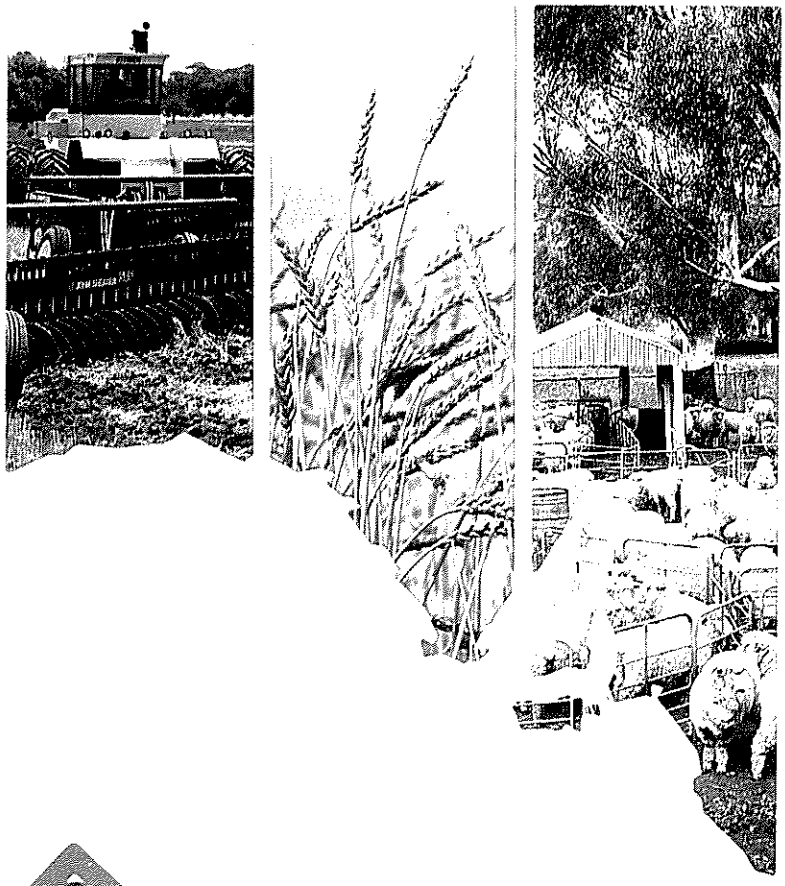
SAGRIC 83

Planning of Department of Agriculture services for South Australians over the next decade



DEPARTMENT OF AGRICULTURE
SOUTH AUSTRALIA

SAGRIC 83

Planning of Department of Agriculture services for South Australians over the next decade

Department of Agriculture, South Australia, October 1982

Department of Agriculture
South Australia, 1982
D. J. Woolman, Government Printer
ISBN O 7243 6099 9

Foreword

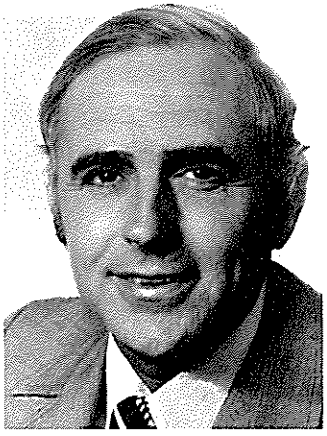
SAGRIC 83 is the first corporate plan for the South Australian Department of Agriculture. It has been prepared in the light of the State Government's rural policy to serve as a framework for planning and development of departmental services over the next decade. The plan has been closely matched to the structure developed for Program Performance Budgeting which has been introduced by the government to provide more cost-efficient and responsive services across the entire public sector.

The corporate plan reviews the current state of the principal agricultural industries of South Australia, examines changes that could be expected in the years to come, and provides goals for the short, medium and long term.

Since all the activities of the Department of Agriculture have now been defined on an individual project basis, changes in services can be readily planned and introduced as they become necessary.

Predicting the future trend of events in agriculture is a notoriously difficult task. Consequently, it will be necessary to review the corporate plan each year in the light of changing agricultural technologies, world product demands and community needs.

Collectively, the initiatives identified in this plan are aimed at improving the service to primary producers by identifying the requirements of primary industry and adjusting the structure of the Department of Agriculture accordingly.



Ted Chapman

MINISTER OF AGRICULTURE

Contents

Agriculture in South Australia

South Australia was founded on a rural society and the industrial sector did not develop as a major part of the South Australian economy until the late 1930s. Today, agriculture remains a major force in the continuing economic progress of the State.

In 1980-81, agricultural production from all sources in South Australia had a gross value of $1 300 million. The gross value of production from individual industries is shown in Table 1. This production came from 23 000 separate holdings, the vast majority of which were family farms.

Agriculture contributes proportionately more in South Australia to the total productivity of the combined mining, manufacturing and agricultural sectors than in any other State except Queensland. Every extra dollar of production from farming results in about $2.50 of growth within the State's economy. By comparison, an extra dollar of coal production generates $1.60 in growth, and a dollar increase in petro-chemical production leads to $1.95 in economic growth.

Table 1: Gross value of agricultural commodities, South Australia — 1980-81

Crops	$'000
Barley	166 253
Oats	14 126
Wheat	243 542
Other grain cereals	970
Fruit and nuts	74 648
Grapes	56 900
Vegetables	66 107
All other crops	68 816
	691 362
Livestock Slaughtering	
Cattle and calves	126 066
Sheep and lambs	114 207
Pigs	42 560
Poultry	35 497
	318 330
Livestock products	
Wool	240 960
Milk	49 557
Eggs	21 352
Honey and beeswax	2 990
	314 859
Total agriculture	1 324 551

Source: Australian Bureau of Statistics

Agriculture is subject to cyclical changes arising from environmental influences, such as the current drought, and marketing pressures. As a whole, however, agriculture emerged from the 1970s as a lean, competitive industry, well adapted to technological and marketing changes. Because these changes will continue, and since the future development of the State's agriculture is dynamic rather than static, there will be a continuing need for the Department of Agriculture to provide extension, research and resource protection services to help South Australian farmers in their continuing pursuit of improved production efficiency.

The Department of Agriculture

Origins

The provision of State Government-sponsored agricultural services to the farming community dates from the late 19th century when advisory services were developed through the Agricultural Bureau movement, research was initiated at Roseworthy Agricultural College and protection services began under legislation administered through a Stock and Brands Department.

Resources

Today, the South Australian Department of Agriculture (SAGRIC) has a staff of 1 083 officers, of whom 859 are employed under the Public Service Act. It operates with a budget of more than $42 m, and is responsible for the administration of 39 major parliamentary Acts (Table 2). As part of its thrust towards deregulation, the State Government has been progressively reducing the number of Acts for which the department is responsible by repealing those that are redundant or obsolete.

Table 2: Major South Australian Acts administered through the Department of Agriculture

Agricultural Chemicals Act 1955-78	Garden Produce (Regulation of Delivery) Act 1967
Agricultural Seeds Act 1938-75	Hide Skin & Wool Dealers Act 1915-74
Apiaries Act 1931-74	Marginal Dairy Farms (Agreement) Act 1971
Artificial Breeding Act 1961-78	Marketing of Eggs Act 1941-73
Barley Marketing Act 1947-80	Meat Hygiene Act 1980
Beef Industry Assistance Act 1975	Noxious Insects Act 1934-74
Branding of Pigs Act 1964-66	Pest Plants Act 1975
Brands Act 1933-82	Primary Producers Debts Act 1935-74
Cattle Compensation Act 1939-49	Primary Producers Emergency Assistance Act 1967-81
Chaff & Hay Acquisition Act 1944	Poultry Meat Industry Act 1969-76
Chaff & Hay Act 1922-75	Rural Industry Assistance Act 1977
Dairy Industry Act 1928-82	Rural Industry Assistance (Special Provisions) Act 1971-72
Egg Industry Stabilization Act 1973-80	Sale of Fruit Act 1915-75
Foot & Mouth Disease Eradication Fund Act 1958-71	Soil Conservation Act 1939-75
Fruit Fly Act 1947-81	Stock Diseases Act 1934-77
Fruit Fly (Compensation) Act 1954-74	Stock Foods Act 1941-72
Fruit & Plant Protection Act 1968-76	Stock Medicines Act 1934-77
Fruit & Vegetables (Grading) Act 1934	Swine Compensation Act 1936-78
Fruit & Vegetables (Prevention of Injury) Act 1927-75	Vertebrate Pests Act 1975-77
Fruit Growing Industry (Assistance) Act 1972	

Figure 1: Department of Agriculture — Offices and Regional Boundaries.

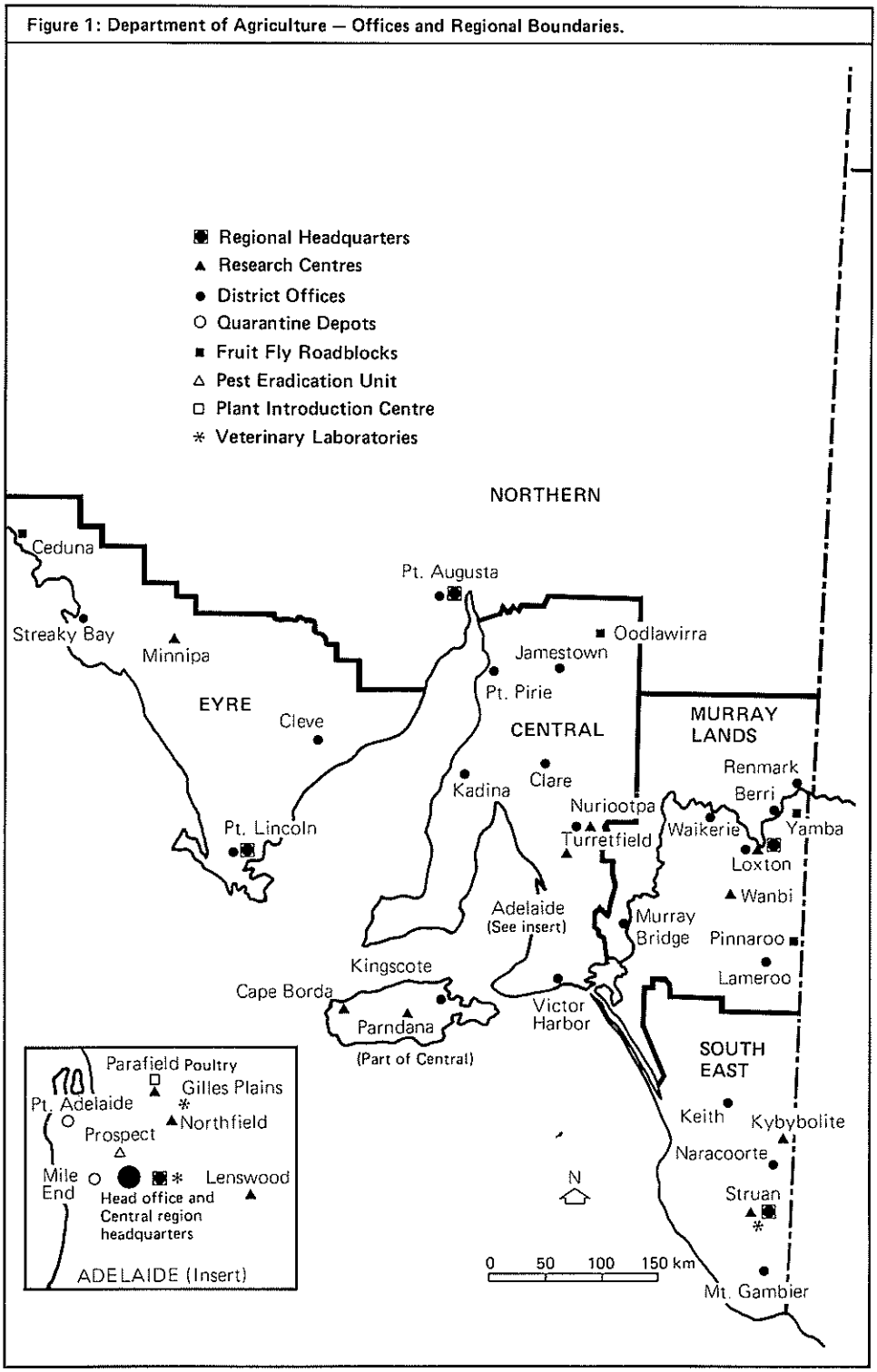
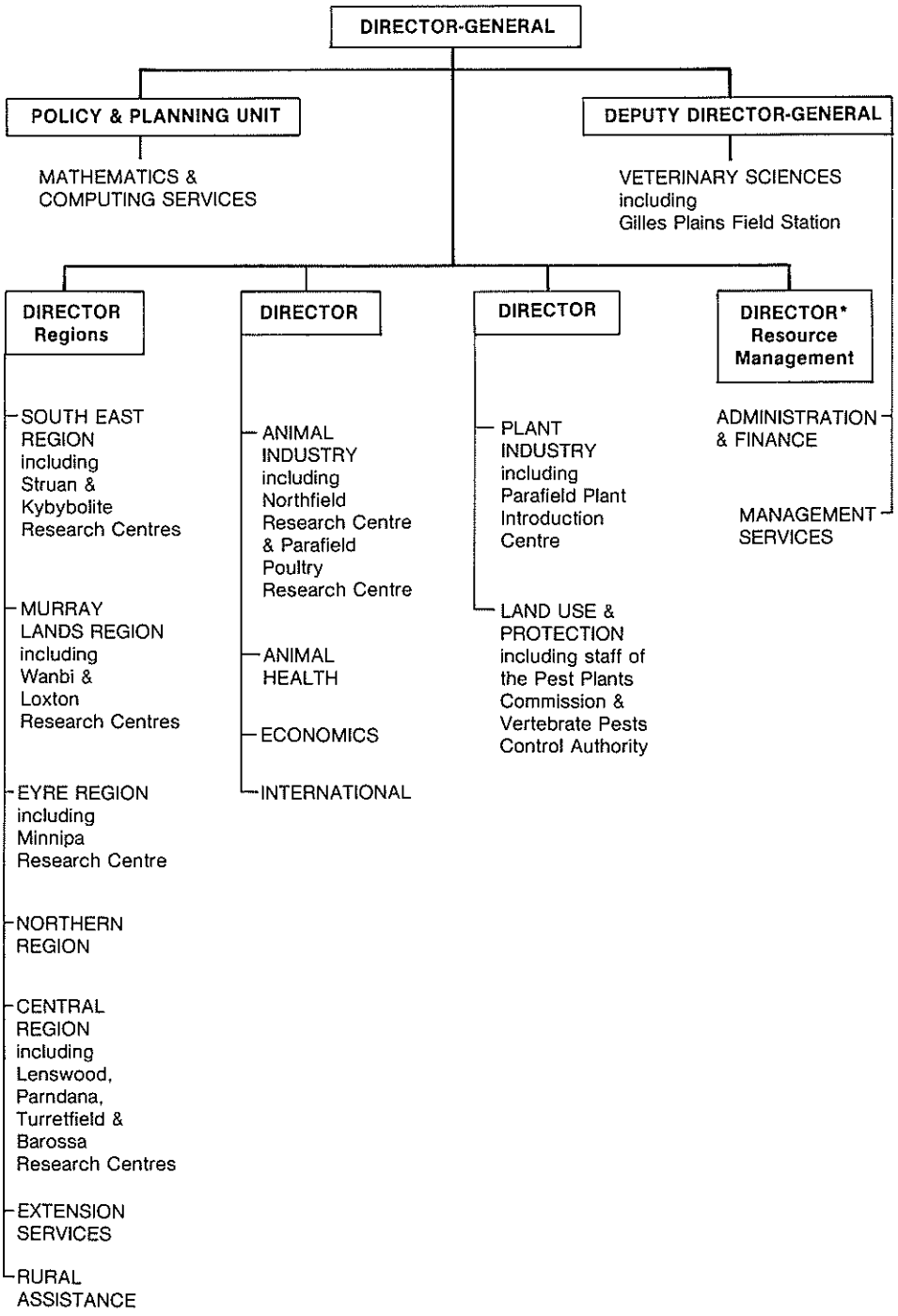


Figure 2: Department of Agriculture, South Australia — Organization Structure



*The position of Director (Resource Management) is vacant. The organization structure shown is as at 1/7/82.

Figure 3: Department of Agriculture, South Australia — Senior Officers	
Executive	
Director-General	Jim McColl
Deputy Director-General	Peter Trumble
Overview Directors	John Potter
	Pat Harvey
	Peter Barrow
Divisional Chiefs	
Animal Industry Division	John Feagan
Plant Industry Division	Arthur Tideman
Animal Health Division	John Holmden
Veterinary Sciences Division	Earle Gardner
Extension Services Division	Jim Richardson
Economics Division	George Ryland
International Division	Bob Hogarth
Land Use and Protection Division	Reg French
Chief Regional Officers	
South East Region	Glyn Webber
Murray Lands Region	Geoff Thomas
Eyre Region	Geoff Robinson
Northern Region	Geoff Neumann
Central Region	Ron Webber
Policy and Planning	
Leader, Policy and Planning Unit	John Radcliffe
Administration and Finance	
Chief Administrative Officer	Harry Shaw
Management Services	
Chief Management Services Officer	Peter Crossley
Mathematics and Computing Services	
Senior Biometrician	John Ellis
Rural Assistance	
Senior Rural Assistance Assessor	Allan Forrest

Services

The Department of Agriculture has a wide range of activities. An advisory service operates from district offices located throughout the State. This is supported by research carried out on farmers' properties and at strategically sited research centres and laboratories. Management is provided from five regional offices located in the principal farming areas. The distribution of these offices and centres is shown in Figure 1. Regional and district offices, research centres and laboratories are listed at the end of this publication.

Industry services are backed by specialist divisions located in Adelaide. These are the Plant Industry, Animal Industry, Land Use and Protection, Animal Health and Economics Divisions, and the Rural Assistance Branch.

The Extension Services Division provides specialist information and communication services to departmental officers and to the public. Diagnostic services for veterinary practitioners and animal health staff are provided by the Veterinary Sciences Division, which was transferred from the Institute of Medical and Veterinary Science on July 1, 1982.

An International Division coordinates consulting and project services to overseas countries on a cost-recovery basis through a subsidiary company, Sagric International Pty. Ltd. This serves to promote the adoption of South Australian

agricultural technology with a view to generating further commercial opportunities of benefit to the State.

Staff of a number of statutory authorities, including the Pest Plants Commission, the Vertebrate Pests Control Authority and the Meat Hygiene Authority, are also integrated with the Department of Agriculture.

Charter

The Department of Agriculture operates under the following charter of corporate objectives and functions.

Corporate 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 the nation.
2. To encourage the most efficient use of the State's natural resources relevant to agriculture, 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 sound and to assist participants in the agricultural sector to advance their physical, social and economic welfare comparably to the remainder of the community.
4. To promote the health and well-being of farm, laboratory, sports, zoo and companion animals.
5. To promote the development of technical and trading relationships with developing countries through provision of expertise to support their agricultural growth.
6. To provide effective administration, financial and personnel services within the Department of Agriculture, and to facilitate the implementation of government policies by maximizing the productivity and motivation of the department's workforce.
7. To promote an understanding and appreciation of the contribution of the agricultural sector to the economic and social welfare of South Australia.

Corporate functions

- ☐ Provide advice to the government to assist in the formulation of agricultural policies.
- ☐ Administer government legislation designed to manage and enhance the development and quality of production from the State's agricultural industries.
- ☐ Prevent the introduction of new, and control the spread of existing, pests and diseases that adversely affect agricultural industries.
- ☐ Conserve the physical resources used in agriculture.
- ☐ Conduct research into the biological, physical, social and economic aspects of existing and potential agricultural industries and improve the quality and efficiency of production and marketing.
- ☐ Provide diagnostic services for, and conduct research into, diseases of farm, sport, companion, zoo, native and laboratory animals and provide a range of species and

strains of animals of appropriate disease status for research and educational purposes.

- ☐ Provide an advisory service to agricultural producers, home gardeners and part-time farmers covering technical, economic and marketing factors.
- ☐ Provide agricultural expertise to developing countries in compliance with government policy.
- ☐ Administer funds made available for the improvement of primary production, rural reconstruction and assistance to rural producers who endure hardship as a result of natural disasters.
- ☐ Provide support services across the Department of Agriculture to facilitate the operation of the department's programs.

Programs

To achieve the objectives of the Department of Agriculture, eight programs of activities are being carried out.

- ☐ Agricultural Industries Policy
- ☐ Agricultural Crop Industries
- ☐ Horticultural Crop Industries
- ☐ Animal Industries
- ☐ Farm Management and Rural Community Support
- ☐ Agricultural Resource Management
- ☐ Overseas Agricultural Projects
- ☐ Veterinary Laboratory Services

Details of the resources allocated to each of these programs are provided in the Program Performance Budget papers which are presented to the South Australian Parliament each year during the budget estimate debates.

The current status of the industries served by these programs, the responsibilities met by the programs, likely developments in them, and the corporate goals planned by the Department of Agriculture in response to potential developments are described on subsequent pages.

Planning for the Future

A corporate planning approach

In reviewing its future activities for the next decade, the Department of Agriculture has adopted a corporate planning approach to develop its goals and strategies. This is a logical extension of the department's project-based management system, and is compatible with the South Australian Government's Program Performance Budgeting (PPB) system.

In preparing the current statement, recognition has been given to the dynamic nature of the planning process and the continuing need to monitor and review what should be achieved and what is being achieved within the resources available to the department.

The present and future scene

In carrying out its planning, the department has, within its broad corporate objectives and functions, attempted to identify the environment in which it is operating and sought to anticipate likely changes over a ten year planning horizon.

After reviewing all current activities, corporate goals have been established, setting out the new initiatives to be achieved, and by when.

Corporate goals — a definition

For planning purposes within the Department of Agriculture, a *corporate goal* has been defined as a proposal having a specified purpose within the objectives and functions of the department. It is responsive to the current and projected scenario in which the department is operating. It is embodied in a statement which is time-bound, achievable, includes a broad statement of strategies and is capable of evaluation.

Goals have been assigned to short, medium and long term categories. Short term goals are to be achieved within twelve months, medium term goals in one to three years, and long term goals during the next ten years.

Following a consideration of the potentially required and likely available manpower, finance and other resources, plans have been evolved to achieve the corporate goals identified for each of the department's programs.

Monitor and review

The implementation of these plans and their success in achieving the department's corporate goals will be monitored during each annual cycle of review. These goals and plans will be revised as necessary.

Since the planning process is being carried out within the overall context of PPB, the Department of Agriculture's PPB programs have been used as a structural basis for the planning process.

Agricultural Industries Policy

Introduction

South Australia's agricultural potential in the decade ahead will depend on many supply/demand factors that are independent of the production processes and technologies used on South Australian farms.

According to recent United States Department of Agriculture commentaries, agriculture in major food exporting countries is in a transitional phase with projections of a much tighter balance between food supplies and demands in the 1980s compared with chronic excess of supplies and the depressed farm prices during the 1970s. The transition from a "farm problem" to a "food problem" implies that there may develop a need to stimulate food production more rather than a need for adjustment and other assistance measures.

However, there are other emerging adjustment pressures on the demand for food, which will create further imbalances on international markets. These adjustment pressures relate to international trading policies and macro-economic factors such as differences in inflation rates and exchange rate fluctuations among trading nations. Within the mix of food commodities there will be significant changes, particularly in relativities among world commodity prices. All of these factors are external to the environment of South Australian farming, but will certainly exert a major and perhaps overriding influence on the production performance of the traded agricultural goods sector.

There is potential capacity to meet the projected growth in demand. However, production increases will probably be achieved at substantially higher costs in terms of opportunity costs of land, more intensive use of fertilizers and herbicides, higher yield variability on marginal lands, and higher machinery costs and could involve higher resource costs in terms of environmental pollution.

The gains from productivity increase are 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 and incomes over the long term from the projected transition from a buyers' to a sellers' market in many traded goods.

Modern agriculture is a diverse and complex system of related activities. Over time, the size of farming units becomes increasingly critical while the opportunities to increase productivity are limited. Improvements such as reduced tillage methods, more precisely determined fertilizer applications, higher yielding varieties and improved livestock strains assist in boosting returns and/or reducing costs. While these

innovations are available to broad-acre farmers in the wheat/sheep belt of South Australia, there are other areas of the State in which both returns and costs are likely to exhibit a continually declining trend in the terms of trade to agriculture. In horticultural production, the canning and processed fruit industries are likely to exhibit declining trends. On the other hand, small-scale vegetable production will probably increase.

In summary, agriculture in the 1980s in South Australia will be subject to the following factors which will influence trends in production.

- ☐ Unlike the 1970s, the 1980s will probably reveal a much tighter food supply/demand balance on international markets.
- ☐ There will be a number of adjustment pressures external to agriculture that will influence the growth of agricultural production in Australia. These include commodity price changes, surplus balance of payments and a potential lowering of protection across all industries.
- ☐ Agriculture will be influenced by the type of policy responses to each of these factors. For example, there will probably be a need for policies to actively encourage food production through emphasis on price and income stabilization measures. At the same time, surplus balance of payments problems can be met by currency revaluation or alternatively permitting a higher domestic inflation rate and encouraging imports. A gradual lowering in protection across all industries will expose our import-competing industries to greater foreign competition. Inevitably there will be a mix of policies designed to achieve alternative policy goals. However, the terms of trade in agriculture will continue to trend downwards and the rate of growth in agricultural output will slow significantly throughout the 1980s.

Although changes in some of the smaller industries, notably the dairy industry, have reduced their reliance on exports, South Australian agriculture (particularly the wool, mutton, wheat and beef industries) still primarily depends on export markets for its prosperity.

Overseas price subsidies

Most world markets are fashioned by influences that are beyond Australia's control. A major factor in some of these markets has been the practice of overseas governments, including the European Economic Community (EEC) and Japan, to protect their agricultural industries by subsidizing prices and, where necessary, even promoting exports at subsidized prices. These policies were introduced in the name of securing self-sufficiency of national food supplies, but there has been little evidence of willingness to modify them when self-sufficiency has been achieved. No changes of advantage to Australia are expected in the short term. Even if the EEC ultimately moves to control surplus production, Australia is unlikely to gain significant access to EEC markets.

Australia's competitive position

Australia's competitive position and the total demand for exported agricultural commodities depends on four principal factors, namely, exchange rates, the status of the world economy, Federal and State government policies affecting the rural sector and the growth in production efficiency on Australian farms.

Exchange rates

An increase in the real exchange rate means that in terms of returns to Australian farmers, the prices of commodities whose prices are determined on world markets decline relative to commodities whose prices are set within Australia. This disadvantages export producers in the competition for resources within Australia. It is also difficult to predict differential movements in exchange rates of countries from which inputs to Australian agriculture are obtained, but these changes will influence ultimate Australian profitability. There has been concern that the "mineral boom" and its preceding capital inflow could lead to significant appreciation in the value of Australia's currency, influence domestic inflation rates and affect the basic structure of Australian agricultural industries. It has been estimated from modelling projections of the effect of the resources boom on South Australian agriculture that outputs of major cereals (wheat and barley), wool, sheep meat and beef may decline by up to two per cent and rural employment by up to three per cent from what it would otherwise have been in the absence of a mining boom.

The prevailing sluggishness of the world economy may reduce the extent of these influences. However, there may be a strengthening in the real exchange rate of 10-15%, with a concomitant reduction in the real price of agricultural commodities of 5-10%, necessitating further adjustment and increased productivity and technical efficiency in Australian agriculture.

Status of the world economy

Export opportunities for Australia's rural commodities will depend on the strength of the economies of our trading partners and the world economy as a whole. The demand for those food exports such as beef where the consumer has the discretion to substitute lower-priced alternatives, will be directly influenced by overseas prosperity levels, by protectionist policies overseas oriented towards the livestock industries, limitations in livestock marketing and handling facilities in developing countries and the greater ease of handling grain imports. World price projections indicate that prices for meat products (especially beef) and fish exports will rise at four to five per cent annually relative to the slowest increasing group (manufactured products and machinery), wool prices will rise at two per cent while prices for wheat and dairy products are expected to remain constant in real terms.

It has become increasingly difficult to predict the outcome of current monetarist policies being followed by a number of major trading nations. In an effort to restrain inflation, interest rates have risen to record heights and unemployment in some industrialized countries has reached 10%. World economic activity in 1981-82 has remained at a lower level than previously expected. It is probable that the world economy will show only low rates of growth in the 1980s, thereby discouraging any rapid increase in consumer demand. However, high interest rates have led to lower overseas stock levels than might have conventionally been expected, so that even a marginal increase in demand could induce a significant upward movement of some commodity prices.

In view of the uncertainties in the progress of the world economy, the Department of Agriculture will need to maintain timely extension programmes attuned to current world commodity prospects. Increasing use will be made of regional outlook

conferences, published reviews of market prospects and the early identification of changes in market signals.

Government policies

Many government economic management policies will have an impact on agriculture directly or indirectly, for example through quotas and tariff protection. The majority of these policies are in the hands of the Commonwealth Government, and the South Australian Government's principal influence on these policies is through the submissions it makes to Commonwealth bodies such as the Industries Assistance Commission, the Commonwealth Working Party on Agricultural Policy, Federal Parliamentary Committees and investigations coordinated through Commonwealth departments. The frequency of these enquiries has increased in recent years and is expected to remain at a high level.

The Department of Agriculture has a responsibility to ensure that the potential impacts of Federal policy changes on South Australian agriculture are appreciated and that professionally prepared technical comments are available for the State Government so that submissions may be made before Federal decisions are finally taken.

At the same time, it is expected that farming organizations will continue the trend of the 1970s in becoming stronger organizations, whose policies are professionally prepared and capably evaluated, and will have a significant impact on government decision-making.

Increasing production efficiency

A crucial aspect of maintaining the competitive position of South Australian farmers will be to ensure that their rate of technological progress is at least as good or better than that of their competitors. This should be seen as a critical plank in the future planning of the Department of Agriculture. The department will place greater emphasis on problem-solving research at the regional and district level. It will have to identify and evolve significant new technologies and products. These can lead to increased efficiency, greater productivity and enhanced market opportunities, thereby lowering input costs in real terms per unit of production. The rural community generally appreciates the value of developmental programs, and is likely to be prepared to increase the resources, in real terms, which it invests in them. This may result in increased research resources funding in the 1980s, in contrast to the decrease in real terms in such funding during the 1970s.

To meet the needs of a changing agriculture, the department expects to restructure its research centre network in the 1980s. At the same time, it will benefit from the greater research rationalization which is being implemented nationally. Significant technological advances can be expected from research over the next decade.

New technologies must not only be developed, however, but proved on a commercial scale and accepted by farmers. This will require greater effectiveness of extension and communication programs. It is possible that industry will begin making a direct contribution to the cost of extension as well as research services if current State funding constraints have to continue, as seems likely.

Although governments are moving towards greater deregulation of industry, South Australian farmers remain strongly committed towards resource-protection regulatory programs such as quarantine, and these will remain an important departmental responsibility.

Adjustment

There is a wide range in the relative efficiency of farms. It has been shown that the top 25% of farms produce more than 50% of the agricultural output and do so with considerably less resources per unit of output than do the remainder. Economies of scale will continue to develop in agriculture. It is likely that owners of smaller farms will continue to choose to leave agriculture and that their farms will be amalgamated with other properties to form more viable units, but at a slower rate than in the recent past.

The pressures for adjustment will vary between commodities due to prevailing prices and environmental conditions. Some adjustment needs will be concentrated in regional locations. For example, the Riverland, with its labour-intensive irrigation blocks based on uncertain horticultural industries, is likely to undergo considerable change over the next few years. With this change may come increased demands for services from the Department of Agriculture. The department will need flexibility of resources in meeting industry adjustment needs as they arise. Hence the department will have to retain, even on a contracting budget, sufficient discretionary resources to meet these needs without becoming totally committed to fixed long-term projects. As capital investment and value of turnover per property increase there is likely to be an underlying need to provide advice and counselling on financial management, particularly with respect to borrowing.

The South Australian Department of Agriculture is in a unique position among such departments in being responsible for both the assessment and banking functions of Rural Adjustment and Rural Assistance schemes. These have advanced over $50 m to the rural community since passage of the initial legislation in 1971.

Additional finance is also available on a limited basis in response to certain natural disasters under the Primary Producers' Emergency Assistance Act. Integration with the State's agricultural advisory services has helped ensure best use of the funds available for primary producers. Whilst these funds operate primarily at the margins of the State's rural finance system, they have nevertheless aided the successful adjustment of more than 2 500 farmers to environmental and economic pressures in agriculture.

The future role of the Department of Agriculture in actually financing adjustment will need to be reviewed in the light of decisions made by the Federal Government on the recommendations of the Campbell Report (*Australian Financial System*. Final report of the committee of enquiry. September, 1981. Australian Government Publishing Service, Canberra), and further reviewed in the light of the actual performance of the financial sector following the Federal Government's decisions.

Enterprise specificity

During the 1980s, farmers are expected to continue the trend of the 1970s in which they moved toward greater enterprise specialisation in response to technological change and market forces. Sideline "mixed farm" enterprises such as dairying, pigs, poultry etc. have largely disappeared, having been replaced by specialist forms of production. Farmers (and hence advisers) will need to have better technical knowledge and decision-making aids and skills. However, they will be applying them on individual farms to a narrower range of enterprises. Whilst this will aid technological advancement within those enterprises, it may reduce the number of options available to the farmer. At the

same time, there will be a need to remain alert to the development of any significant new agricultural industries with potential for introduction into South Australia.

Conclusion

Adoption of corporate planning procedures should aid the Department of Agriculture in ensuring that its policies remain attuned to changing pressures on agriculture.

Current activities

The agricultural industries policy program provides the support necessary to develop a South Australian viewpoint on national agricultural issues, usually expressed at Standing Committee on Agriculture and Australian Agricultural Council. This is supported with specialist research resources in the field of agricultural economics.

Services such as those for rural assistance, rural adjustment and help in time of natural disaster are managed as part of this program. A range of Ministerial projects, many of them arising from agreements entered into by all state Ministers of Agriculture at Australian Agricultural Council, also form part of the work carried out within the agricultural industries policy program.

To further develop the effectiveness of current activities, the following goals have been identified for the agricultural industries policy program.

Corporate goals

Short term

- ☐ Initiate a review in 1982-83 to establish guidelines for interpreting, advising on and initiating policies that affect agriculture and agricultural policy, both in dealings within government and with industry bodies themselves.
- ☐ As an aid to providing more effective and relevant policy advice, develop by June 1983 an information system to identify Australian and world economic and trade policy changes relevant to South Australian agriculture and its agri-industries.
- ☐ Aid farm management decision-making on the use of external capital, by conducting an examination during 1982-83 of the range of problems associated with rural borrowing. Identify to government the potential need for any additional departmental counselling services.
- ☐ Based on the report of the Department of Agriculture Working Party on Marketing, establish the role to be played by the department in agricultural marketing in line with government policy.
- ☐ Develop and implement any approved changes in farm adjustment and financing policies and procedures for South Australia within twelve months of the announcement of Commonwealth Government decisions on the recommendations of the Campbell Report.

Medium term

- ☐ Improve the effectiveness of departmental services to the State's rural industries by

establishing, on an industry by industry basis, improved mechanisms for liaison between the department and industry.

Long term

- ☐ In collaboration with rural industries in South Australia, establish what statistical information is necessary for effective planning and management within those industries, identify what information is currently collected and its availability, and develop mechanisms to secure the supplementary data that may be required.

Agricultural Crop Industries

South Australian production of wheat and barley in the 1979 and 1980 seasons averaged a total of 3.7m tonnes compared with a 20 year average 1961-1980 of 2.1m tonnes, illustrating the major increase in plantings that has taken place in recent years.

Wheat

There is likely to be a general trend in the 1980s towards a tighter food supply/demand balance on international markets, with a transition from a world "farm problem" to that of a world "food problem". There will be greater demands by food importers. This is likely to underpin the position of South Australian cereal producers, who have increased their sowings in recent years. Although the short-term outlook is one of adequate world supply, income prospects for the wheat industry over the medium term remain sound. Current Bureau of Agricultural Economics (B.A.E.) projections suggest that if the world economy remains depressed, there could be a greater demand for cereals at the expense of beef.

South Australia is in a somewhat vulnerable position in regard to these developments. Technology is becoming available to increase cereal production through use of new varieties, new cultural techniques and closer rotations, and these changes are already being implemented. However, we are not fully aware of the economic implications of various new technological innovations, nor of their impact on alternative crop-livestock management systems. The impact on farm profitability of alternative practices such as minimum tillage, continuous cropping, trash farming, new and larger cropping implements, higher horsepower tractors, new herbicides and new grain and legume varieties is not well known, nor are we familiar with the impact of alternative practices on soil fertility, structure and disease status.

As well as considering the effects of new technology on farming practices, it is also necessary to consider the impact on profitability and soil systems of recently introduced pasture legume pest insects. Medic and lucerne pastures have previously contributed significantly to both pasture feed for livestock and to maintenance of soil fertility and structure.

The overall conclusion is that there is a need for continuing studies of the effects that each of these variables singly and as an inter-dependent group have on the profitability and soil resource of South Australian farmers. It is essential to quantify the effects of these farming practices and to devise appropriate strategies to reduce the

impact of some of the more damaging influences on the State's finite agricultural resources.

Coarse grains

Markets for coarse grains are likely to increase more rapidly than for wheat in the next decade. Consequently, the development and adoption of a higher yielding feed barley (Galleon) will improve the profitability of most South Australian cereal farmers. This development may lead to some short-term difficulties in maintaining adequate supplies of malting barley for traditional markets. A new malting variety is expected to become available within two years.

Grain legumes

There is potential for further development of grain legumes for both food and feed purposes. Field peas have been adapted for use as feed in the pig industry and there are opportunities for greater use in the dairy and poultry industries. There is scope to further develop the export market for peas as a source of livestock feed. With regard to human food, the expansion of the pea industry has enabled existing processors to develop export markets for yellow split peas. A field pea improvement project, strongly supported by industry, is designed to increase disease resistance and yields by developing a pea crop with upright, semi-leafless characteristics. Development of the faba bean crop for higher rainfall areas could lead to an expansion in plantings of this crop. The risk of disease is high and will have to be monitored closely by the department. Market development work will also be required to ensure that any rapid increase in production will have a ready market.

Triticale

Triticale development will depend entirely on existing and new varieties yielding better as crops and performing better in feed rations than wheat and barley varieties. Current pricing mechanisms by the Australian Wheat Board ensure that wheat remains competitive with triticale.

Cereal breeding

Some shifts in expenditure of revenue funds may occur in cereal breeding. There will be greater industry contributions towards this activity, in part enhanced by the department's own review of activities over the past two years. Cooperation between the breeders is good and closer administrative cooperation can be expected. Work is continuing on the development of new varieties.

Pasture species

The greater overseas potential for exports of pasture plant genetic material is unlikely to require further resources from within the department, particularly if the Commonwealth Government agrees to support the development of the Australian Plant Genetic

Resources network. This proposal could result in additional facilities being provided at the Parafield Plant Introduction Centre. South Australian seedgrowers can be expected to continue their strong overseas marketing orientation. Industry services provided by the department are now largely carried out on a cost-recovery basis and, with the introduction of a computer-based seed certification scheme, greater operating efficiency can be expected.

Considerable resources are being devoted to pasture species breeding, much of the funding coming from industry. Producers have high expectations of the breeding programs, and it is essential that new varieties are produced that gain wide acceptance within the next few years.

In general terms, the pasture seed industry appears not to need further departmental inputs during the 1980s, and there may well be potential for some savings through use of more efficient techniques.

"Genetic engineering"

The techniques that have been recently developed to influence gene recombination, commonly known as "genetic engineering", have excited considerable interest for their potential to increase the productivity of crop industries and other components of agriculture.

A number of research organizations, notably CSIRO within Australia, are developing programs in this area of expertise. Considerable resources are about to be invested, and competition has been engendered among research groups to initiate this work. It has become fashionable. The Department of Agriculture has no specific skills or expertise in this field.

"Genetic engineering" is likely to require quite specific technical equipment and highly specialized staff. In an era when rationalization is increasingly important, it would seem prudent not to enter this field prematurely when large numbers of other groups are involved. No investment for at least five years seems necessary, although progress by other research groups should be monitored.

Current activities

The agricultural crop industries program encompasses cereal, legume and other field crops and all pasture crops, whether grown for seed, hay or grazing.

Research work includes broadly-based variety testing trials, specific breeding and selection projects in oats, peas, wheat, subterranean clover, annual medics and lucerne, physiological studies on seed production and nitrogen fixation, and field studies of hay and silage-making, pasture ecology, herbicide use and control measures for annual ryegrass toxicity.

Advisory services located throughout the State provide production and marketing advice to growers and industry on field crops and pastures. Advisory staff also contribute to the preparation of independent annual estimates of field crop production.

Regulatory responsibilities include seed certification services and the maintenance of cultivar standards, the monitoring of pesticide residues in crops and supervision on behalf of the Commonwealth of grain export inspection services.

Goals for the future development of the agricultural crop industries program are as follows.

Corporate goals

Short term

- ☐ Establish during 1983 further multidisciplinary investigations of principal production components including alternative rotations, tillage systems, fertility changes, associated livestock practices and other input/output relationships in order to better understand and quantify the dryland farming system.
- ☐ Improve the profitability of dryland farming by further assessing the effects of insect pests on medics under commercial farming conditions and help mitigate these effects by development of appropriate programs of investigation and extension during 1983.
- ☐ Improve the effectiveness of field crop breeding and testing through progressive introduction, starting in 1982-83, of accepted recommendations of the Field Crop Improvement Review.
- ☐ Provide more effective introduction of high-quality agricultural seed to commerce by computerizing the operations of seed certification services during 1983.
- ☐ Seek a solution to the spread of toxicity in annual ryegrass pastures by appointing a bacteriologist to assist in the development of field control procedures.

Medium term

- ☐ Improve the level, and maintain the long-term stability of cereal production under changing farming systems, by promoting existing knowledge on the adoption of legume crops and pastures and appropriate tillage practices through a concentrated extension initiative to commence in 1983.
- ☐ Improve crop and livestock productivity through progressive development of pasture species recommendations based on more extensive testing under commercial conditions at a regional level.
- ☐ Improve the provision to industry and government of information for marketing and forecasting purposes by developing, by 1984, improved crop forecasting and seasonal monitoring systems.
- ☐ Improve the effectiveness of developing and establishing improved medic cultivars by upgrading the departmental operation of the medic gene pool to form part of the National Plant Genetic Resources Network.
- ☐ Enhance the provision of improved genetic material to the plant industries through the progressive upgrading, starting in 1984, of varietal testing and plant selection techniques and skills within the department.

Long term

- ☐ Increase production options for South Australian farmers by researching the potential for non-food crops.

Horticultural Crop Industries

The horticultural industries of South Australia have an annual gross value of production approaching $200m. However, they are currently the sector of primary production under the greatest economic pressure and have the greatest potential need for adjustment services.

Grapes

Wine-making is the major outlet for grapes grown in South Australia. Certain varieties of red wine grapes are being overproduced 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 past few years shown a quite dramatic decline in sales growth. While there are further options to improve the efficiency of the wine grape industry through use of high-yielding clonal and improved rootstock selections, additional irrigation, improved water quality and new trellis designs, there is a basic problem of over-production, in part exacerbated by wineries becoming more vertically integrated through establishing their own vineyards.

The downturn in brandy sales due to excise duty imposition is a further problem. The imposition of a wine tax and its effects on sales would worsen the over-production problems. Continued adjustment services and some exodus from the industry will be required to improve its stability.

For the past few years, the dried vine fruit section of the grape industry has received high returns. However, it is an opportunistic market and is strongly influenced by overseas cropping yields and the prevailing state of overseas markets. Approximately half of Australia's dried vine fruit is exported. South Australia is a relatively small dried vine fruit producer.

There is some potential for development of table grape and grape juice sales.

Canning deciduous fruit

The canning fruit industry underwent major restructuring in the early 1970s in response to changed overseas and local market demands.

This industry relies on export sales to take up 60% of its production. Continuing losses of export sales on EEC markets have resulted in surplus stocks of canned fruit. The South Australian canned peach industry is particularly affected by the Australia wide

surplus and the financially troubled Riverland Fruit Products cannery faces a difficult future. It will be necessary to develop nationally some rationalization both on the growing and canning side of the industry.

This industry is one where increased departmental resources may be necessary over the next five years to assist major adjustments.

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 barely meets Australia's requirements, there is room for a small expansion in production.

Pears

The two main areas in the State for pear production are the Adelaide Hills and the Riverland. The Hills production, consisting mainly of the variety Packham Triumph, is for fresh and export markets, while Riverland production, mainly the varieties Bartlett and Duchess, is for canning fruit. However, with the decline in the market for canning pears, the Duchess variety is being sold on the fresh market. The result of this action, especially from Victoria, 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) during 1979-80 in a total Australian production of 124 300 tonnes. There is some potential for increased exports of pears as they are well-regarded overseas.

Citrus

The Australian citrus industry is currently in a healthy position with demand for citrus juice being 30 per cent greater than supply. The unfulfilled juice demand is being supplied from overseas, mainly from Brazil. However, the local industry is protected by a variable tariff which is equivalent to about 25 cents per single-strength litre. A recent enquiry by the I.A.C. has suggested that this tariff should be progressively reduced.

Of the 40% of Australia's citrus produced by South Australia, predominantly in the Riverland, 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. If the industry remains stable, this trend would appear likely to continue. However, disruption through the threatened loss of import protection could lead to major restructuring being required. Coupled with adjustments already on the horizon for the canning fruit industry, the Department of Agriculture could become involved in changes with major social as well as economic consequences for the Riverland.

The need for adjustment, especially in the Riverland, will arise from both a need to upgrade plantings and irrigation systems and a need to respond to current and projected market situations. It should be noted that adjustment in horticulture is characterized by long lead times and high capital cost. It will demand specialized and highly skilled extension services from the Department of Agriculture.

Almonds

Australia's almond production is centred in South Australia and has been traditionally located in the Southern Vales area south of Adelaide. However, large plantings are being

developed in the north-west of Victoria. There is also an increase in plantings in the Riverland.

At present, this industry is 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 low import prices are not expected to be sustained in the long term. There is considerable potential to increase *per capita* consumption and hence allow further growth in the local industry provided the developments are of a large scale nature. There is scope for the introduction of new genetic material. The existing level of service to this industry will need to be maintained.

Apples

Apples are the major non-citrus fruit crop in South Australia and are principally grown by a small group of efficient producers 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 United Kingdom and Europe. Tasmania and Western Australia are looking for alternative markets within Australia to replace lost export markets. Hence South Australian producers face greater competition, especially in Victorian markets. Higher production levels in 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, and the local market has traditionally been well insulated from producers in other States.

Long-term storage techniques now allow the Adelaide market to be supplied for up to 11 months of the year. Some marketing problems derive from the fact that 60% of the current crop is Jonathans, which have a high incidence of storage disorders. There is some potential to increase consumption of processed apple products including juice, bar confectionery, apple rings and dehydrated apple crisps.

Cherries

These are produced by a scattered, very competitive group of growers as a high-risk venture with high labour costs at harvest. New varieties are being examined to determine whether the incidence of production defects, especially rain cracking, can be reduced.

Speciality fruits

There are limited opportunities to increase production of a number of high-value speciality fruits including avocados, kiwi fruit, dessert peaches and nectarines and berry fruits. Berry fruit growers are currently developing a cohesive industry.

Vegetables

The vegetable industry in South Australia consists of about 20 main vegetable crops and about 10 minor ones each with particular problems and needs. The most important crops are potatoes with a value in 1980-81 of $20m, onions ($10m) and glasshouse tomatoes

($8m). Others are brassica crops such as cauliflower, cabbage and brussel sprouts ($7m) and cucurbits ($2m). The total value of the vegetable industries is about $60m a year. Marketing issues are paramount in the future of the vegetable industry.

South Australia produces approximately 10% of Australia's potato crop. In 1981, 96 748 tonnes of potatoes were produced by 348 registered growers in South Australia with 80% of the crop being marketed through the South Australian Potato Board. In the coming decade it is likely that the number of growers in the industry will stabilize at approximately 300 in South Australia and production will slowly increase.

The potato supply system has an inherent tendency to over-supply the market between February and May and under-supply it between September and November. Growers are currently attempting to fill shortfalls in production (e.g. from September to November) by initiating production in new areas of South Australia.

There is a need for the Department of Agriculture to work closely with growers and processors to develop efficient potato production systems that permit potatoes to be produced throughout the year to meet the separate market requirements of the table trade, the crisp industry and the manufacture of frozen french fries.

State tomato production is about one million boxes, about three quarters of which is produced on the Northern Adelaide Plains and the remainder in the Riverland and at Murray Bridge. About 400 growers are involved on the Plains, many from non-English speaking backgrounds. Traditionally about half of the State's production has been consigned to the Melbourne fruit and vegetable wholesale market. With increasing production of good-quality produce from Queensland, South Australian growers are facing tremendous price pressure in the Melbourne market. There is a need to improve product quality for this market. The industry is hampered by lack of a single industry organization accepted by all growers. A substantial extension and research program to assist tomato growers will be required in the short to medium term. Particular consideration is being given to the needs of this diverse ethnic community through provision of specialist communication services.

Ornamental horticulture

The ornamental horticultural industry comprises cut flower production and nurseries (bedding plants, pot plants and ferns, native plants, and various trees).

In South Australia in 1978 there were 385 nurseries, a production area of 196 ha, 896 employed persons and $10.13m of sales. Most holdings are within the Adelaide metropolitan area or near to Adelaide. There is considerable potential to increase exports, native proteaceous flowers having attracted particular attention. Ornamental horticulture is one of the few agricultural industries with major growth potential in terms of increased opportunities for export earning, increased employment, and an increased share of the domestic consumer's discretionary dollar.

Horticultural plant breeding

The possible initiation of a Plant Variety Rights Scheme could make available a wide range of horticultural and other plant material. This would place new demands on the Department of Agriculture for virus indexing and performance testing of the introduced material. It also opens up new plant breeding possibilities which must be assessed.

Current activities

Within the horticultural crop industries program, effort is directed to servicing the pome fruit, citrus, stone fruit, grape and vegetable industries, together with a group of smaller industries encompassed within general horticulture. Services are particularly directed to the centres of horticultural production in the Adelaide Hills and on the northern Adelaide Plains, in the Barossa Valley and the Riverland, on the Lower Murray, and in the Southern Vales and the lower South-East.

Experimental work includes varietal assessment, crop production studies, development of techniques for integrated pest control, pruning and trellising techniques, identification of new crops, studies in wine quality, post-harvest research and examinations of alternative marketing systems. The research work is underpinned through the operation of research centres at Loxton, Lenswood and Nuriootpa.

Extension services provide production and marketing advice to growers and industry. Specific production advice is available for each of the principal crops, and general block redevelopment advice is also available. Specialist irrigation advisory services are one feature of the horticultural crop industries program.

Regulatory responsibilities include fresh and dried fruit export standards carried out on behalf of the Commonwealth, and assistance in determining wine grape prices under the relevant legislation.

Goals covering new initiatives for the horticultural crop industries are as follows.

Corporate goals

Short term

- ☐ Develop a more stable wine grape industry by promoting the establishment of a State wine grape industry body during 1983.
- ☐ Improve the profitability of Riverland growers by providing options for redeveloping their mixed fruit properties by using a mathematical modelling approach.
- ☐ Increase the competitiveness and efficiency of the vegetable industry by initiating with industry during 1983 an information system giving expected gross margins of alternative crops.
- ☐ Assess by June 1983 the potential for the ornamental horticulture and nursery industries in South Australia and the role of the department in such development.
- ☐ Help growers capitalize on any potential benefits from the introduction of Plant Variety Rights, by developing appropriate policies, and research and extension initiatives.
- ☐ In view of the economic and social problems and adjustment pressures currently facing the horticultural industries, review the adequacy and effectiveness of Department of Agriculture services to those industries.

Medium term

- ☐ Assist the glasshouse tomato industry to restructure its production and marketing over the next three years to meet changing market preferences and increased competition in the Melbourne market through varietal evaluation, educational

programs, encouragement of industry unity, and investigations of the potential for alternative glasshouse crops and new markets for them.

- ☐ Review the potential to provide more effective research, development and extension services to the wine grape industry through rationalizing projects with the four other institutions currently servicing the wine industry in South Australia.

Long term

- ☐ Assist the cost-competitiveness of the South Australian-based national almond industry in world competition by investigating, adapting and advising on the technology of new almond production systems and new planting material.
- ☐ Improve the potential efficiency of the horticultural industries by extending the range of plantings of superior genetic material and the extent to which these are available to growers.
- ☐ Assist the established horticultural industries to adjust to changing market pressures and to maintain their cost-competitiveness and market share with interstate growers through research and extension aimed at more effective crop production and marketing systems combined with improved advice on the economic aspects of block management.
- ☐ Review the potential for and, where appropriate, foster the development of new horticultural industries with local and overseas market potential by investigating the required cultural, harvesting and marketing technology.

Animal Industries

The gross value of production from South Australia's animal industries in 1980-81 was more than $630m.

Wool

Wool prices have shown a steady rise over the past year, but a slight downward trend is likely in real prices during the next decade. While oil prices are notoriously difficult to forecast, the current expectation is that they will increase at a real annual rate of only three per cent, resulting in greater competitive pressure from synthetic fibres. Continual technical development of synthetics has meant the development of new fibres whose characteristics more nearly approach wool. Furthermore, the input-cost rises in the synthetic fibre industry from the mid-1970s have encouraged increased manufacturing efficiency. There is also some evidence of reducing pressure on the environmental standards imposed on manufacturing plants, thereby containing further input-cost rises for synthetics subject to these requirements.

Woolgrowers will most likely be under increasing economic pressure in the 1980s, and further technological advancement will be required to maintain wool's competitive position on the fibre market. Sheep breeding will provide greater recognition for objectively measured characteristics, and wool selling may be simplified through use of sale-by-description procedures. Farmers and Department of Agriculture extension staff will need to maintain close familiarity with the latest advances in on-farm wool handling. The rising cost of wool harvesting could limit the extent of productivity improvements in the wool industry. Automated mechanical shearing with associated sheep delivery systems appears to be some years away. There will be continued opportunities to improve flock health standards.

Sheep meat

Some 88% of the mutton kill is exported, but only 14% of the lamb kill. To the total Australian sheep kill of 29.1 million head must be added the additional 5.8 million sheep exported live. The interrelation between the live sheep export, sheep meat and wool components of the sheep industry will be crucial to the profitability of sheep husbandry in the 1980s.

The probability is that sheep meat exports will continue through the 1980s at current levels, but greater uncertainty exists as to the future of the live sheep export trade. A few commentators believe that the live sheep trade is a passing phenomenon which will gradually phase out as buyers develop their own chilled meat handling facilities. There is also limited community pressure on the grounds of animal welfare to reduce this trade.

The South Australian Government takes the view that the live sheep trade is a continuing industry in its own right. It will ensure that such research and extension needs as may be required are met, and that the industry is maintained. From the shipping viewpoint, there have already been significant technological improvements over the past five years.

The size of the sheep industry will be limited by the feed resources available to support it. Drought and its attendant risk of environmental damage remains a problem in the South Australian dryland farming areas. This is currently being exacerbated by the increased areas now being devoted to cereal production.

Advisory staff will need to maintain a sensitive awareness of the delicate interrelation of these variables in the current economic climate.

Dairy

Only 18% of Australia's dairy products are now exported, though South Australia's export cheese industry is still significant. A further reduction in the level of production available for export is likely. The South Australian dairy manufacturing industry has been restructured in recent years, and is facing fewer problems than comparable industries interstate.

The future of the industry is still threatened by a number of unpredictable events including possible disruption of domestic markets by imported New Zealand dairy products following the development of Closer Economic Relations (although New Zealand Government assurances and subsequent industry agreements now suggest that this will not occur), the breakdown of present control mechanisms which limit the extent to which UHT milk can compete with fresh milk, and a more general breakdown in orderly whole-milk marketing arrangements between the States.

If disturbances due to these factors can be avoided it is likely there will be a slow drift of the industry towards Fleurieu Peninsula, but little additional movement to the South East despite its better environmental conditions for dairying and the introduction of a price augmentation scheme. There could be some further limited expansion of dairying in the mid-North and Yorke Peninsula based on Golden North. Over the next 10 years, about 200 smaller producers are expected to leave the industry with about 1 000 dairy farmers remaining. Cow numbers may fall from 110 000 to 90 000, but with little reduction in milk production.

Over the next decade, changes can be expected in the role of the Australian Dairy Corporation and its relationship to the State milk marketing authorities following the sharp decline in dairy exports.

Beef

Improvement in the overseas beef market will depend on a recovery of the world economy and may also be influenced by the extent to which countries such as those of the

EEC are prepared to continue to subsidize their exports which are now reaching major proportions. It seems that the most likely outcome during the 1980s is for a moderate rate of herd building over the next few years in response to favourable beef prices. The South Australian beef herd currently stands at 1.1 million head. Some easing of prices later in the decade is expected, but the magnitude and timing of any market downturn is unpredictable. What is predictable is that uncertainty and instability will remain a feature of the industry.

Although transport improvements have resulted in changed beef production systems in the pastoral areas, which now contain 18% of the State's beef cattle, there are unlikely to be dramatic production changes in the South Australian beef industry in the next decade. There will be continuing pressures to improve production efficiency, particularly in response to seasonal and market forces. Completion of the Brucellosis-Tuberculosis Eradication Campaign should be achieved within a few years—a campaign which has brought an increased appreciation of the importance of other aspects of herd health among producers.

Input-cost reductions can be expected to be achieved by containment of handling and transport expenses through development of alternative selling systems and the adoption of carcass classification. (About 60-70% of beef cattle are still sold by physical relocation to auction yards prior to slaughter).

Any changes in the meat processing industry will be mainly limited to country slaughterhouses as a result of the new South Australian meat hygiene legislation. Though now much less of a problem in South Australia, rationalization among meatworks interstate will continue in the early 1980s due to the pronounced surplus of killing capacity which arose during the mid-1970s.

A greater entrepreneurial role is likely to be taken by the Australian Meat and Livestock Corporation in the 1980s.

Pigs

This is a stable industry, with about 80% of production coming from 20% of herds. The industry has no significant overseas exports and no change in the level of exports is expected. Current production efficiency compares well with world standards.

There may be some further movement towards intensive pig units but, for the time being, the high cost of capital will preclude any radical change in the current composition of the industry. There may be some limited opportunities to increase domestic consumption through sales by fast-food outlets.

The pig industry has an above-average standard of internal self-management and major departmental inputs should not be required over the next decade.

Chicken meat

Remarkable production efficiency improvements have been achieved by this industry in the past 15 years, with concomitant domestic market expansion (1 kg of chicken meat now represents less than 1% of average weekly earnings; 15 years ago the price was equivalent to 10% of average weekly earnings). The phase of rapid production expansion in this industry came to a rather abrupt halt in 1979. Nationally, potential over-production is now a problem. Changes to poultry industry Acts in other States can be expected in the next few years to bring them more into line with that extant in South Australia. If the legislation in other States is so structured as to allow the industry to

identify and regulate its own affairs, as it appears to be doing satisfactorily in this State, major adjustment within the industry should not be required during the 1980s. The risk of new poultry diseases remains one of the major potential problems of the industry.

In an industry which is now largely vertically integrated, has a high degree of self-regulation, and has reached a level of stability after a period of spectacular growth, there will be little need for major departmental inputs to aid chicken meat production in the 1980s, though some guidance may be required in helping the industry reach a consensus with the community at large on changing expectations for animal welfare. More efficient servicing of the chicken meat industry should follow from development of integrated services for poultry health and husbandry.

Eggs

The egg industry has had an orderly marketing system through the 1970s, with controls on entry to the industry and prices based on production costs, a procedure which has the potential to insulate producers from the necessity for technological change and adjustment. The marketing system depends on cooperation between the States on the continued operation of their egg stabilization schemes. Removal of any one State from the scheme would cause collapse in the established orderly marketing system.

If this happens, significant adjustment pressures could develop among egg producers. The South Australian industry has 12 producers with over 20 000 birds, 40 with 5 000 to 20 000 birds, but 76 producers with 1 000 to 5 000 birds. There are 560 producers with flocks of less than 1 000 birds. The nett result is that one-third of the total number of birds are in the hands of 12 producers.

Increased interest in bird welfare is likely to generate a demand for a greater understanding of behavioural characteristics of poultry.

Since the egg industry does not have the level of vertical integration that occurs in the chicken meat industry, proportionately more advisory services will need to be provided, especially if the need for adjustment becomes pronounced. Current changes to the department's poultry health and husbandry services are opportune to prepare for likely adjustments in the egg industry in the 1980s.

Genetic resources

With the opening of the livestock introduction station on the Cocos (Keeling) Islands, and the development of the Australian National Animal Health Laboratory at Geelong, and the possible construction of a poultry introduction facility at Torrens Island, there will be greater opportunities to introduce new animal genetic material to Australia. It is suggested that whilst these opportunities will not necessarily lead to rapid advances in the genetic quality of our livestock, they could generate potential for capital gains from novel genetic material. There could be a need for the department to maintain some resources for the objective evaluation of new introductions, preferably on a "client-pays" basis.

At the same time, the potential for South Australian livestock overseas should continue to be pressed through Sagric International Pty. Ltd.

Current activities

The animal industries program provides services to the beef, sheep meat, wool, dairy, pig, chicken meat, egg and apicultural industries.

Research work covers reproduction and genetics, animal production and husbandry, and herd and flock health requirements of the various industries. In addition, some research projects are directed to particular facets of specific industries, including studies into product quality of meat, wool, milk and egg production systems, and the particular research needs of the dairy manufacturing industry. Ruminant nutrition research is also carried out. Specialist research centres at Northfield (dairy, pigs), Parafield (poultry) and Struan (beef cattle) are primarily for animal research, while significant research for the animal industries is also carried out at the Turretfield, Kybybolite and Parndana Research Centres.

Advisory services are provided to livestock producers throughout the State on health and husbandry aspects of animal production. Where appropriate, encouragement is given to herd and flock improvement programs, though the cost of these services is primarily borne by producers themselves. Particular attention is being given to developing new marketing systems based on sale by description.

Regulatory requirements cover the whole spectrum of herd and flock health and disease eradication responsibilities, with major current emphasis being given to the national Brucellosis and Tuberculosis Eradication Campaign. Codes of practice are being implemented for various aspects of production and manufacturing systems according to accepted national standards. Meat hygiene supervision is an important new responsibility which was introduced in 1981.

The Department of Agriculture has identified the following goals for its animal industries program.

Corporate goals

Short term

- ☐ Increase the effectiveness of services to the poultry industry by implementing proposals for an integrated poultry health and husbandry extension service during 1982-83.
- ☐ Protect the quality of meat to consumers by preparing amendments to regulate the handling of pet meat and to control the standards of hygiene and construction of poultry processing plants in line with Australian Agricultural Council resolutions.
- ☐ Improve the quality of livestock products at consumer level by increased surveillance during 1982-83 of pesticide and antibiotic residues.
- ☐ Develop the management role of the Department of Agriculture in farm, laboratory and experimental animal welfare by June 1983.

Medium term

- ☐ Reduce the extent of regulation and legislation controlling the animal industries by reviewing proposals to amalgamate the Artificial Breeding Act and Stock Diseases Act, examining the requirements for the Brands Act, and amalgamating the Agricultural Chemicals and Stock Medicines Act.

- ☐ Undertake a client survey into attitudes to animal health regulation and its implementation, to improve the effectiveness with which the animal industries are protected by animal health regulatory activities.
- ☐ Reduce the dependence of stockowners on provision of health services by the public sector, by progressively transferring disease-investigation activities to the private sector.
- ☐ Establish a computer-based data bank of epidemiological information to aid the development of improved standards of animal health in producers' herds and flocks.
- ☐ Encourage quality and productivity improvement in the cheese industry through encouraging completion of Code of Practice factory improvements, the development of a Code of Hygienic Practice in cheese manufacture, the upgrading of correspondence courses in cheesemaking, the review of current dairy industry regulation, and the development of new processing technology.
- ☐ Optimize productivity of pastoral livestock industries and minimize environmental impact by assessing production parameters and carrying out necessary research and extension.

Long term

- ☐ Assist the profitability of mixed farming by on-farm research to develop a better understanding in economic and management terms of the place of livestock on cereal farms.
- ☐ Improve the profitability of the sheep industry through genetic improvement programs leading to improved fertility and fecundity, greater resistance to blowfly strike and improved wool quality with a lower incidence of pigmented fibres.
- ☐ Improve the efficiency of milk production through promotion of the Australian Dairy Herd Improvement Scheme as an aid to genetic improvement in dairy herds and the development and promotion of more economical dairy cattle nutrition.
- ☐ Improve the efficiency of lamb, pig and beef marketing systems through seeking the progressive development and national acceptance of sale-by-description techniques with a view to their routine use in all three industries by 1986.

Farm Management and Rural Community Support

Farm decision-making is becoming increasingly complex with diversity in the scale and nature of operations. Changes are also taking place in the composition of the rural communities themselves. Primary producers have a continuing need for expert advice and assistance with the economic management of their farms and the marketing of their products. This advice must be attuned to both farmer and community aspirations.

The rural community

Current services reflect the pattern of development of South Australia's agriculture. During the first half of this century, much departmental effort was associated with the development of new agricultural lands. This meant serving an expanding population and involved identifying and advising on technical solutions to unforeseen problems (e.g. soil stability, mineral nutrition, pasture composition). The clients were generally young and entrepreneurial and had many objectives in common. These agricultural decision-makers, being confined to a narrow age group, laid the foundations for the cyclical population changes still evident in many sectors of the South Australian rural population today.

At the same time, the department was also serving the settled agricultural areas. These had completed their developmental phase and had entered a period of consolidation characterised by adjustment to a continually changing technology, the substitution of capital for labour and, in some instances, lowering of production expectations to match the ultimately established potential of the land.

By the end of the 1950s, there remained few large tracts of the State with undeveloped potential for agriculture. Since then, the department has become increasingly oriented to servicing a settled agriculture whose participants are primarily faced with continuing adjustment pressures.

The population in the settled agricultural areas has been in decline since 1911 in response to such pressures and, except for a short period immediately after World War II, was not offset by increases in areas where new agricultural development was occurring. Population decline has been especially significant in the Northern Yorke Peninsula, mid-Eyre Peninsula and Murray Mallee wheat/sheep areas, and has also been occurring in the mid-South East.

Recent population studies of South Australian non-metropolitan local government areas suggest that in the 1970s there was more stability and growth in the

rural population as a whole than at any time since 1911. (It is notable that on-farm employment increased by 5% between 1978 and 1981, reversing a long-term declining trend.)

This increased stability reflects the major adjustments initiated in the previous two decades as a result of depressed overseas commodity demands, which led to wheat quotas and very low wool prices. (From 1954 to 1970, agriculture's share of the GDP fell from 19% to 9%. It was 8% in 1980-81.) Population stability may well be maintained in South Australian rural areas in the 1980s.

Whilst the post-war "baby boom" has resulted in a burgeoning of the 20-39 statistical age group in the general community, there are some specific differences among the agricultural areas, seemingly influenced by cyclical changes dating from the time of the original land development.

Although contracting in other rural areas, the 30-39 age group is expanding in the Western Eyre Peninsula, Upper Eyre Peninsula, Mid North, Yorke Peninsula, Adelaide Hills and Fleurieu Peninsula and in the Lower South East. In most of these areas, there is an associated contraction in the 40-54 age group and an increase in the post-55 age group. Members of the latter group will become less significant in agricultural decision-making as they retire.

The average age of farmers is decreasing. In those regions where decision-makers are predominantly in the 30-40 age group, farmers are likely to be more innovative and adaptable to change. They may well have a greater demand for advisory services and a greater propensity to implement the advice given. There is a particular need to support and encourage developing rural leaders through the Rural Youth Movement.

During the period 1966-76, there was a major change in population in the areas surrounding Adelaide—the so-called "peri-urban" areas. A significant proportion of the Adelaide-employed population developed residential roots in a rural or semi-rural environment, resulting in the creation of a hobby farm-commuting zone around the city. Increased commuting costs have since slowed this change. It is hypothesized that hobby farms will not require substantial departmental services in the 1980s, and their expansion will not continue at the previous rate. Furthermore, the level of expertise is progressively rising among hobby farmers, though there is continual change through newcomers replacing those foregoing recreational agriculture.

However, the replacement of commercial farm land by the hobby farm-commuting zone has created a zone of agricultural intensification just beyond the commuting zone through the development of more intensive livestock and horticultural industries in areas such as Balaklava, Kapunda, Murray Bridge and Victor Harbor. Consequently, the reversal of the previous population declines in the rural areas surrounding these towns has been more dramatic than elsewhere and signals a potentially greater demand for specialized agricultural services.

It can be concluded that the department in its planning process must utilize demographic characteristics among other information in identifying those areas of the State which will have higher priorities for service. These priorities will be influenced by both the halting of the overall decline in the rural population, and the increased receptivity of younger farmers for innovation and implementation of technological change. The department will need to be able to secure and provide the resources to meet this challenge, and to locate them where they will best do so.

The new technology

Farm management decision-making is entering a phase of revolutionary change based on electronic technology. Applications of this technology have been developing for about 20 years. Although the Department of Agriculture has a number of officers with expertise in this area, not all of its investments in this field have been successful. It is certain that electronic aids will have a major impact on agriculture within the next 10 years, but there is as yet no real consensus about the relative significance of the various innovations which are becoming available. The department needs to develop a broader foundation upon which to evaluate the potential for electronics in agriculture and to determine how producers' needs can best be met.

Younger farmers are already exposed to computers in their formal education. Provision of adequate management information is becoming even more important in today's farming. Within 10 years, farmers will be seeking to access data bases with their own terminals and could have the means to print out those data they wish to retain. The establishment of a Videotex trial by the department may show the potential for such systems.

A variety of software programs covering partial budgets, discounted cash flows, gross margins, farm planning, feeding strategies and breeding plans are becoming available. It is likely that the department will be asked to provide advice on the merits of alternatives, and comprehensive training programs for advisers in this area will be necessary.

A greater understanding of the impact of changes to the farming system, such as use of alternative machinery options, alternative cropping rotations or alternative enterprise mixes will become possible through the development of modelling procedures for agriculture. (It is also likely that electronically programmed equipment "robots" could begin to play a role in physical agriculture within a decade. Routine tasks such as shearing, tractor operation, irrigation, intensive animal feeding and product handling lend themselves to this type of development. The department will in due course need to develop expertise in this field.)

In addition, to support its community services there will be a need for the Department of Agriculture to develop a more comprehensive internal computer-based information system from which its own managers and field staff can call up information to meet their needs. Such a system could encompass budgeted finance and manpower management, project objectives, resources and achievements, planning information, industry production records, Acts and regulations, committee membership, and personnel, staff structure and leave records, etc. Some preliminary work has already been carried out towards developing such a system.

Social changes

The development of departmental services will also need to take account of social changes in rural areas. There is likely to be greater population stability in rural areas over the next decade. The number of elderly will increase, strengthening the infrastructure of larger country towns. Most broadacre farms in the cereal/sheep zone will continue to operate as family enterprises. It seems likely that there will be less pressure from external investment sources in agriculture in South Australia than in some other States. While some of the intensive agricultural industries produce significant quantities

of products, the total number of such enterprises is not great and the high cost of capital may well inhibit any great expansion in their numbers for the time being.

The needs of specific ethnic communities will become increasingly oriented to the problems of aging, and will become less significant in technical agriculture.

Women, who have traditionally played a much stronger role in farm management decision-making than is generally realized, will become more directly involved in farm operations, and will also make a greater contribution to the setting of agricultural policies.

Current activities

The farm management and rural community support program provides a range of services to the rural community, integrated across conventional industry boundaries.

Advisory services on farm management decision-making, including alternative enterprise mix combinations and more specific farm mechanization extension services, are being provided. Commercial market advisory services are being monitored. An Extension Services Division provides a range of equipment and publications facilities for use in all the advisory services of the department.

Research is carried out by a specialist social research unit into the effectiveness of the department's extension services and into demographic and social changes in the agricultural community. Agricultural systems research is also being carried out to back up field advisory services.

The following goals highlight the thrusts that have been developed for the farm management and rural community support program in the next few years.

Corporate goals

Short term

- ☐ Develop a computerized farm-monitoring system for South Australian agriculture in 1983.
- ☐ Develop leadership qualities in young people who are entering rural practice in their own right by appointing a training and development officer in 1982-83 to serve the Rural Youth Movement.
- ☐ Improve the effectiveness of farm management decision-making through more effective extension services by introducing during 1982-83 special training for advisory staff in the use of micro-computers and associated software in agriculture.
- ☐ Improve the timeliness and accuracy of farm costs and returns information available to farmers by investigating means during 1983 for more frequent up-dates of the available information.

Medium term

- ☐ Promote farmer understanding of relevant legislation, regulations, and government policies through education with a view to decreasing dependence on regulatory procedures, including prosecution.

- ☐ Advance the effectiveness of farm machinery decision-making by developing machinery decision models with respect to both operational and purchasing decisions, and making them progressively available to farmers.
- ☐ Implement Videotex and Viewdata services when it has been shown, by monitoring and annually reviewing the development of these services in Australia, that such services have become cost-effective to the Department of Agriculture and to a significant proportion of rural audiences.
- ☐ Improve the effectiveness with which advisory services are provided to the rural community by further developing the use of a planned approach to extension and implement any necessary staff training which may be required.
- ☐ Improve the provision of market information services by developing a computerized market information system and providing greater opportunities for professional development of officers in the marketing field.
- ☐ Improve the effectiveness of extension programs by developing mechanisms to monitor and extend information on population trends and the changing agricultural environment.

Long term

- ☐ Extend to the rural community the evolving benefits of the electronic media to provide accurate and timely management advice on a wide range of issues of concern to rural people.

Agricultural Resource Management

The successful continuity of agriculture depends on effectively managing the resources upon which the production systems are based. South Australians, in the driest State of the driest continent, operate within a very sensitive and fragile ecosystem. The increasing pressure on agricultural resources, particularly in the cereal industry, has the potential to generate some undesirable environmental changes in the 1980s.

Soil

Responses to changes in the traditional South Australian dryland farming system will need to be monitored due to increased intensity of cereal cropping, variations in pasture use, alternative tillage and stubble handling technology and changed fertiliser use patterns. Soil science skills will need to be maintained and integrated with those of crop agronomists and livestock officers. Following the initiation of a soil conservation program in 1982, it will become necessary by the mid-1980s to review its effectiveness and to determine the future level of public fund investment in soil conservation.

Water

Although the significance of water to South Australia has long been realized, increasing consideration has been given to the management of water supplies and their quality, including problems of pollution, over the past 10 years. This is particularly highlighted through the attention that has been focused on the River Murray through the River Murray Overview Study, though it should be pointed out that only half of the irrigators in South Australia are dependent on the Murray as their water source.

During the 1980s, there will be increasing competition for water resources between the urban and rural users leading to a requirement for increased irrigation efficiency and a tighter control on any water pollution in the rural sector. The increased cost of capital for providing water supplies will lead to an increased emphasis on development of "fringe" sources of water. There will be an increase in effort into developing "demand management" systems through water pricing and increased expertise. Because access to water for irrigation and for stock increases the range of production options on "non-irrigation" farms, there will be a continuing demand for economic advice to maximize returns from a combination of enterprises under the restraint of limited water supplies. This will also occur on irrigation farms subject to increased water costs and decreased allocations.

The Department of Agriculture is likely to continue to be requested to support the Engineering and Water Supply Department through provision of irrigation and water conservation expertise at farm level. Previous projects have included the evaluation of effluent from Bolivar, the identification of drainage alternatives for the South East and a review of water quality standards in the Riverland horticultural areas. Current work includes the major River Murray Irrigation and Salinity Program. Although effective informal relations exist between professionals within different departments contributing to water management, increased formalization of responsibilities at the planning stage would be advantageous.

The Department of Agriculture in its own right has a responsibility to ensure improved efficiency of water use through extension of improved irrigation practices. Given the importance of the water resource to South Australia, and the role of improved irrigation in protecting that resource, such programs are of high priority.

Quarantine

The importance of maintaining vigilant quarantine services was demonstrated in the 1970s when serious re-orientation of our cereal and livestock farming became necessary following the introduction of sitona weevil and the pasture aphids. There is very strong support for both plant and animal quarantine programs among producers, and any reduction in the effectiveness of these services appears undesirable. Nevertheless, they are labour-intensive. A total review of current operations should be carried out to see whether new, more efficient procedures could be developed, particularly making use of electronic information systems, while at the same time ensuring that the State still retains the ability to respond effectively to any plant or animal quarantine emergency.

Environmental protection — chemicals

There will be continual pressure for high standards of protection of the environment from chemical residues. The department is introducing a computer-based information system for use by the agricultural and veterinary chemicals unit, and is re-orienting and coordinating the management of its responsibilities in this area.

Potential for a coordinated approach to resource protection

The current amalgamation of the Vertebrate Pests Control Authority and the Pest Plants Commission shows the potential for greater coordination of effort in the general area of environmental protection in the 1980s. There are likely to be technical and economic advantages resulting from progressive integration of a number of agricultural resource protection responsibilities which are currently encompassed within separate pieces of legislation. This approach is likely to be developed during the 1980s.

Current activities

The purpose of this program is the protection of the resources upon which the State's agriculture depends. The program pays particular attention to the soil and water resources of South Australia, and to the protection of crops and livestock from invasion by pest plants, pest animals, noxious insects and plant pathogens. At the same time,

quarantine procedures, some carried out on behalf of the Commonwealth Government, protect the State's agriculture from the entry of exotic plant and animal diseases.

Research work is being carried out into soil conservation and management techniques, including new tillage and rotation practices and their impact on soil structure and fertility. Water use studies, some carried out in close association with the Engineering and Water Supply Department, are directed towards irrigation practices, salinity, crop requirements, catchment hydrology and waste water utilization. Biological studies into the control of various weeds, vertebrate pests, insects and plant diseases are being carried out, with particular attention being given to cereal and horticultural crop diseases and stored product insect pests.

Advisory services are provided in soil conservation and cultivation methods, a major thrust being the development of group catchment schemes under the recently introduced national soil conservation program. Extension services are provided for water conservation and irrigation practices, while advice on pest plants and vertebrate pest problems is provided by local government. Insect and plant disease identification services are provided by specialist units, and a small advisory service on quarantine is maintained to highlight to the public the importance of this function.

Regulatory activities are directed through the Soil Conservation Boards, the Pest Plants Commission and the Vertebrate Pest Control Authority, assistance being given to local government, where necessary, to support their contribution to these activities. One of the more conspicuous of the department's resource protection activities is its long-standing campaign in Adelaide to keep the city free of fruit fly.

Corporate goals for the 1980s to further increase the efffectiveness and efficiency of current agricultural resource management activities are listed below.

Corporate goals

Short term

- ☐ Improve efficiency of irrigation water use by increasing the extension resources devoted in 1983 to adoption of improved irrigation and salt mitigation practices.
- ☐ Develop strategies to overcome deleterious effects of soil pathogens on cereal, vegetable and horticultural crop production by establishing during 1983 the resources to assess these effects, especially at regional level.
- ☐ Maintain the protection of South Australia's agricultural and horticultural industries, whilst developing more cost-efficient means of preventing entry into the State of exotic plant pests and diseases, by initiating a review during 1983 of current road block and fruit fly surveillance operations.
- ☐ Protect and maintain the resources of the arid zone by investigating during 1983 the need for research and extension services to be provided by the Department of Agriculture and kindred organizations.

Medium term

- ☐ Advance the understanding of the agricultural potential of the State by establishing a data-base on the soil, water, land use capabilities and climate/yield information of all regions.

- ☐ Improve the conservation of the State's soil resources by carrying out a detailed assessment of the established group conservation schemes by 1986 with a view to progressive introduction of further group schemes.
- ☐ Improve the local management of land resources by developing by 1985, both within the Department of Agriculture and the farming community, an integrated management concept bringing together statutory responsibilities for insect, plant pest, vertebrate pest and soil conservation activities.
- ☐ Protect the State's resources by development of improved techniques for detection and prevention of soil and water pollution, including methods for waste water re-use.
- ☐ Protect the State's animal resources by developing procedures by 1984 for oversight of non-domesticated exotic animal collections including those in zoos and aviaries.
- ☐ Improve community understanding of the value of and competition for the State's water resources through joint involvement with Engineering and Water Supply Department in economic research and community educational programs, starting in 1983.

Long term

- ☐ Conserve the State's soil resources by increasing research and on-farm investigation into the effects on soil fertility and stability of shorter cropping rotations and new tillage methods, and alternative animal management systems.

Overseas Agricultural Projects and Market Development

The Department of Agriculture has been involved in the transfer of agricultural technology to other countries for many years. Initially, this took the form of providing individual technical experts for short term consultancies. Development led to teams of experts being deployed and later whole project implementation was undertaken. Project design and execution followed. The objective has always been to promote the export of South Australian goods and services through a commercially viable operation.

At present, projects are being executed in Algeria, Iraq and Jordan, and are valued at over $12m. Projects have been completed in Libya, Egypt and Syria. Project work is carried out on commercial terms through the government-owned company Sagric International Pty. Ltd. Project costs are not a charge against State funds.

The future

The drive for national food self-sufficiency in developing countries is likely to continue. Australia's political and technical acceptability as a supplier of agricultural expertise will remain. The resultant increase in enquiries from developing countries in recent years will probably continue. Exports will continue to offer major potential for growth in sales of South Australian agricultural capital, goods and services.

In order to utilize the desirable characteristics of both the public and private sectors, to further involve the private sector, and to conserve the department's scarce manpower resources, the concept of project work being sought by joint ventures between Sagric International and South Australian firms will continue to evolve. Relationships with private consultants will be further developed. Other commercial bodies will expand relationships with Sagric International through the prospect of joint ventures.

All governments in Australia now have a capability for overseas project work and many are pursuing such work vigorously. As there is already aggressive international competition, particularly from Third World consultancies, Sagric International will be obliged to devise more innovative, effective and efficient means of achieving its goals. One such means is likely to be the incorporation of financing facilities (from either national, multi-lateral or commercial bodies) into project proposals.

The need for operations to be commercially viable and not dependent on public funding will remain. In this environment, Sagric International Pty. Ltd. will need to develop its commercial and marketing skills. The addition of a financial component to projects will require development of additional new skills.

Current activities

At present, the South Australian Department of Agriculture, through Sagric International Pty. Ltd., is engaged in implementing three major overseas projects.

1. At Ksar Chellala, Algeria, a rangeland development project is being implemented by a team of seven permanent staff supported by visiting consultants. The project is approaching its final stage and should be completed in mid-1983.
2. In Iraq, Sagric International is establishing and operating a 5 000 hectare cereal/livestock farm. Six permanent specialists are developing the farm. All major infrastructure has been positioned and the area cropped is being progressively increased to 5 000 hectares.
3. In Jordan, three experts are undertaking a research and extension project aimed at introducing a rotational system into the Jordanian rainfed agricultural zone. The project is being conducted on behalf of the Australian Development Assistance Bureau and will continue until mid-1984.

As well as these projects, consultants are being provided to international organizations such as the Food and Agriculture Organization and to other Australian consultancy firms. Corporate goals to extend current activities are as follows.

Corporate goals

Short term

- Establish a second agricultural development project in Iraq in 1982-83.
- Continue negotiation for a development project in Tunisia.
- Undertake feasibility studies and consultancies in other countries as approved by the South Australian Government.
- Fully discharge existing contractual obligations: (a) in Algeria by satisfactorily completing the current contract in March 1983; and, (b) in Iraq and Jordan by meeting defined project goals.

Medium term

- Provide, as opportunities arise, short term consultancies to international and private agencies.
- Develop additional agricultural marketing opportunities by establishing and developing techniques for joint venturing in international development projects with South Australian firms.
- Establish further projects as determined by government policy.

Long term

- Develop, through all forms of technology transfer, continuing opportunities for the sale of South Australian agricultural technology and equipment in overseas markets.

Veterinary Laboratory Services

Livestock industries

The value of production and outlook for the livestock industries has been described in the section on animal industries. Improvements in the efficiency and productivity of these industries depend largely on reducing, as far as possible, factors leading to suboptimal production at a State, regional and individual property level.

Veterinary laboratory services are directed toward investigating problems of animal health and production in livestock and other animals, in allied materials (pastures, crops and stock feeds so far as they affect health) and in animal products (for problems relating to safety or marketability) and providing information on the definition, significance and extent of these problems and possible options for control.

Laboratory services also gather information by surveys and surveillance, and carry out research, diagnosis and test development. As increasingly sophisticated survey techniques are developed, greater understanding can be expected of the aetiology and methods of control of animal diseases. The servicing of disease control schemes and provision of information and advice on animal health problems are major parts of the veterinary laboratory services program.

Sport and companion animals

The horse and dog racing and breeding industries are economically significant. There are also sound human health and social reasons in both the rural and urban areas for ensuring the health and well-being of sport and companion animals. Laboratory services in this area are directed through veterinary practitioners towards the individual animal and its owner. However, tests developed for these animals and information derived from them also provide a significant input to animal health and disease control in the wider forum. With rising standards of living and increasing community standards for animal welfare, there may be an increasing demand for diagnostic laboratory support for veterinarians specializing in companion animal practices.

Laboratory animals and wildlife

Laboratory animals and animal products are used extensively in both animal and human health research and, in the present social environment, it is important that the welfare of

such animals be considered. In South Australia, there are only two major suppliers of laboratory animals and the Veterinary Sciences Division of the department is the only supplier of genetically defined inbred strains.

Sophisticated testing procedures are required to maintain the quality of laboratory animals and this technology then becomes available for wider use. New types of laboratory animals are required for research purposes (e.g. small marsupials for foetal studies). Any further reduction of these animals in the wild could have a severe impact on endangered species. The knowledge derived from studying these animals while adapting them to captivity is useful for fauna preservation. For these reasons the technology and expertise developed within this program is sought by research scientists in other organizations working with experimental animals and wildlife.

Current activities

The veterinary laboratory services program encompasses the provision of diagnostic services and associated research in the fields of immunology, haematology, biochemistry, tissue pathology, microbiology, parasitology and virology for veterinarians in the livestock, sport, companion, laboratory animal and wildlife sectors of veterinary medicine. To keep pace with the advance of science, the development of new diagnostic procedures forms a significant component of the program.

The program also includes the supply of animals of known disease-free status and genetic composition for teaching and research purposes. Stock produced within the program have resulted in the production unit attaining national recognition for the quality of its animals and the methods which are used.

A small but significant component of the program includes studies of small native animals, especially marsupials. A more closely defined characterization of these often little-known animals is valuable in developing a greater appreciation of Australian fauna.

Corporate goals

Short term

- ☐ Maintain and improve the standard of veterinary services available to practitioners and producers in 1982-83 while completing the transfer of the administration of the Veterinary Sciences Division from the Institute of Medical and Veterinary Science to the Department of Agriculture.
- ☐ Improve the efficiency of veterinary services available to producers by extending the range of diagnostic services provided by the South East Regional Veterinary Laboratory of the Veterinary Sciences Division.
- ☐ Increase knowledge of factors influencing livestock health by identifying trends in the distribution and frequency of animal diseases by establishing a computerized laboratory data-base during 1982-83.
- ☐ Improve the quality, health, efficiency of production and criteria for care of laboratory animals by providing the services of a clinical veterinary officer and developing a virological quality control program.

Medium term

- ☐ Improve livestock health and productivity by reducing the effects of trace element deficiences on animal production through defining the areas and factors affecting sub-clinical deficiency and evaluating alternative methods of correction.
- ☐ Improve the economic efficiency of livestock productivity by reducing the effect of internal parasitism through definition of seasonal and geographic distribution of the different parasites and developing strategies for more appropriate and economic control programs.
- ☐ Improve the marketability of Australian meat by reducing the incidence of meat defects, through research aimed at devising ways to control lesions such as those caused by sarcosporidiosis.
- ☐ Assist farmers to minimize the deleterious effects of fodder toxicities by defining the distribution of, and developing tests for the early detection and severity evaluation of fodder toxicity diseases.
- ☐ Reduce the nett cost to the State of veterinary laboratory services by recouping test and laboratory animal cost from users through implementation of a systematic cost-recovery system.
- ☐ Improve the efficiency of commercial pig production by determining the effect of environment on the health and productivity of piglets and developing techniques to optimize production by manipulation of that environment.

Long term

- ☐ Provide animal and medical science with experimental animal models more relevant to problems under investigation by evaluating and adapting native species for laboratory purposes.
- ☐ Evaluate alternative options for the future provision of veterinary laboratory services taking into account present and expected future demand for services.
- ☐ Collaborate with other states and the Commonwealth to rationalize veterinary laboratory services, improve quality control and provide more effective national disease information systems.

Conclusion

Technological change and adjustment will remain critical to the continued success of South Australian agriculture in the next decade. The Department of Agriculture must itself retain the capability to adapt to changing technology and to meet the needs and expectations of producers 10 years hence. Consequently, the department can expect to have a high annual investment in training and retraining.

Through the logical and orderly development of the corporate planning process, the Department of Agriculture seeks to identify likely changes in agriculture and to develop and adapt for government and producers the services that will be demanded in the decade ahead.

Appendix

Department of Agriculture, South Australia

HEAD OFFICE
25 Grenfell Street
GPO Box 1671
Adelaide SA 5001
Telephone: 227 9911

Research Centres and Laboratories
Northfield
Telephone: 266 0911

Veterinary Sciences Division Laboratories
Institute of Medical and Veterinary Science
Frome Road,
G.P.O. Box 1671
Adelaide 5001
Telephone: 228 7226

Veterinary Sciences Division Field Station
Cnr. Blacks Road and Grand Junction Road
Gilles Plains 5086
Telephone: 261 1033

Parafield (Poultry)
Telephone: 258 1244

Plant Pathology Laboratory
Waite Agricultural Research Institute
Private Mail Bag 1
Glen Osmond 5064
Telephone: 79 7901

Quarantine Depots
Mile End
Telephone: 227 4191 or
227 4192 (Plants)

Port Adelaide
Telephone: 47 5133 (Plants) or
47 3136 (Animals)

Pest Eradication Unit
Prospect
Telephone: 269 4500

Plant Introduction Centre
Parafield
Telephone: 258 2307

CENTRAL REGION—Adelaide

Regional Headquarters

Adelaide
25 Franklin Street
Telephone: 227 3799

District Offices
Adelaide
25 Franklin Street
Telephone: 227 3799

Clare
9 Old North Road,
Box 287
Clare 5453
Telephone: (088) 42 3900

Jamestown
17 Irvine Street
Box 145
Jamestown 5491
Telephone: (086) 64 1408

Kadina
35 Frances Street
Box 145
Kadina 5554
Telephone: (088) 21 1555

Kingscote
Council Chambers
Dauncey Street
Kingscote K.I. 5223
Telephone: (0848) 22464 or 22222

Nuriootpa
Research Rd
Box 245
Nuriootpa 5355
Telephone: (085) 62 1355

Victor Harbor
3 Eyre Terrace
Box 4
Victor Harbor 5211
Telephone: (085) 52 3064

Virginia
Box 522
Virginia 5120
Telephone: 380 9562

Port Pirie
Box 519
Port Pirie 5540
Telephone: (086) 32 3530

Research Centres
Lenswood Research Centre
Lenswood 5240
Telephone: 389 8302

Parndana Research Centre
Parndana K.I. 5220
Telephone: (0848) 95234 or 95236

Turretfield Research Centre
Rosedale 5350
Telephone: (085) 25 8017

Nuriootpa Research and Advisory Centre
Box 245
Nuriootpa 5355
Telephone: (085) 62 1355

Fruit Fly Roadblock
Oodla Wirra
Telephone: Oodla Wirra 3U

EYRE REGION—Port Lincoln

Regional Headquarters

Port Lincoln
Box 11
Port Lincoln 5606
Telephone: (086) 82 3022

District Offices
Cleve
Box 156
Cleve 5640
Telephone: (086) 28 2091 or 28 2098

Port Lincoln
Box 11
Port Lincoln 5606
Telephone: (086) 82 3022

Streaky Bay
Bay Rd
Streaky Bay 5680
Telephone: Streaky Bay 108

Research Centre
Minnipa
Box 31
Minnipa 5654
Telephone: Minnipa 31

Fruit Fly Roadblock
Ceduna
Box 183
Ceduna 5690
Telephone: Ceduna 288

MURRAY LANDS REGION — Loxton

Regional Headquarters

Loxton
Box 411
Loxton 5333
Telephone: (085) 84 7241

District Offices
Berri
Box 6
Berri 5343
Telephone: (085) 82 1166

Lameroo
Railway Terrace
Lameroo 5302
Telephone: Lameroo 345

Loxton
Box 411
Loxton 5333
Telephone: (085) 84 7241

Murray Bridge
Bridge St
Murray Bridge 5253
Telephone: (085) 32 2266

Renmark
Box 1014
Renmark 5341
Telephone: (085) 86 6761

Waikerie
Kingston Rd
Waikerie 5330
Telephone: (085) 41 2622

Research Centres
Loxton
Box 411
Loxton 5333
Telephone: (085) 84 7317

Wanbi Research Centre
Wanbi 5310
Telephone: Wanbi 11

Fruit Fly Roadblocks
Pinnaroo
Telephone: Pinnaroo 321

Yamba
Telephone: (085) 85 5026

SOUTH-EAST REGION — Struan

Regional Headquarters
Struan
Box 618
Naracoorte 5271
Telephone: (087) 64 7419

District Offices
Keith
Makin Street
Keith 5267
Telephone: (087) 55 1844

Mount Gambier
Box 475
Mount Gambier 5290
Telephone: (087) 24 1511

Naracoorte
6a McRae St
Naracoorte 5271
Telephone: (087) 62 1855

Research Centres and Laboratories

South East Region Veterinary Laboratory
Box 618
Naracoorte 5271
Telephone: (087) 64 7419

Kybybolite
Box 2
Kybybolite 5262
Telephone: (087) 64 2002 or 64 2008

Struan
Box 618
Naracoorte 5271
Telephone: (087) 64 7419

NORTHERN REGION — Port Augusta

Regional Headquarters

Port Augusta
Box 357
Port Augusta 5700
Telephone: (086) 42 3722

District Office

Port Augusta
Box 357
Port Augusta 5700
Telephone: (086) 42 3722

Stock inspectors:

Coober Pedy
Telephone: Coober Pedy 73 5415

Chandler