are shared approximately 50/50 between local government and the State government. Actual pest plant control work is charged at cost, and is therefore not a cost to the State government except on its own land.

10.87. There is a need for increased research into pest plant control. Some proclaimed pest plants do not have satisfactory measures available for their control.

10.88. Such research should primarily be the responsibility of the State government, and increasing inputs will be required in South Australia. In addition, however, research into biological control of pest plants (and other weeds) is at present the one and only area of involvement of the Commonwealth government in weed and pest plant control matters. It is the current stated policy of CSIRO to give high priority to research into biological control of pests (including weeds). It is to be hoped that CSIRO will increase its activity in this field as there are many candidate species on the list for biological control research which cannot currently be tackled. The place of the State government in biological control research is to provide back-up support and follow-up work to CSIRO once biological control agents have been identified. This policy appears to be appropriate for South Australia.

10.89. The agricultural chemicals industry makes a major input into weeds and pest plants research through the development and commercialisation of new herbicides. It has been SAGRIC's policy to co-operate with agricultural chemicals manufacturers in the conduct of contract research at departmental institutions into the efficacy, crop tolerance and safety of new products. This policy will be maintained.

10.90. In general, weed and pest plant control has become a high technology area, allowing for greatly increased efficiency of control operations. Equipment and chemicals are becoming more sophisticated, and changes in technology are quite rapid. This places a big responsibility on the State government, local government and on industry to ensure that farmer education is adequate to enable the rapid introduction and widespread adoption of new techniques. Improvements in weed and pest plant control techniques have more than kept pace with increases in farm size and reduced availability of labour. Effective future control work is thus a possibility, but it will depend on the success of education and enforcement programmes.

Vertebrate Pests Control

10.91. The activities of the Vertebrate Pests Control Authority (VPCA) cover the control of rabbits, dingoes, foxes, mice, feral goats and some limited involvement with native species. Of this list only rabbits, dingoes and foxes are proclaimed under the Vertebrate Pests Act.

10.92. As with pest plants, there is a clear case of community interest in the effective control of vertebrate pests, which are highly mobile and fecund and can spread alarmingly in plague proportions if not controlled. Thus, although individual farmers have a primary responsibility for control, there is a well recognised need for government involvement in financing and administration.

10.93. It has been the policy of the VPCA to adopt a centralised enforcement policy stronger than that of the Pest Plants Commission. Powers of prosecution are used to very good effect. This does not mean, however, that publicity, education and advisory aspects of vertebrate pests control are neglected. There are important programmes being conducted in these areas.

10.94. As with pest plants, the administration of vertebrate pests control is a co-operative effort of the State government and local government. Much of what has been stated above about pest plant control applies here also. The legislation covering both areas is similar in many ways.

10.95. The VPCA supports an active research programme into the control of rabbits, goats, mice and dingoes. This is funded mainly by the State government, but the mice research programme is funded by the Wheat Industry Research Council of Australia, as part of a co-ordinated program in three States.

10.96. Co-ordination of all vertebrate pests control activities is achieved on a national basis through the Vertebrate Pests Committee of S.C.A.

10.97. South Australia has a clearly defined policy on dingo control. This is, basically, that the dingo should be permitted to survive as a native species in the north of the State outside the "Dog Fence", but that total eradication should be aimed for south of

the fence. This policy has been of great assistance to the VPCA in the maintenance of a firm attitude and programme of enforcement of dingo destruction in urban areas. There is a total prohibition on the keeping of dingoes as pets in the settled areas, but this is a contentious issue in some other States. Uniformity of policy on a national basis would be desirable and some modification of South Australia's approach is put forward for consideration.

10.98. The importance of feral animals as carriers of exotic diseases, in the event of any future outbreak is a matter of great concern. Exotic disease control strategies have recognised this problem, but the destruction of whole populations of feral animals would be a gigantic task which could not be achieved through the use of current knowledge and technology. The main species concerned are feral pigs, cattle (buffalo and domestic breeds), goats, horses, donkeys, deer, foxes, feral cats and dingoes. There is an urgent need for the development of a co-ordinated national programme, involving both State governments and the Commonwealth to cover the following main areas:

i) Definition of the problem
   (a) density and distribution
   (b) threshold levels below which, for the sake of disease transmission, animal numbers can be tolerated.

ii) Methods of control for each species
   (a) development of control techniques
   (b) application of techniques

iii) Research
   (a) movements of animals - distances travelled
   (b) behaviour, when under hunting pressure
   (c) rate of resurgence of populations, following a reduction in numbers.

10.99. Another matter of national significance is the need for a uniform system of categorisation of vertebrate pests. The Vertebrate Pests Committee based on the categorisation system used by the Western Australian Agricultural Protection Board, which will allow for full or partial restriction on the entry and keeping of all animal species and for the development of control or eradication strategies appropriate to each species. This proposal will be considered by the SCA for adoption throughout Australia.

Insect Pest Control

10.100. As with pest plants and vertebrate pests, there is a large group of "common problem" insect pests which farmers must control, in their own financial interest; and also a further small group of "community interest" insect pests in which the State government accepts a responsibility for control.

10.101. The latter category are covered by various forms of legislation, and have been proclaimed for special treatment because they are either highly mobile and must be controlled in outlying districts before reaching crop lands (e.g. locusts) or are newly arrived and potentially dangerous pests to agriculture (e.g. fruit fly).

10.102. The control of newly arrived pests is a quarantine matter and covers only selected proclaimed insect pests. Commonwealth quarantine covers specified insects exotic to Australia, and State quarantine (administered by SAGRIC) covers specified insect pests exotic to South Australia, but present in other states. In all cases the aim of procedures adopted is to prohibit entry of the pests, and to totally eradicate them if they do gain entry.

10.103. Procedures for State quarantine vary from State to State. Several States have introduced or are considering introducing streamlined interstate quarantine procedures. New procedures are currently being negotiated with agricultural producer bodies in South Australia.

10.104. The control of locusts and migratory grasshoppers comes under the provisions of the Noxious Insects Act, which provides for control activity by farmers, local government and the State government. In practice, however, the vast majority of control work is carried out by the State government as part of massive control campaigns when locust plagues occur.

10.105. The Commonwealth also has a role in locust control. It established the Australian Plague Locust Commission which carries out surveys to predict locust plagues, and attempts to control them by early spraying in inland areas of New South Wales, South Australia and Queensland. The Commonwealth has now withdrawn from direct administration of the Commission, but still pays

half the running costs, the balance being paid by the States.

10.106. Research is an important aspect of insect control activity. State governments and idnustry trust funds have tended to support research into specific insect pests. The agricultural chemicals industry has carried out its own research for the development and commercialization of new insecticides. The main role of the Commonwealth is in the field of biological control of insect pests. State departments of agriculture and universities also have an important part to play alongside CSIRO in this field. The report (January 1982) of a working party set up by SCA recognised the increasingly important and valuable role of biological control and recommended that it be co-ordinated nationally to overcome some of the deficiencies of the current ad hoc approach. It recommended the creation of a small secretariat in the Plant Quarantine Section of the Department of Health for this purpose. The priority areas recommended by the Working Party for biological control research on insect pests were:

i) Specific Pests:
   - white fringed weevil
   - wingless grasshopper

ii) Groups of Pests:
   - aphids
   - mealy bugs
   - noctuids
   - scarabs, wireworms and false wireworms
   - spider mites
   - white snails

iii) Pests of Specific Crops;
   - citrus
   - glasshouse crops
   - temperate legume pastures

Future Directions in Pest Control

10.107. Mention has been made above of the impending integration of pest plant, and vertebrate pest control activities at local level in South Australia. In many cases the same local inspectorial and administration staff are involved in both activities.

10.108. A logical extension of this proposal would be to bring together an even wider range of agricultural protection measures into an integrated system involving both State government and local government. There is already some measure of support for the future amalgamation of pest control boards and District Soil Conservation Boards, to form the basis for a series of regional structures which might be designated as Land Management Boards, to cover all forms of pest control, soil conservation and other related protection measures such as vegetation clearance and similar measures. Local government would form a logical basic structure for such bodies. New legislation would be required and extensive negotiation would have to take place before such legislation could be introduced.

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11. EFFICIENT USE OF MACHINERY

11.1. This section discusses the importance of maximising efficiency in the use of farm machinery including research and extension on the best use of machinery and the provision of improved information on performance to enable farmers to make better investment decisions. Much of the responsibility for improving efficiency rests with manufacturers and farmers, but national and State governments have roles in encouraging research and conducting extension work.

11.2. MECHANISATION AND AGRICULTURAL ENGINEERING

Australian farmers have played a major role in the development of farm machinery in this country. Many innovations have arisen from needs caused by uniquely Australian conditions. In addition Australia is isolated from Europe causing difficulties in communication and the transportation of goods. Some of what were essentially farmer innovations received worldwide recognition and adoption, such as the McKay harvester and the stump-jump mechanism for ploughs. Today wool growers are at the forefront of innovation with the development of sheep handling devices and wool harvesting techniques.

11.3. Farm machinery manufacturers have responded to farmer needs and from time to time have sought government assistance. Such assistance has come in the main in the form of bounties and tariffs and not so much in the areas of research and development. The dominance of pastoral groups, with relatively low mechanisation needs, tended to restrict the development of mechanisation. However, the gradual reduction in the rural work force since World War II has been accompanied by a substitution of capital for labour as farmers increased their dependence on machinery. This trend is likely to continue and the need for soil and water conservation measures together with new tillage techniques calls for greater efforts to be made in the area of machinery design.

11.4. Given the increasing dependence of agriculture on machinery, state departments of agriculture have increased their commitment to the engineering aspects of agriculture over the last ten years. In constrast CSIRO has largely dismantled its involvement in the area of agricultural engineering research. In 1980, Professor Downing was commissioned by the Commonwealth Council for Rural Research and Extension to report on the state of agricultural engineering in Australia (Downing, 1981). Supplementary submissions to the Standing Committee on Agriculture were made by Queensland and New South Wales.

11.5. In the whole of agriculture it was estimated that in 1977-78 $610 m. was spent on vehicles and machinery, $471 m. on repairs and maintenance and $327 M. on power and fuel. It was estimated that very nearly half of this total was spent by the wheat industry alone. Additional data show the very large expenditure on agricultural engineering inputs to the grain industries and the relatively low inputs of research and extension compared with the agronomic aspects of the industry and the total livestock industry. The grain industries account for 26 per cent of agricultural production and their dependence on machinery is likely to increase.

11.6. FUTURE DIRECTIONS

Future developments in the area of agricultural engineering require a balance between research and extension. Increased emphasis on preventing soil erosion and the rising cost of fuel are stimulating the need for greater operating efficiency. Adequate information is available for extension programs aimed at better management practices. The steady increase in the cost of machinery highlights the need for extension work based on least cost machinery systems. While in South Australia the proportion of capital invested in machinery on wheat-sheep farms has not altered over the last 15 years there is scope for

research-extension programs to assist farmers make better decisions on matching and sizing which lead to reductions in capital, overhead and operating costs. The main challenge is not the researching and development of radical machines or systems but for applied research and extension which allow farmers to exploit to the full machines currently available.

11.7. This is particularly relevant to the grain industries which rely on mechanisation at all stages of production. As grain growing increases in complexity farmers will need more data on which to base investment decisions regarding machinery. Tractors and headers are the most expensive items of plant. There is scope for increasing tractor efficiency and for improved selection of headers according to capacity. Also desirable are consideration of means of minimising grain losses during harvesting, the draught requirement of implements, cultivator performance, minimum tillage techniques, air seeder performance, machinery use and weed control, and weed spray equipment.

11.8. TASK FORCE APPROACH TO IMPROVEMENTS IN MECHANISATION

It is important that any research and extension program in mechanisation and agricultural engineering have a multi-disciplinary approach. While engineers can obviously make significant contributions, economists, soils experts and agronomists also have roles to play. Emphasis should shift from bounties and tariffs for machinery manufacturers to the encouragement of practical developments, including potentially useful farmer ideas or prototypes. Study grants could be made available to innovative farmers to further develop their ideas in conjunction with relevant professionals and institutions. Extension emphasis should centre on improved operating efficiency, management practices and developing low-cost efficient systems. Further, it is important that both extension and research programs be co-ordinated on an Australia-wide basis.

11.9. SELF HELP BY FARMERS

Farmers and farm organisations are showing increasing interest in improving decisions on the acquisition of farm machinery and other equipment and materials. Some independent farmer groups have taken action themselves to try to overcome the scarcity of objective information about the capabilities of new machinery. They have demonstrated that it is possible to collect information on user experience with machinery, for example, the seeder, boomspray and header reliability trials conducted by the Kondinia and Districts Farm Improvement Group in Western Australia.

11.10. The Farmer Consumer Association Steering Committee's survey of 400 South Australian farmers showed that there is a significant desire for a farmer consumer association or a farmer consumer complaints service. More than two thirds of the survey group considered primary producers have inadequate options in pursuing complaints about unsatisfactory products and materials, and nearly half believed that many farm products are poorly made and that there is a shortage of accurate, unbiased information on the products they buy. A significant majority of farmers believed that there was a need for new laws to protect primary producers when they buy goods, services and equipment for their farming operations. Most of those surveyed also believed there was no satisfactory course of action for them to resolve disputes over the purchase of faulty items. High priority was given to more adequate information about implements and tractors, with farm vehicles, fertilizers and animal health also high on the list. Insurance, farm finance, seeds, spare parts and legal advice were seen as next in importance.

11.11. There is no doubt that farmers as individuals have little chance of being able to apply enough pressure to a manufacturer or supplier to rectify faults in design or manufacture. Farmers must therefore use their collective influence.

11.12. There is scope for farmers and extension officers throughout Australia to develop such programs together to include all major items of farm equipment and other purchased inputs. This would be a major task for national and state farm organisations and public agencies concerned with agriculture .

REFERENCE - Chapter Eleven

C.G.E. Downing, Agricultural Engineering Research, Development and Extension in Australia - A Report to the Commonwealth Council for Rural Research and Extension, A.G.P.S., Canberra, 1981.

12. RURAL SAFETY

12.1. INTRODUCTION

Rural safety is important. But to prepare a paper on rural occupational safety, health and welfare based on statistically sound data is impossible. With the exception of injuries to paid workers in some states, rural accidents are not reportable to any authority. No organisation has made available sufficient resources to analyse rural accident phenomena by sampling or other systematic means.

12.2. This section, therefore, is based on field experience gained by SAGRIC during eleven years of conducting a rural safety extension programme. Some particular accident and health problems are highlighted. Discussions with experienced agricultural advisers, country medical practitioners and farmers would probably support the assumption that the incidence of such problems is "high" or "too high".

12.3. LIMITED INFORMATION

Of the limited information available, one survey (Moulds, 1970) found that, in the area surveyed, 50 per cent of farms had one or more accidents each two years, averaging 49 days of lost time per injury. Also a detailed examination of 520 tractor accidents (McDonald, 1972) identified a number of tractor design faults and established that the tractor fatality rate was, pro rata, equal to that of motor cars.

12.4 Some indication of the costs involved can be obtained from an Australian Bureau of Statistics report (1978-79) which shows that the average pay-out for workers compensation injuries in rural-oriented industries was $1,145.20 per injury, and the average time lost was 5.3 weeks. This cannot be taken as an accurate figure for farming because forestry, fishing and hunting are included with agriculture but it does suggest that the problem is not a minor one.

12.5. SAFETY EDUCATION

Departments of agriculture are well placed to handle rural safety matters. They have a network of country offices and their officers have a good knowledge of farm working systems and farmers' attitudes and values. Further, they have skills in agricultural extension which some leading safety practitioners now advocate applying also to other areas of safety.

12.6. In most States industrial safety legislation, especially regarding machinery safety, has been extended to cover rural employment. Although the legislation lacks uniformity it is mainly directed at paid employees. It gives self-employed farmers little legal protection or guidance.

12.7. Legislation is unlikely to achieve a significant reduction in rural accidents. Resources for the effective policing of dispersed, owner-operated production units are unavailable. The one exception to this is the legal requirement for manufacturers of new equipment to provide guarding to a satisfactory standard. However, there is little or no control over what happens to guards after machinery is delivered to the farm.

12.8. In the long term, it is hoped that safety education will contribute to accident reduction. However, the safety component of rural education courses depends more on individual initiative than on official emphasis. There is, however, a reasonable degree of activity in the promotion of pesticide safety through public seminars.

12.9. Unfortunately there are many examples of advisory officers conducting demonstrations or producing pamphlets with sub-standard reference to safety. Often officers give support for unsafe work conditions, for example, by conducting demonstrations without necessary protective equipment. Safety awareness should be promoted in all relevant departmental programs as part of the whole farm extension approach.

12.10. ISSUES FOR FURTHER WORK

The need for further information and action is illustrated by the following issues.

12.11. Machinery

A need exists to develop a taxonomy of rural machinery accidents with a view to identifying and rectifying design faults. There is also a need to review the effectiveness of legislation in reducing injuries. Any review should also examine the relevance of legislation to the rural work environment and operational conditions. Transposing industrially-oriented regulations to the rural scene is unlikely to be effective.

12.12. Pesticides

While the immediate effect of a single pesticide overdose is well understood more information is desirable on the long term effects of regular small doses and potentiation between various chemicals. Most farmers are aware of the dangers of pesticides but are often misinformed about particular chemicals. The registration of agricultural chemicals is well controlled but there are weaknesses in the presentation of safety directions on labels. The correct and sensible usage of protective clothing and equipment is not yet well understood by farmers.

12.13. Back Injuries

The active life of many farmers from the age of 30 years onwards is curtailed because of degeneration of the lumbar region. This is due to a lack of understanding of correct lifting techniques and back care, inadequate materials handling equipment and inattention to safe packaging sizes and weights. Unfortunately the farming community accepts the "crook back" as an unavoidable "occupational disease". A change in attitudes is desirable.

12.14. Noise Induced Hearing Loss

A current South Australian project in which over 4,500 audiograms of the rural population have been taken, indicated that about one third of farmers above the age of 40 years suffer significant hearing losses. Noise attenuating tractor cabs help alleviate the problem but many unprotected tractors will remain in use for many years. Further, tractors are not the only dangerous noise source on farms. The reasons for and solutions to noise induced hearing losses are well known, but preventative activity is confined mostly to manufacturing industries. Deafness is a little recognised but very real social and family problem. Farmers deserve more guidance and help than they currently receive. That suitable action can be effective has been demonstrated by the results of a program on SAGRIC research centres in South Australia where a combination of audiometry and prevention measures has reduced a serious noise-induced hearing loss problem.

12.15. Child, Home and Water Safety

Organisations dealing with these matters, where they exist, tend to confine their activities to the larger target audiences within the more densely populated urban areas. Consideration should be given to extending safety programmes on these matters to the farming community.

12.16. RESEARCH AND DATA COLLECTION

Effective accident control measures are extremely difficult to establish without a clear understanding of accident phenomena and a sound data base. A need exists for research into the causes of rural accidents and the collection of relevant statistics. Compulsory reporting of farm accidents has not been successful in at least one Australian state. Voluntary hospital reporting schemes and regular sampling of rural communities by trained data collectors are two methods by which better information could be obtained.

12.17. A data collection program should be set up, in consultation with professional safety practitioners, either on a national basis or on a basis allowing comparisons to be made between different States. Particular consideration should be given to the cost of rural accidents and the likely effectiveness of various approaches in reducing accident costs. Analysis of this kind would enable a realistic appreciation of rural safety issues to be made and the benefits of further efforts to promote rural safety to be compared with benefits from other assistance to rural producers. This would provide an informed basis for policy decisions.

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13. RURAL SOCIETY

13.1 FAMILY FARMING

With the introduction of increasingly sophisticated technology (discussed in chapter six) and trends towards vertical integration (discussed in chapter seven), fears have been expressed that large corporations and agribusiness enterprises will replace family farms. However, these trends have been more apparent in intensive than extensive agriculture.

13.2 In the cropping and grazing industries the overwhelming majority of farms are still family farms. A recent analysis of rural property sales in South Australia found that over 90 per cent of sales were made to other family farmers within the same local government area. The most likely buyers are still neighbours buying more land.

13.3 By increasing productivity per farmer, greater mechanization and improved sheep and cattle handling techniques help maintain the viability of family farming. It is estimated that farming techniques are already available to allow productivity per farmer in South Australia to double. It is possible for one farmer to produce and harvest 1000 ha of cereal crops whereas the average area per farmer is still under 400 ha. Similarly the average number of sheep on cereal farms is below 1000 whereas some farmers easily handle 3000 each.

13.4 Average capital per farm has increased six-fold in 17 years, representing an 11 per cent compound growth rate per annum. The greatest limiting factor to increasing the size of family farms in South Australia is the relative scarcity of land for sale. This is forcing land price increases to exceed increases in the CPI.

13.5 The increasing demand from employees for shorter hours, less out-of-hours work and less overtime, and the high cost of staff housing, payroll tax, workers compensation and insurance, all mitigate any move away from family farming, especially in the extensive industries where effective staff supervision is difficult.

13.6 For these reasons family farming in the cereal and grazing industries is likely to remain the dominant form of farm ownership, operation and management throughout the 1980's. Any trend away from family farming in South Australia will continue to be in the intensive livestock industries and some aspects of horticulture.

13.7 FOREIGN INVESTMENT IN RURAL LAND

Farmers and farm organisations have expressed concern recently at the extent of foreign investment in rural land. Accurate information on the extent of foreign ownership is difficult to obtain. The Foreign Investment Review Board requires details on any real estate transaction involving more than $350 000. In the past four years 353 transactions have been approved. N.S.W. and W.A. were the States most affected. The gap in information is the extent of sales involving less than $350 000 or where local organisations buy property on behalf of foreign investors or in conjunction with them. Better information is needed before new policies are established.

In some countries a period of residential requirement is needed before purchasers are able to invest. Such a policy would disqualify most existing absentee landowners and favour the investor genuinely interested in moving to Australia and bringing capital to invest.

13.8 HOBBY FARMING

Part-time farming has had a significant impact on traditional agriculture in areas on the fringe of metropolitan capitals and large regional centres in Australia. This is a phenomenon common to the environs of most western cities. (For a South Australian study see Menzies and Bell, 1981).

13.9 Difficulty is encountered in any attempt to classify these land users as many motivations are involved. These include residential, recreational, conservation, agricultural and life style considerations (including in some cases a rejection of suburban living).

13.10 A common trend is the desire to live in a rural environment but to use an urban service base and be employed in the urban labour market. The 'hobby farmer' population comprises predominantly middle class Australians who have traded off increased commuting demands against a rural residential lifestyle.

13.11 In South Australia, whether for part-time farming or rural residential occupancy, lot sizes of land affected vary from 0.5 ha to 40 ha.

13.12 Part-time farming in urban fringe locations represents a phase in the conversion of land from bona fide agricultural uses to urban uses. However, it has serious effects on agricultural land users if uncontrolled, for it increases land values significantly as value is assessed more in terms of residential than agricultural criteria. The net effect is to increase rates. This tends to increase the pressure for the sale of bona fide agricultural land. The conversion process is often associated with speculative activities.

13.13 In order to discourage speculation, occupants of small holdings should bear much or all of the cost of service provision at the time of connection to public utilities. This would have the effect of concentrating these forms of land use into more compact areas. Such policies would reduce some of the current subdivisional pressures on bona fide primary producers and facilitate retention of land in full-time agriculture.

13.14 Differential rating procedures could be adopted by local government. The valuation of land deemed to be of long term social significance could be anchored to the concept of 'existing use' in order to protect 'socially desirable' occupiers from rate and tax increases which will ultimately make existing operations unviable. However, such a basis of rating should be reappraised periodically to assess new social uses and to reconsider existing social uses in view of changes in technology and community attitudes. Provision should also be made for recouping for public benefit a proportion of the enhanced capital value of such land when eventually sold for another use. Land valuation on remaining areas should be based on 'potential use' in order to cater for ultimate urban encroachment or subdivision into rural residential allotments.

13.15. The reaction of conventional farmers to part-time farming varies. For some it is an incentive to rural adjustment. For example, the prices offered for undulating to steep land used for dairying have provided many sub-commercial dairy farmers with their best opportunity to acquire sufficient capital to re-establish themselves in another district or another industry.

13.16. However, farmers who remain are concerned about increased local government rates resulting from higher land prices and demand by new residents for urban style services. They are also concerned by perceived threats to agricultural enterprises from low levels of land management skills possessed by new residents. Farmers are particularly concerned by ignorance about the control of pest plants, vertebrate pests, animal and plant diseases, and bushfires. Part-time farmers' lack of skills in land management may also lead to higher rates and public sector outlays because of increased costs in implementing land management regulations.

13.17. Demand for agricultural extension and information services also poses new challenges, but the recent formation of the Small Farm Association in South Australia and the appointment of a specialist extension officer in SAGRIC should improve the availability of much needed technical advice to part-time farmers. It should be noted, however, that agricultural servicing of part-time farmers requires personnel with empathy for landowners who may not be highly commercially oriented. This is a major problem confronting departments of agriculture as many officers in these departments believe that their principal responsibility is for full-time farmers and have difficulty in relating to non-commercial rural land users and part-time farmers.

13.18. There is probably scope for significant private sector development in servicing 'hobby farmers'. However, while State agencies provide free advice there is no incentive for small holders to consult private agencies. Extending the principle of fee for service could be considered as a method of filtering part-time farmer demand for extension services and ensuring that extension resources are not overly diverted from servicing full-time land owners.

13.19 In view of low levels of land management experience and skills among 'hobby farmers', public sector services should concentrate on providing basic agricultural skills and encouraging community initiatives in the same field. Much of this can be achieved by group methods. Short educational programmes in specific areas of known interest could be held by adult education agencies. Such courses could be self-funding from fees paid by users.

13.20 EDUCATION

Changing demographic and economic conditions have had a significant effect on education in rural areas. Many of the findings and projections of the Karmel Enquiry (1971) have proved optimistic and have been subsequently reappraised. Evidence suggests that declining rural population and the falling birth rate (National Population Inquiry, 1975) will place added pressures on government to cut back even further resources for primary and secondary schooling. In chapter six issues relating particularly to agricultural education were discussed. In this section more general issues are canvassed.

13.21 Primary Education

In primary schools (and to a lesser extent in secondary schools) population decline over the past three decades has been associated with a decline in the number of schools. Catchment areas for individual schools have increased and 'bussing' of school children over greater distances has increased.

13.22 Consolidation has both advantages and disadvantages.

Advantages include:

i) declining overhead costs, although some of these are off-set by costs of bussing students to schools.

ii) enhanced possibilities for specialisation in remaining schools.

Disadvantages include:

i) country school children spending more time in transit to and from school. There are limits to the extent that this is desirable, particularly for younger children.

13.23 Secondary Education

At the secondary school level, rural education suffers from the following disadvantages:

i) Rural secondary schools tend to have higher proportions of inexperienced young teachers. This applies particularly to area schools.

ii) Country schools, particularly area schools, have less staff stability than metropolitan schools.

iii) Specialised teaching resource centres and facilities are more restricted in country schools.

iv) The more restricted range of course and subject options available in country high schools and area schools is perhaps the chief educational disadvantage. The relatively high proportion of students who move to Adelaide for final year(s) of schooling indicates this is perceived by many in the country as a disadvantage (Cawthron et al. 1980).

13.24 Despite restrictions on course and subject options, there is little apparent difference in matriculation results between students of metropolitan and non-metropolitan high schools. Area schools, however, do show significantly poorer matriculation results than other secondary schools (Cawthron, et al. 1980).

13.25 Tertiary Education

Advanced tertiary training is highly centralised and is expected to remain so given the population distribution in South Australia (Anderson, 1979). The effect is to limit severely opportunities for rural people to enter tertiary training other than through extra-mural studies. Advanced training for most means movement to a metropolitan centre.

13.26 Adult Further Education

In contrast to education of children, adult education has burgeoned in recent years, and has been decentralised to rural regional centres. While growth has now ceased it has provided the possibility for

residents in rural areas to upgrade qualifications or become involved in self-interest, hobby and self-improvement courses.

13.27 However, existing further education courses depend on the availability of qualified tutors and a minimum number of participants. It would be desirable for correspondence courses in conjunction with the School of the Air for primary school children to be extended not only to secondary level students but to an adult school of the air. It would also be desirable to improve access to educational radio and television broadcasts. Unfortunately, Radio 5UV courses (presented by a radio station operating within the University of Adelaide) have limited impact due to poor reception in country centres.

13.28 The development of a national communications satellite system, which is financially accessible to isolated communities would further improve access to primary, secondary and adult education programs.

13.29 Policy Issues in Education

The following issues for further investigation are suggested:

i) the social effects and costs of further consolidation of education facilities in rural areas in terms of small rural communities and the services they provide for their local communities.

ii) the maximum periods children of various ages can be bussed to and from school without physical and psychological stress.

iii) whether there is any marked correlation between educational achievement and time taken in bussing to and from school.

iv) the extent to which restricted course and subject options result in a narrowing of the employment field for school leavers from the country.

v) whether the education of rural children suffers as a result of higher teacher turnover, employment of a greater proportion of young and inexperienced teachers and a comparative lack of specialised teaching facilities.

vi) whether current cutbacks in educational spending are having a greater impact on rural areas than urban areas.

vii) means of using a national communications satellite system to best advantage in education and further education.

Information on these issues should be taken into account in determining further policy on rural education.

13.30 SOCIAL SECURITY AND WELFARE

Rural families are not well informed either about their rights or the availability of public sector or voluntary welfare services. The major recipients of public welfare assistance (Commonwealth and State) are women. Particularly in isolated areas, officers of departments of agriculture can be important information sources about available benefits.

13.31 Government officers in rural communities need to work together on their local Council for Community Development or equivalent.

13.32 High unemployment in rural areas, especially for females, needs special attention. An outmigration of the young looking for jobs in larger centres leaves an imbalance of ages. Decreasing population often means decreasing services, for example, public transport.

13.33 ETHNIC GROUPS

The post-1945 immigration programme has resulted in a significant change in the ethnicity of the Australian population (National Population Inquiry, 1975). Although most migrants of non-western European origin have been attracted to the metropolitan capitals (Rowland, 1979) some groups have settled in rural areas (Mapsome, 1966; Menzies, 1977; Phillips, 1970; Pich, 1975). Where these groups have clustered in distinct concentrations within particular agricultural industries they have presented new challenges to government servicing agencies.

13.34 Linguistic and cultural differences confront traditional government agencies in dealing effectively with these groups. This is particularly so with first generation migrants. The problem abates with second and subsequent generation ethnic peoples as bilingualism becomes more prevalent and acculturation takes place. Agricultural extension activity needs to recognise these problems and should be modified to ensure that the most effective communication media are used in providing services for such groups.

13.35 Menzies' (1980) appraisal of agricultural extension among Greek horticulturalists in the South Australian Riverland indicates the importance of accurate information rather than opinion in planning service delivery to such groups. Extension agencies should adapt their methods to suit the needs and abilities of client groups in order to relate effectively to them.

13.36 HEALTH SERVICES

The South Australian Health Commission is aware of the growing concern in rural areas for more equitable health care services. In 1980 a study was funded by the Commission on the elderly in the Riverland. Similar studies in rural South Australia have been done in Mount Gambier (Radford and Peever, 1976) and Pt. Elliot and Goolwa (Radford, Badcock and Hugo, 1981). A few other such studies have been conducted elsewhere in Australia.

13.37 There is a significant lack of knowledge regarding available services (public and private). Many people over 65 years of age "are of an age and generation that traditionally does not expect, ask or demand" a service which is available and to which they are entitled. Projected growth rates indicate that the proportion of population exceeding 65 years in age will increase significantly and in selected areas "hobby farmers" will further add to the growth rate. In the 75+ age group there is a high incidence of disability and chronic conditions.

13.38 It is considered that departments of agriculture can usefully take an educative role to ensure that the elderly, the disabled and the public generally are aware of available health services and the lines of communication to them.

13.39 ROLE OF WOMEN IN RURAL SOCIETY

The role of women in rural communities is changing and improved communications are likely to hasten this process. There will be an increasing participation of women in the work force as is general throughout Australia today. Women will have an opportunity to make use of their broader educational backgrounds and could hasten the adoption of new technologies. It would be desirable to sponsor training courses in rural areas for women involved in various aspects of agricultural production to better utilise and encourage the development of their skills. Courses need to be flexible to combine with women's double duties of homemaker and farmer. The increased pressures on women should be appreciated and adequate and responsive support systems will be vital if the potential role of women in rural society is to be realized.

13.40 Career counselling for rural students to encourage girls to consider a wider range of careers should be a high priority. Conservative thinking tends to influence girls to enter traditional occupations such as nursing, teaching, the retail trade and secretarial work, and the need for counselling for non-traditional careers is vital.

13.41 The quality of life in rural communities is often due to the voluntary efforts of the women. Departments of agriculture should support the concept of viable rural communities and could help in the development of leadership skills in rural groups including women, for example the Agricultural Bureau, the Women's Agricultural Bureau and the Rural Youth.

13.42 Increasingly, women with the interest and ability should be encouraged to participate in producer organisations. They have much to offer.

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