



**DEPARTMENT
OF PRIMARY
INDUSTRIES,
QUEENSLAND
GOVERNMENT**

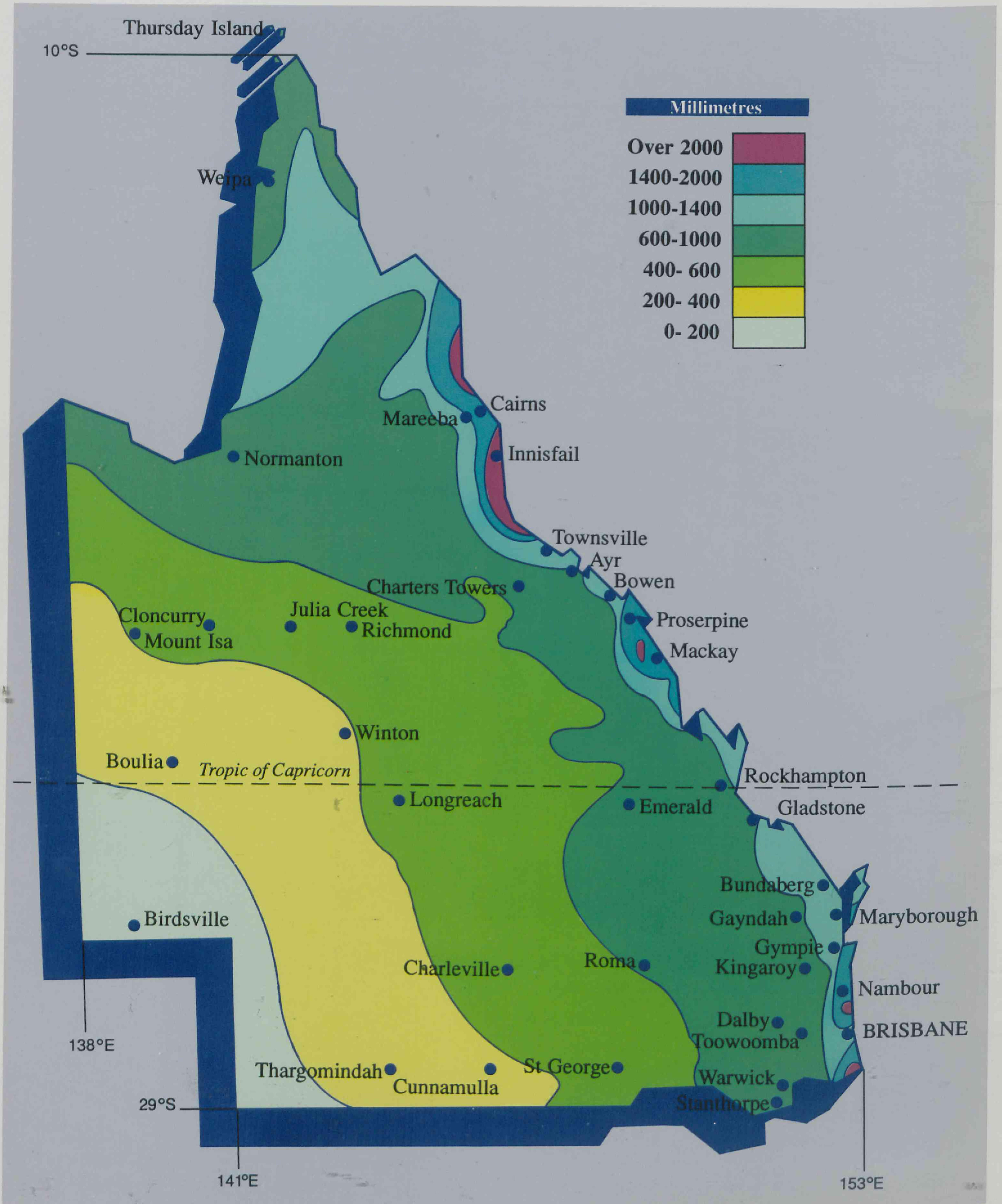
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**ANNUAL REPORT
1988-89**

QUEENSLAND AVERAGE ANNUAL RAINFALL

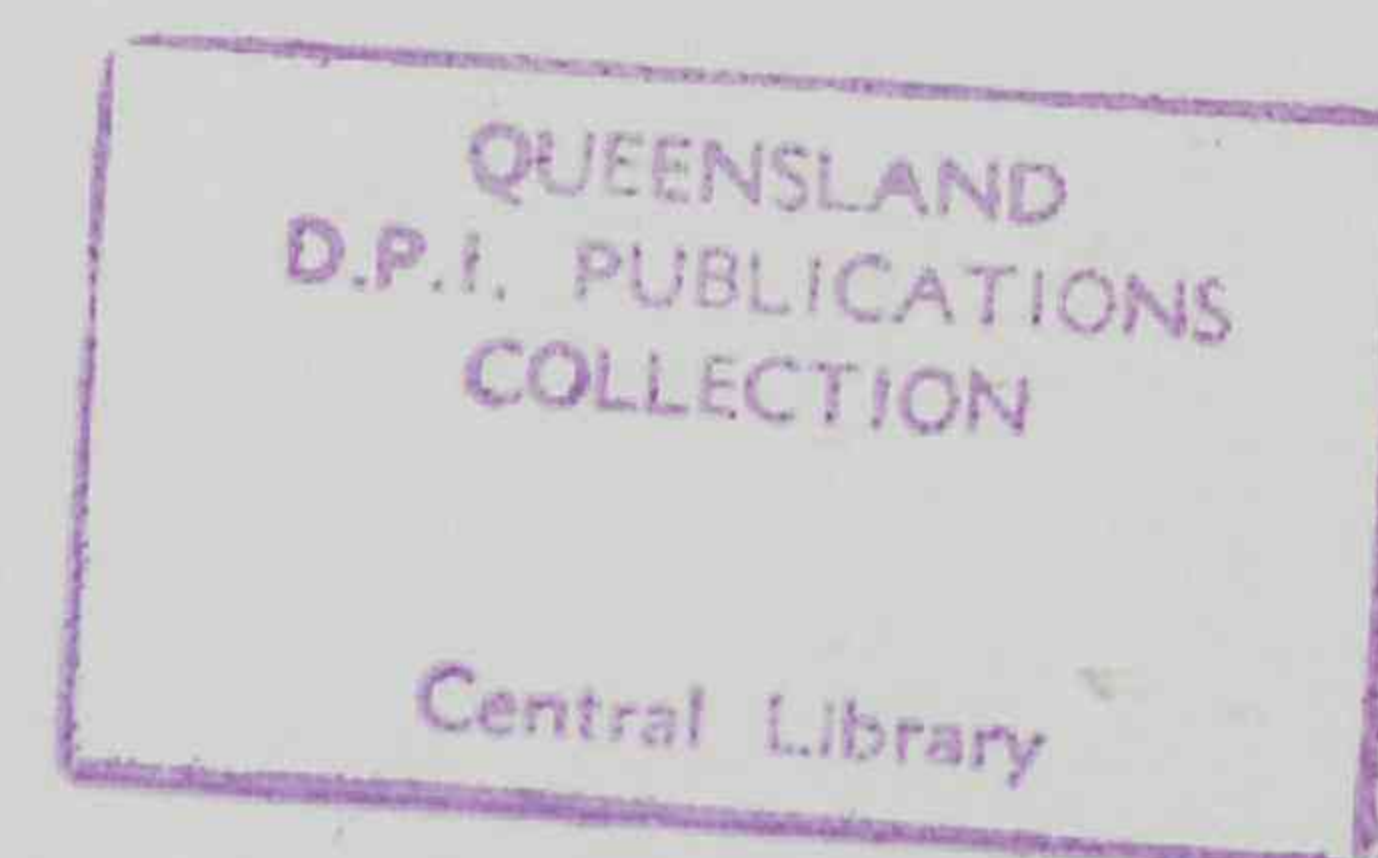
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DEPARTMENT OF PRIMARY INDUSTRIES, QUEENSLAND GOVERNMENT

ANNUAL REPORT 1988-89



CONTENTS

Foreword	2
The year reviewed	3
Board of Management	4
Corporate organisation	5
Corporate purpose	6
Corporate goals	6
Corporate highlights	6
Research	7
Extension	7
Regulation	8
Information	8
Primary industries overview	9
Financial statement	11
Acts and Regulations	17
Legislation	18
Animal industries	20
Plant industries	22
Food technology	24
Fisheries	26
Land conservation	28
Agribusiness services	30
Technical services	32
Corporate services	32

FOREWORD

By command, I have the honour to present this report to Parliament.

Queensland's economy remains heavily dependent on rural industry, which, in 1988-89, generated a record gross value of production of \$4412m, an increase of 12% on the 1987-88 figure.

Over the years, as our primary production records have been established and broken, there has been an increasing awareness that environmentally sound farming methods are vital to our long-term economic prosperity.

Queensland could not maintain its position as Australia's leading rural export state without continued diligent attention to factors affecting the environment.

Both the Government and primary producers have acknowledged their joint responsibility to ensure that the environment, in which our national food requirements and about 40% of our export earnings are achieved, is not over-exploited and lost to future generations.

Throughout the past year, my Department has given high priority to research, extension and regulatory

issues associated with sustainable agriculture and effective management of the fisheries resource.

Rural communities have always recognised their responsibility for improved land management, and this is now greatly enhanced with coordination and support measures from the Queensland Government, whilst fishing communities have come to acknowledge the need to reduce exploitation of their natural resource.

A major Government land resource initiative, the \$50m primary industry productivity enhancement scheme, was announced in the State Budget. This scheme is supporting structural adjustment by helping farmers expand or reorganise their farming operations to facilitate property build-up.

As part of the State Government's recognition of the importance of protecting our natural resources, a new Division of Fisheries and Wetlands Management was created within my Department. As in the past, this division will be responsible for maintaining and enhancing our fisheries resources.

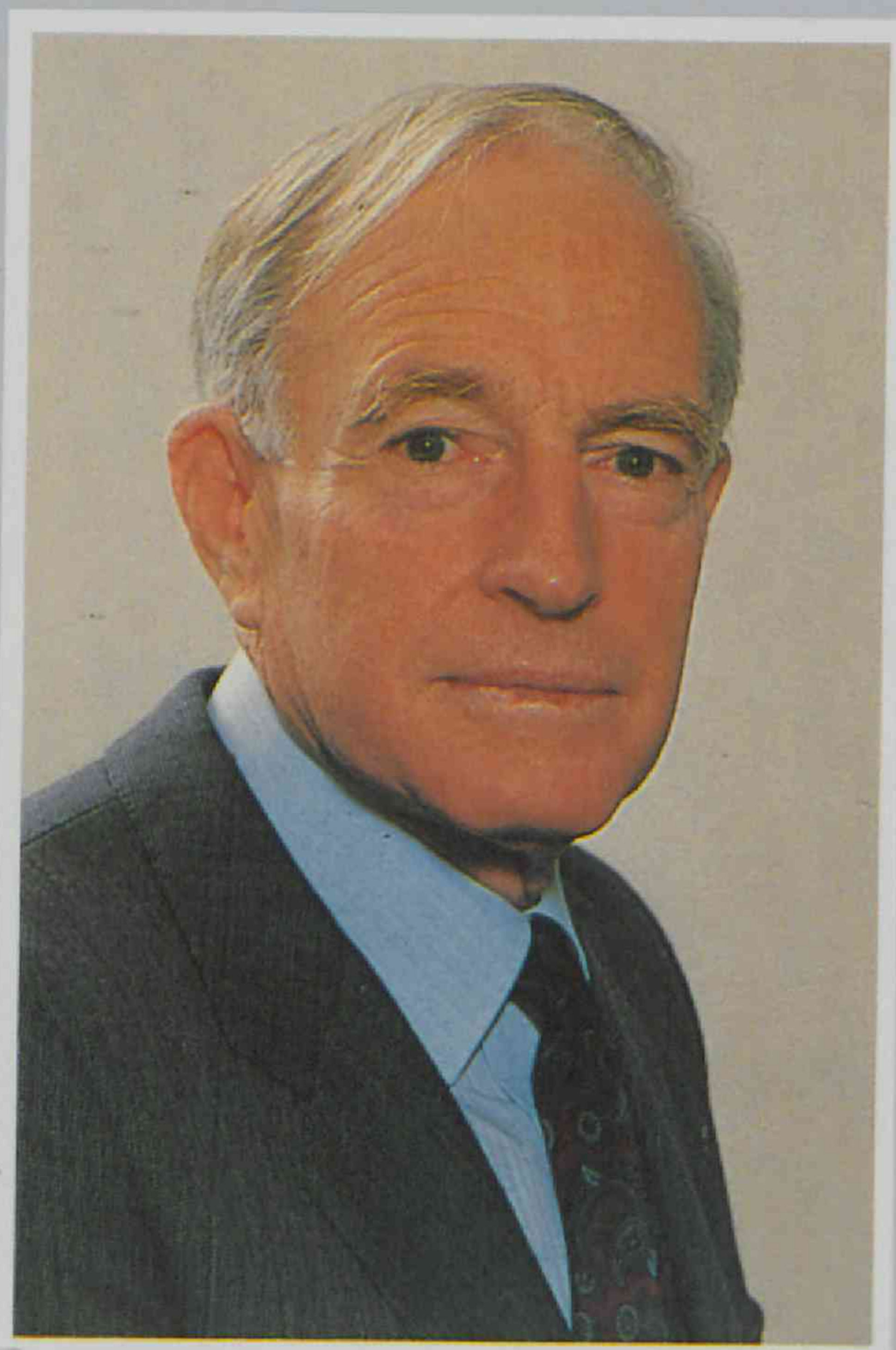
During 1988-89, 12 legislative measures were enacted through the

Queensland Parliament on my motion, including the *Chemical Usage (Agricultural & Veterinary) Control Act 1988*. That Act is concerned with the possession and use of specified agricultural and veterinary chemicals which have the potential to harm human or animal life, property, trade or the environment.

A highlight of the year was the declaration of the entire State as a brucellosis-free area on 1 January 1989. On the same date, Queensland achieved tuberculosis provisionally free status.

Other achievements, as detailed in this *Annual Report*, reflect a progressive commonsense approach to the many factors affecting primary production in this State.

Through its economic strategy, the Queensland Government fully recognises the value of the rural sector to the State's economy. As a result, my Department will continue to promote and enhance the economic growth and sustain the productivity of Queensland's agricultural and fishing industries, and to improve the quality of their products for the community's benefit.



A handwritten signature in black ink, appearing to read 'N. J. Harper', with a horizontal line underneath.

**The Hon. N. J. Harper, M.L.A.,
Minister for Primary Industries**

THE YEAR REVIEWED

A record year

Queensland's rural industries continued to prosper during 1988-89, resulting in a record gross value of production.

Beef, sugar and wool were again the highest income earners, with record prices being received for wool and beef. Horticultural production remained relatively static, but prices were firmer than in 1987-88.

Cyclone Aivu brought record rainfall to most parts of Queensland in April, and, at the end of June, despite disappointing rainfall earlier in the year, only three northern shires had drought-declared status. This compared with 25 partly and totally drought-declared shires in May 1988.

Organisation

As part of the Government's Quality Queensland strategy, QDPI structure and objectives received close scrutiny.

In January 1989, the directorate was streamlined with the appointment of three executive directors, and, in May, a separate Division of Fisheries and Wetlands Management was created. This recognised the important role of commercial and recreational fishing and their interaction with wetlands preservation.

Disease free status

On 1 January, Queensland was declared a brucellosis-free area and gained tuberculosis provisionally free status. The cooperative efforts of Queensland's producers and QDPI personnel contributed greatly to these achievements.

Genetic improvement

QDPI maintained its active animal and plant breeding programs. Two new wheat varieties, Janz and Perouse, were released.

For the first time, QDPI-developed plant varieties were submitted for Plant Variety Right protection. These were Manark, a higher-yielding soybean, Bisset creeping blue grass and Amarillo pinto peanut pasture legume. QDPI also cooperated with CSIRO in developing and releasing a new stylo, Amiga.

A world first was created with the release of a new wilt resistant tomato, Delta Tristar, for the Bowen area. It is the first commercial tomato variety to combine resistance to all three races of fusarium wilt.

The QDPI rice variety, Fin, doubled the previous average yield in the Burdekin to a record 10 t/ha.

The Animal Genetics Centre at Warrill View was being developed as a centre for genetic improvement, animal breeding and reproductive physiology. The centre is at the forefront of embryo transfer programs for cattle and goats.

In October 1988, the joint Commonwealth/State Australian Tropical Crops Genetic Resource Centre was opened at the Biloela Research Station. The centre will provide germplasm for all tropical field crop improvement programs.



Land care

QDPI's long-term efforts in soil conservation were being boosted by increasing community concern for all aspects of environmental conservation. This had resulted in the establishment of land care committees, which involve a community acceptance of the responsibility to protect agricultural lands. At the year's end, 31 such committees existed throughout Queensland.

A total of 1.16m ha of the State's cropping lands had been protected with soil conservation measures, with 53 000 ha receiving this protection in 1988-89.

Farm financial counselling

The provision of advice to producers experiencing financial difficulties had become firmly established as part of QDPI extension and advisory services. Twelve financial counsellors were located throughout Queensland.

Research and development

The 700-strong QDPI research and development team is a vital source of scientific skills for Queensland. Since the Department's early years, its scientists have contributed significantly to Queensland's development. Research programs were encompassing a variety of high-technology areas, ranging from biotechnology developments to satellite imagery for monitoring droughts.

The future direction of QDPI R & D efforts was considered during the year, with the framing of a strategic plan and the further development of program management concepts.

A handwritten signature in black ink, reading "A. Hegarty". The signature is written in a cursive, slightly slanted style.

Mr A. Hegarty,
Director-General

BOARD OF MANAGEMENT

The members of the Board of Management (from left): A. Hegarty; The Hon. N. J. Harper, M.L.A. (chairman); J. G. Miller; J. K. Leslie; B. J. Cameron; and R. B. Bygott.

The Honourable Neville John Harper, M.L.A.,

*Minister for Primary Industries
Chairman*

Mr Harper was appointed Minister for Primary Industries on 1 December 1986 and was re-appointed Minister for Primary Industries in the first Ahern Government on 9 December 1987. A primary producer with interests in stud and commercial poll hereford cattle, fodder and graingrowing, he has served in public life since 1976 when he was elected to Taroom Shire Council. Re-elected in 1979, he did not seek re-election in 1982. On 29 November 1980, he was elected Member for Auburn, having previously been a member of Ministerial Parliamentary Committees for lands, forestry and police; mines and energy; and commerce and industry. Between August 1983 and November 1986, he was Minister for Justice and Attorney-General.

Austin (Jack) Hegarty, B.Sc.,

*QDA
Director-General*

Mr Hegarty joined the Department in 1942 as a cadet and was involved in plant industry work at Atherton and in south-east Queensland, most notably as an adviser in Gympie. In the 1950s in Brisbane, he was a seed certification officer and, later, an agrostologist and an assistant standards officer. In the 1960s, he was a founding member of the Department's Development Planning Branch set up to liaise with other government bodies involved in Queensland's major land-development schemes, such as the Brigalow Scheme and the Emerald Irrigation Area. In the late 1960s, Mr Hegarty was appointed to the joint position of assistant director, Division of Development Planning and Soil Conservation (later renamed Division of Land Utilisation), and director, Development Planning Branch. He later became director of the Division of Land Utilisation. In these positions, he made a major input into all irrigation proposals and other matters affecting land use across the State, at both field and policy levels. In recognition of his experience and his departmental contributions, Mr Hegarty was appointed to one of the newly created positions of assistant director-general (1980), deputy director-general (1981) and director-general (1988).



James Gordon Miller, B.Agr.Sc., Grad.Dip.Bus.Admin., QDDM Deputy Director-General

Mr Miller joined QDPI in 1964 and, for the next six years, was a field technologist in dairy production and processing in the State's dairying areas. In 1970, he became a senior technologist in charge of the dairy technology section at Otto Madsen Dairy Research Laboratory, Brisbane. Four years later, he became the supervising scientist in field services branch, based in Brisbane, and was involved in daily administration of staff in 30 centres throughout Queensland. Subsequently, he was appointed assistant director (1978) and director (1980) of field services branch; director, division of dairying and fisheries (1983); assistant director-general (1986); and deputy director-general (1988). Throughout the 1980s he has served on several industry advisory committees. Currently, he is a member of the Australian Fishing Industry Research and Development Council.

John Kenneth Leslie, B.Agr.Sc. (Hon.), Ph.D., F.A.I.A.S.

Executive Director, Technical Services

Dr Leslie's career with the Department began in agronomic research in 1957, with contributions to the selection and evaluation of sown pastures and their establishment on black soils of the Darling Downs, to zinc nutrition of field crops and to fallowing and land preparation for annual crops. He has had extensive experience in research and extension administration. He managed wheat research (1967-74); directed research and extension for field crops, sown pastures and rangelands for Queensland (1974-81); and administered research and extension for field crop, horticultural and pasture-based industries in Queensland (1981-89).

Baden John Cameron, B.Agr.Sc., M.A.I.A.S

Executive Director, Corporate Services

Mr Cameron joined QDPI in March 1989 after a career in both the private and public sectors, beginning in 1961 with a US-owned meat-processing company based in Queensland. He spent the next 10 years with an agribusiness firm, rising to general manager, before becoming executive director of Australia's first cattle industry lobby. From 1980 to 1984, he was the Northern Territory's agricultural development and marketing authority chairman and, subsequently, its Department of Primary Production secretary. More recently, he has held these positions: Brisbane Market Trust chairman, meat industry trade description review chairman and United Graziers' Association of Queensland chief executive officer.

Robert Brian Bygott, B.Econ., Dip.Agr.Ext., M.A.I.A.S.

Executive Director, Special Duties

Mr Bygott joined the Department in 1947, gaining field experience in agronomy and research station administration before returning to head office in 1965 to be appointed an agricultural economist. In 1975 he became director of economic services. Further appointments included deputy director of marketing; chairman, Rural Reconstruction Board; and director, division of dairying and fisheries. Other appointments included deputy chairman of the Queensland Milk Board, the Milk Entitlements Committee and the Queensland Fish Management Authority, and State finance representative on the National Brucellosis and Tuberculosis Eradication Campaign Committee.

CORPORATE ORGANISATION

QDPI is responsible to the Minister for Primary Industries, who is also responsible for statutory authorities established under Acts of Parliament.

During the year, senior management was reorganised. The positions of assistant directors-general were abolished and three new executive director positions created. These positions, together with the director-general and the deputy director-general, form a Board of Management, with the Minister as chairman.

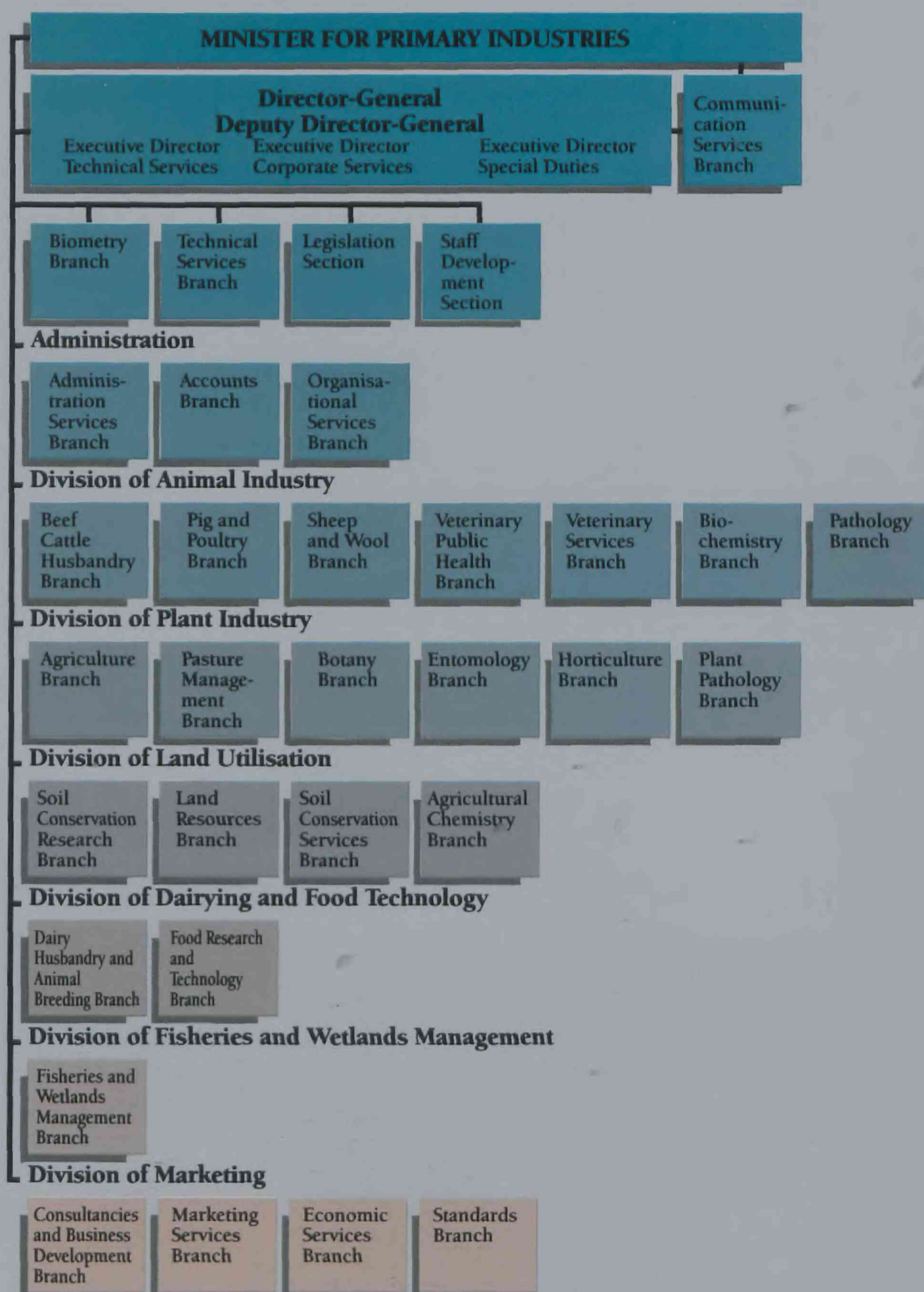
A hierarchial structure, in which QDPI operates through divisions and branches, each with an industry or disciplinary focus, continues to be the most appropriate means of fulfilling objectives. However, senior management recognises that a level of regional management is required to service some needs of QDPI's client base.

Interaction between divisions and the Board of Management was achieved by setting up an Executive Services Board, consisting of divisional directors, for planning, for operational policy development and for coordinating research, extension and administrative activity across QDPI divisions.

Alterations in organisational structure reflected the changing needs of Queensland's primary industry sector. Two new divisions — Fisheries and Wetlands Management, and a Division of Dairying and Food Technology — were created. A new branch — Consultancies and Business Development — was created in the Division of Marketing. A new Technical Services Branch was formed by com-

bining Extension Services and Research Stations branches. Information Branch was restructured to make it more attuned to servicing the Government's relationship with mass media on all rural issues.

At June 30, QDPI-approved public service staff establishment was 3034, which included 469 positions funded from Commonwealth and rural industry sources.



CORPORATE PURPOSE

Q DPI exists to provide and enhance the economic growth and productivity of Queensland's agricultural, pastoral and fishing industries to improve the quality of their products and to foster the use of technologies that result in sustainable resource use.

It seeks to achieve its corporate purpose through:

- implementing government rural policy;
- undertaking research and developing technology with commercial application;
- providing and extending technical, financial and managerial information to farmers, agribusiness and the general public; and
- facilitating private sector opportunities in international marketing of products, technologies and services.

CORPORATE GOALS

Q DPI, in seeking to achieve its purpose, pursues these goals:

- development and transfer of superior technologies and systems for internationally competitive production and processing;
- diversification of the range of commodities produced and processed;
- minimisation of the economic impact of pests and diseases, including security from exotic pests and diseases;
- conservation of agricultural and water resources, and protection of the environment;
- efficient marketing systems for expanded domestic and export opportunities for products, technology and services;
- safe and quality-assured products;
- superior information systems for government, agricultural producers, consumers and other groups; and
- knowledge, skill and deployment of QDPI staff and resources to achieve the corporate purpose.

CORPORATE HIGHLIGHTS

- Chemical Usage (Agricultural & Veterinary Control) Act proclaimed
- 31 Land care committees established
- Expansion of Redlands Research Centre
- Cotton industry deregulated
- Rationalisation in dairy industry
- Grazing Lands Stability and Productivity Unit for Charters Towers
- Arid Zone Research Institute (Longreach) opened
- \$50m Primary Industry Productivity Enhancement Scheme announced
- Poultry industry legislation updated
- Livestock genetic improvement program launched
- Millionth hectare of cultivate land treated with contour banks
- Queensland achieves brucellosis freedom
- Bribie Island Aquaculture Centre construction underway
- Crops genetic resource centre for Biloela
- Pesticides shipped out for destruction

RESEARCH

QDPI research activities are directed at solving production, marketing and resource management problems. Tactical research and adaptive development work are emphasised but, when knowledge gaps block practical solutions, significant effort is put into more basic research.

Work is administered through branches and divisions, with the Executive Services Board addressing priorities and coordination policies. Regional management is established within most branches to interface with statewide strategies. Regional management and program groups are increasingly achieving inter-branch coordination.

Research is carried out through:

- research stations involving a number of branches and multidisciplinary teams, managed departmentally by Technical Services Branch;
- branch-operated research stations serving a particular industry or function (for example, fisheries and animal breeding);
- branch-operated central laboratories with a variable service/diagnostic role complementing the research activity; and

- experiments on commercial properties and field surveys.

QDPI liaises closely with industry and other research organisations to identify problems, set priorities and integrate research and development effort.



DPI research establishments

Applethorpe	Granite Belt Research Station
Ayr	Ayr Research Station
Batavia Downs	Batavia Downs Research Station
Biloela	Biloela Research Station
Bowen	Bowen Research Station
Bundaberg	Bundaberg Research Station
Burnett Heads	Fisheries Research Station
Cairns	Northern Fisheries Research Centre
	Kamerunga Research Station
Charleville	Charleville Pastoral Laboratory
	Croxdale Research Station
Cleveland	Redlands Research Station
	Redlands AI Export Centre
	Redlands Horticulture Centre
	Redlands Poultry Research Centre
Deception Bay	Southern Fisheries Research Centre
Emerald	Emerald Research Station
Gatton	Gatton Research Station
Gaydah	Brian Pastures Research Station
Indooroopilly	Agricultural Research Laboratories
Julia Creek	Toorak Research Station
Kairi	Kairi Research Station
Kingaroy	J. Bjelke-Petersen Research Station
Longreach	Arid Zone Research Institute
	Rosebank Research Station
Mareeba	Mareeba Research Laboratories
	Southedge Research Station
Millaroo	Millaroo Research Station
	Swan's Lagoon Research Station
Mutdapilly	Mutdapilly Research Station
Nambour	Maroochy Research Station
Rockhampton	Veterinary Laboratory
Rocklea	Animal Husbandry Research Farm
Roma	Roma Research Station
St Johnstone	South Johnstone Research Station
Theodore	Brigalow Research Station
Toowoomba	Queensland Wheat Research Institute
	Kingsthorpe Field Station
	Veterinary Laboratory
Townsville	Oonoonba Veterinary Laboratory
Wacol	AB Centre
	Boar Test Station
	Dairy Herd Improvement Laboratory
	Pig Research Centre
	Tick Fever Research Centre
Walkamin	Walkamin Research Station
	Fisheries Research Station
Warrill View	Warrill View Animal Genetics Centre
Warwick	Hermitage Research Station
Yeerongpilly	Animal Research Institute

EXTENSION

Extension is information transfer to producers and agribusiness. It ranges from planned education programs to advice to farmers on specific problems. Extension is always couched in economic terms and includes treatment of whole-farm business management.

QDPI operates a coordinated, regionally-based extension system within policies established by its Executive Services Board. Within each region, the units of extension are

industry extension groups. These groups have a mix of technical expertise to achieve a balanced service to industry at the enterprise level.

Most regions have fulltime regional extension leaders to coordinate and improve extension services, and to build and maintain links with research and with private-sector advisory services.

QDPI extension services help Queensland's primary producers to

improve their profitability by adopting new and improved practices (both technical and business), and by using existing resources better. The services help ensure a high standard of quality in fresh and processed commodities for the entire community and promote practices to ensure long-term productivity of Queensland's natural resources. The services are directed at all rural industries except timber and sugar.

REGULATION

The Minister for Primary Industries, through the Department, administers Acts of Parliament and sets of Regulations that affect nearly every aspect of primary production in Queensland.

These Acts and Regulations involve the work of QDPI divisions and almost all branches.

Although many pieces of legislation contain enforcement provisions,

prosecution occurs only when personal contact and discussions prove ineffective.

In 1988-89, in accordance with Government policy, the Minister for Primary Industries published eight Green Papers on significant amendments proposed to both principal and subordinate legislation. Public responses were heavy, with closing dates for comment often being

extended because of community representations.

The Minister and his Parliamentary Committee analysed these responses before sending firm policy recommendations to the Government for consideration. Only after completion of these review processes was legislation drafted for Parliament's consideration.

INFORMATION

QDPI information services continued to be given high priority.

Fifteen new video productions were underway to complement research, extension and regulatory functions.

QDPI books were more widely known because of an intensive marketing program that began in July 1988 with a QDPI trade book exhibition. An increasing number of books were being sold to book wholesalers and retailers, thus relieving pressures on QDPI book-selling centres.

A general agreement was reached with the New Zealand Ministry of Agriculture and Fisheries' Primedia Bookshop for it to market and sell QDPI books in New Zealand. Other potential overseas sales areas were being investigated.

Remote and regional rural community groups indicated support for QDPI's *Rural Focus* program, produced fortnightly, through the television network, TSN-11. The program is telecast to 60 TAFE Colleges and 3000 viewing sites in Queensland and is re-transmitted the next week

through QSTV (the Queensland Commercial Satellite Television Service) to an audience of more than 100 000 viewers in remote and regional areas of Queensland and north-west New South Wales.

Consideration was being given to establishing further 'farmer information centres', modelled on the successful Nambour farmer information centre. Such centres give farmers and the general public ready access to production, land use and economic information.



In 1988-89, QDPI agricultural journalists produced a fortnightly television program, *Rural Focus*, through the Brisbane studios of TSN 11, which coordinates the Queensland Government's needs for satellite video transmission. *Rural Focus* features educational stories of general agricultural interest and its audience includes remote groups of Queenslanders who do not receive conventional television broadcasts.

PRIMARY INDUSTRIES OVERVIEW

International marketing issues

During 1988-89, subsidisation and protectionist policies of major industrial countries continued to distort world trade in agricultural commodities. Despite the successes of multilateral trade negotiations under the auspices of the General Agreement on Tariffs and Trade (GATT), little short-term relief was expected from the harmful effects of these policies on trade from exporting countries like Australia.

Tri-lateral discussions at Geneva in April between the United States, the European Community and the Cairns Group (including Australia) regenerated hopes that shorter term action could be taken to liberalise agricultural trade. These talks committed 100 participating countries in the 'Uruguay Round' to freeze existing support levels and to start reducing support in 1990. Fears were held, however, that improved global market conditions might weaken resolve to achieve the longer term goal.

Firmer demand, tighter supply, reduction in stock holdings and prolonged drought conditions in North America combined to lift world commodity prices for most rural exports, including wool, beef and veal, lamb, wheat and coarse grains. Sugar prices also improved.

Successful challenges against Japanese beef import quotas and United States sugar quotas under existing provisions of GATT offered Queensland beef and sugar exports expanded marketing opportunities. Investment in the beef industry intensified as Japanese interests sought to secure supply sources. The sugar industry embarked on a 5% increase in productive capacity to secure traditional market outlets.

The domestic economy

A mid-year appreciation of the Australian dollar against other currencies reduced export earnings. Imports also rose significantly, blowing-out the current account deficit. Interest rates



QDPI veterinary services officers use helicopters to inspect extensive properties in remote areas as part of the brucellosis and tuberculosis eradication campaign. Queensland was declared a 'brucellosis free area' on 1 January 1989.

rose towards the year's end, inflation rates remained relatively high, and benefits from promised tax reductions appeared doubtful. By the year's end, producers were again deferring investment in essential maintenance and capital items, and rural debt remained high.

Deregulation issues dominated marketing arrangements for rural commodities.

Grain industry attention was focused on the ramifications of the Commonwealth Government's proposed national wheat marketing legislation, which foreshadowed deregulation of the entire domestic wheat market. The Queensland Government, the State Wheat Board and the Queensland Graingrowers' Asso-

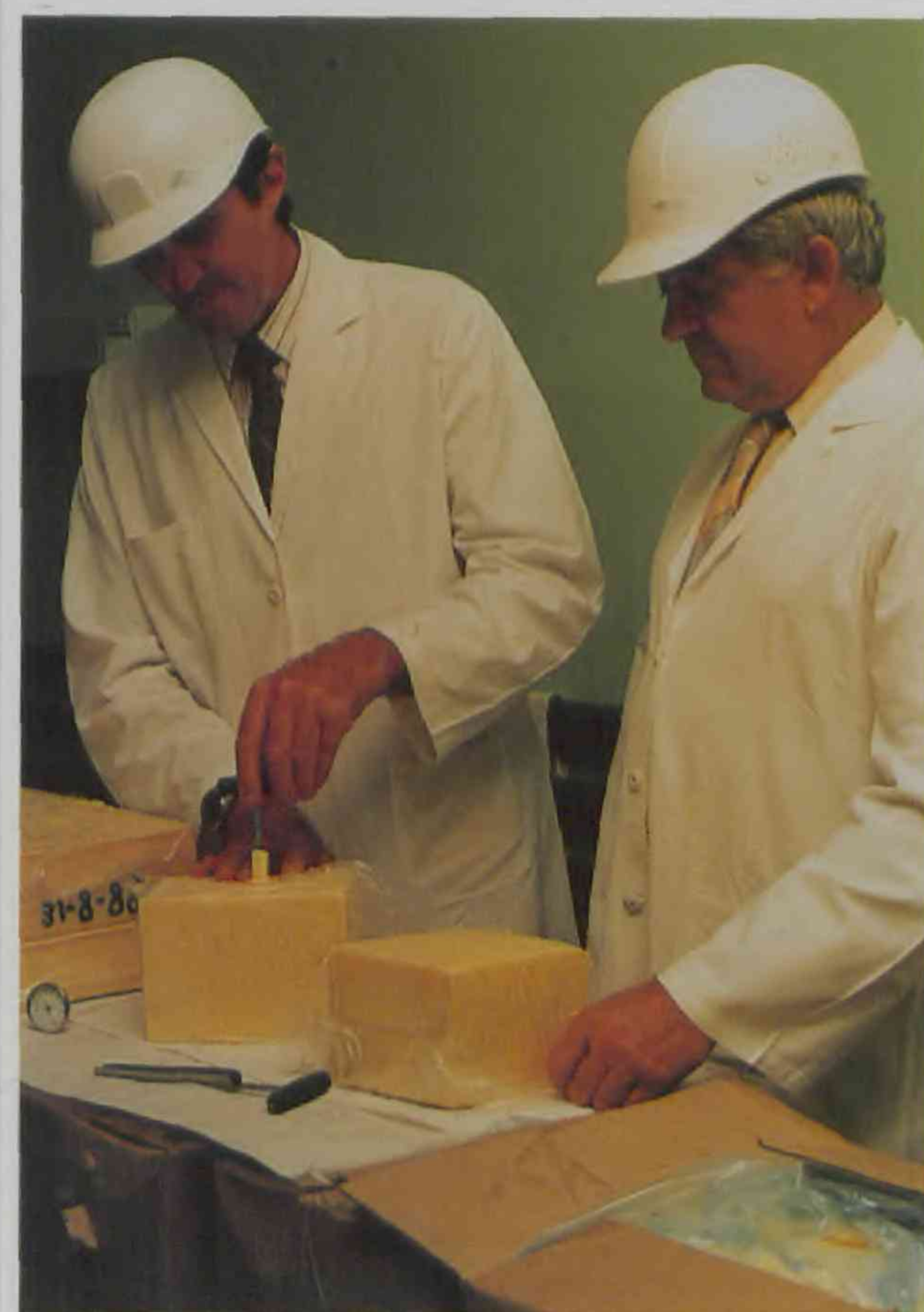
ciation opposed the legislation. Provisions for Commonwealth regulations to override State legislation relating to grain storage, handling and transport were totally unacceptable.

In March, cotton growers voted overwhelmingly for a Cotton Marketing Board proposal to deregulate statutory marketing of cotton, to wind up the Board and to transfer the Board's assets to a new grower-controlled corporate structure.

The Queensland Government and the sugar industry opposed the Commonwealth Government's decision to replace the embargo on sugar imports with a system of tariffs from 1 July 1989. The proposed tariffs give the industry little or no protection when world prices are low and unnecessarily increase import barriers when prices are high. In May, the Commonwealth agreed to a fixed tariff rate of \$155/t, phasing down to \$70/t in 1992.

Restructuring continued in the sugar industry: the North Eton mill was closed and suppliers to other mills were rezoned. Roaming of assignments and harvesting of green cane also increased.

QDPI graders play a major role in upholding the quality of dairy produce in this State. Both locally produced and imported cheeses are sampled and tested.



Seasonal conditions

For most of the year, dry seasonal conditions generally prevailed across Queensland's agricultural areas. Extremely hot conditions in October resulted in a poor finish to the winter grain season and lower than normal plantings of summer grain and oilseed crops. Available pasture for livestock was in short supply as was irrigation water in the major horticultural areas. Widespread rains in March and April greatly improved the seasonal outlook for both livestock and crops in all areas except McKinlay, Richmond and Flinders Shires, which remained drought affected.

Gross value of production

Queensland's gross value of rural production in 1988-1989 was estimated at \$4412m, or 12% more than in 1987-88. This increase was due mainly to improvements in the value of wheat, sugar, livestock slaughterings and vegetables.

Wheat was valued at \$367m, up 203% on the previous year's \$121m. Improved sugar prices resulted in the estimated gross value of sugar-cane cut for crushing increasing by 22% to \$710m. The value of livestock slaughterings (and other disposals) increased by 3%, with cattle and calf slaughterings totalling \$1174m, pig slaughterings \$143m and poultry slaughterings \$95m.

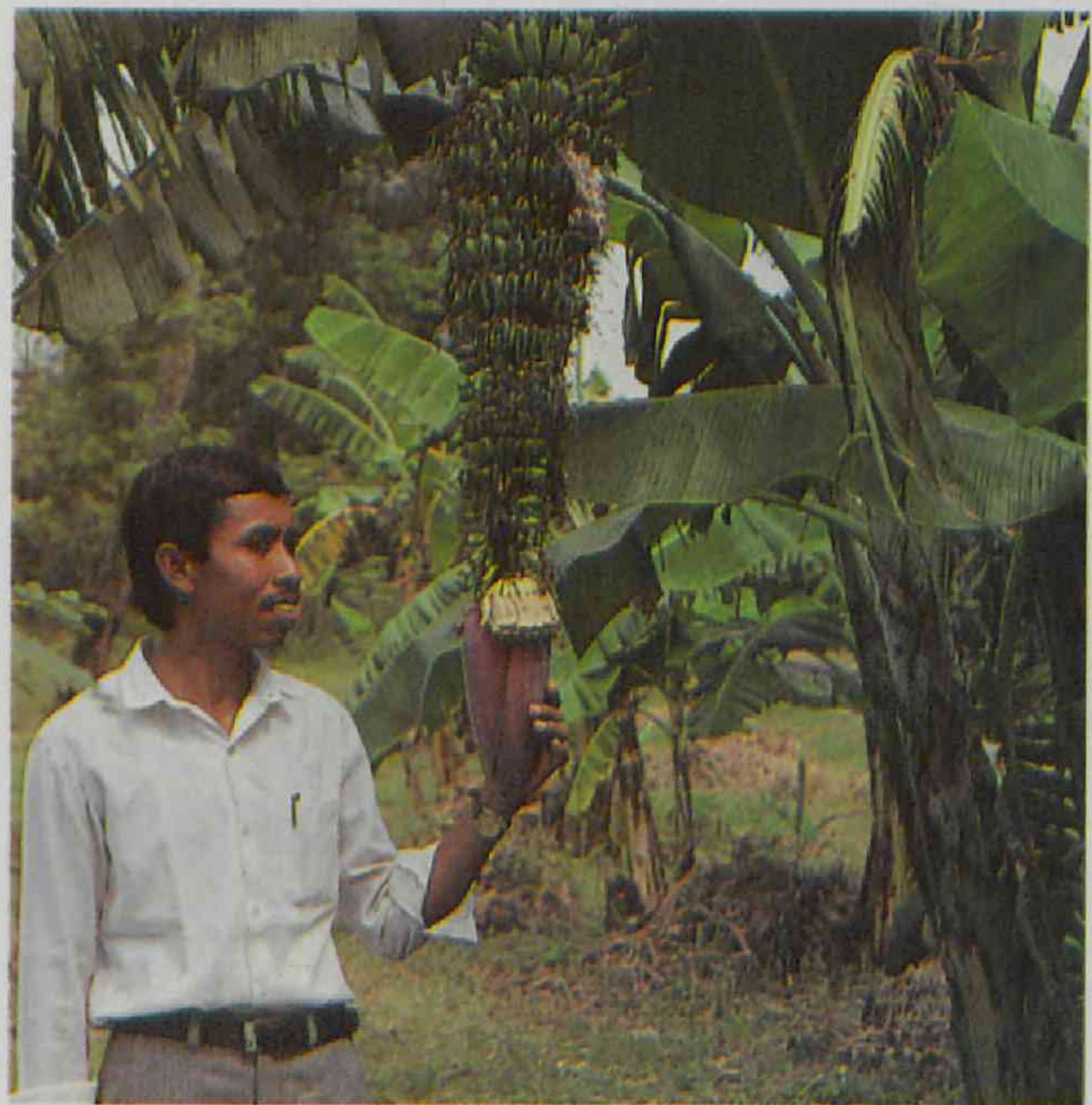
The value of vegetables rose from \$253m to \$314m, an increase of 24%. The vegetables that showed the greatest increases were beans, carrots, lettuce, onions, potatoes, pumpkins and tomatoes.

Diseases such as fusarium wilt and black Sigatoka pose a significant threat to the Queensland banana industry. Sources of resistance that could be used in Australia have been sought in other countries, including Papua New Guinea and Indonesia. Here, banana plants in Indonesia are being inspected for reaction to disease.



A vapor heat unit recently acquired by QDPI will be used for pilot-scale experiments to find fruit disinfestation treatments to satisfy overseas quarantine requirements. Unlike the chemical dipping and spraying treatments currently used, vapor heat disinfestation leaves no chemical residues on treated fruit. This is a major advantage.

Since an outbreak in America of listeriosis caused by contaminated cheese, local foodstuffs have been tested for the causative organism, *Listeria*. A stereomicroscope with oblique transillumination can be used to help detect *Listeria*.

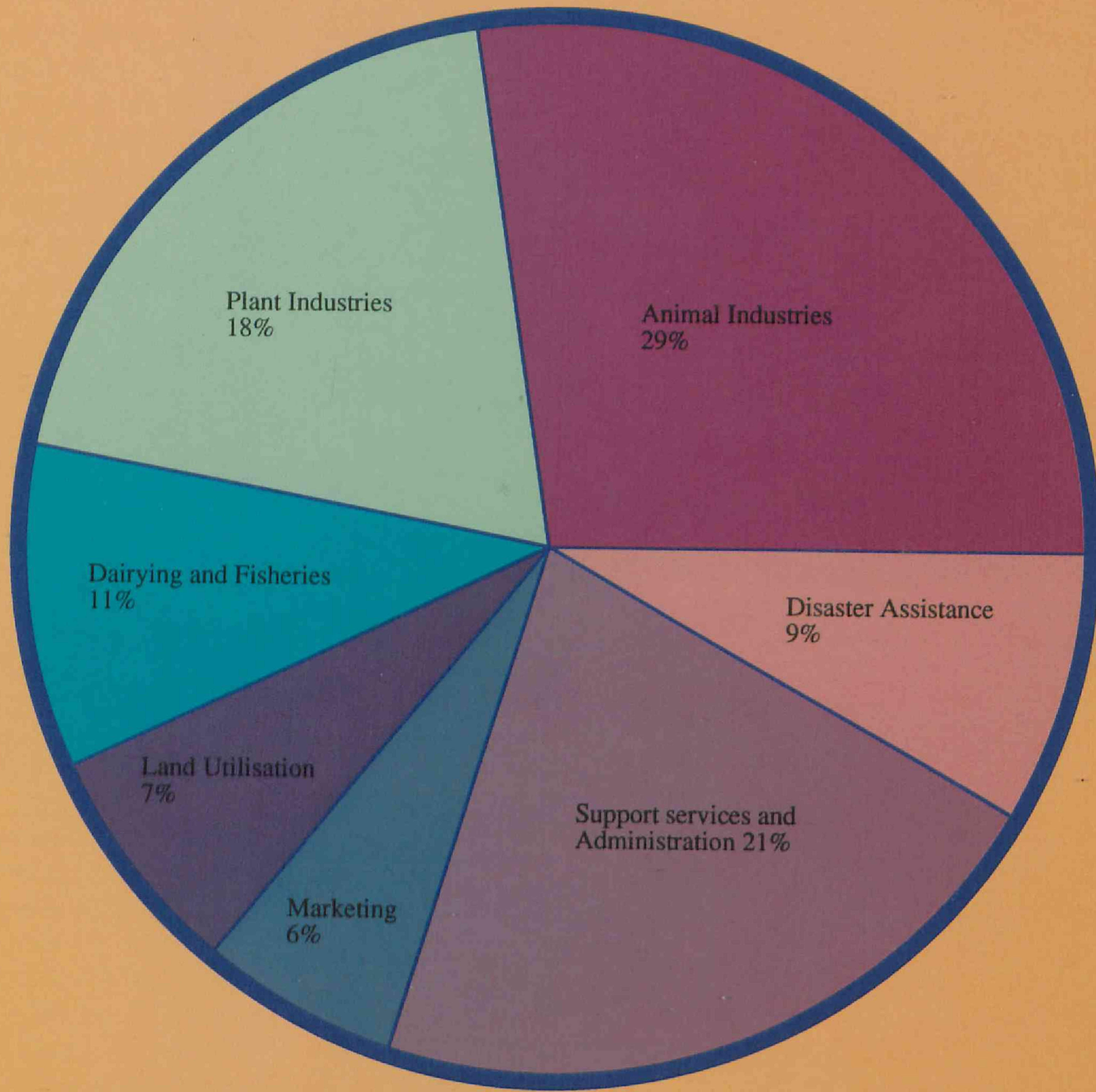


ANNUAL FINANCIAL STATEMENTS OF THE DEPARTMENT OF PRIMARY INDUSTRIES

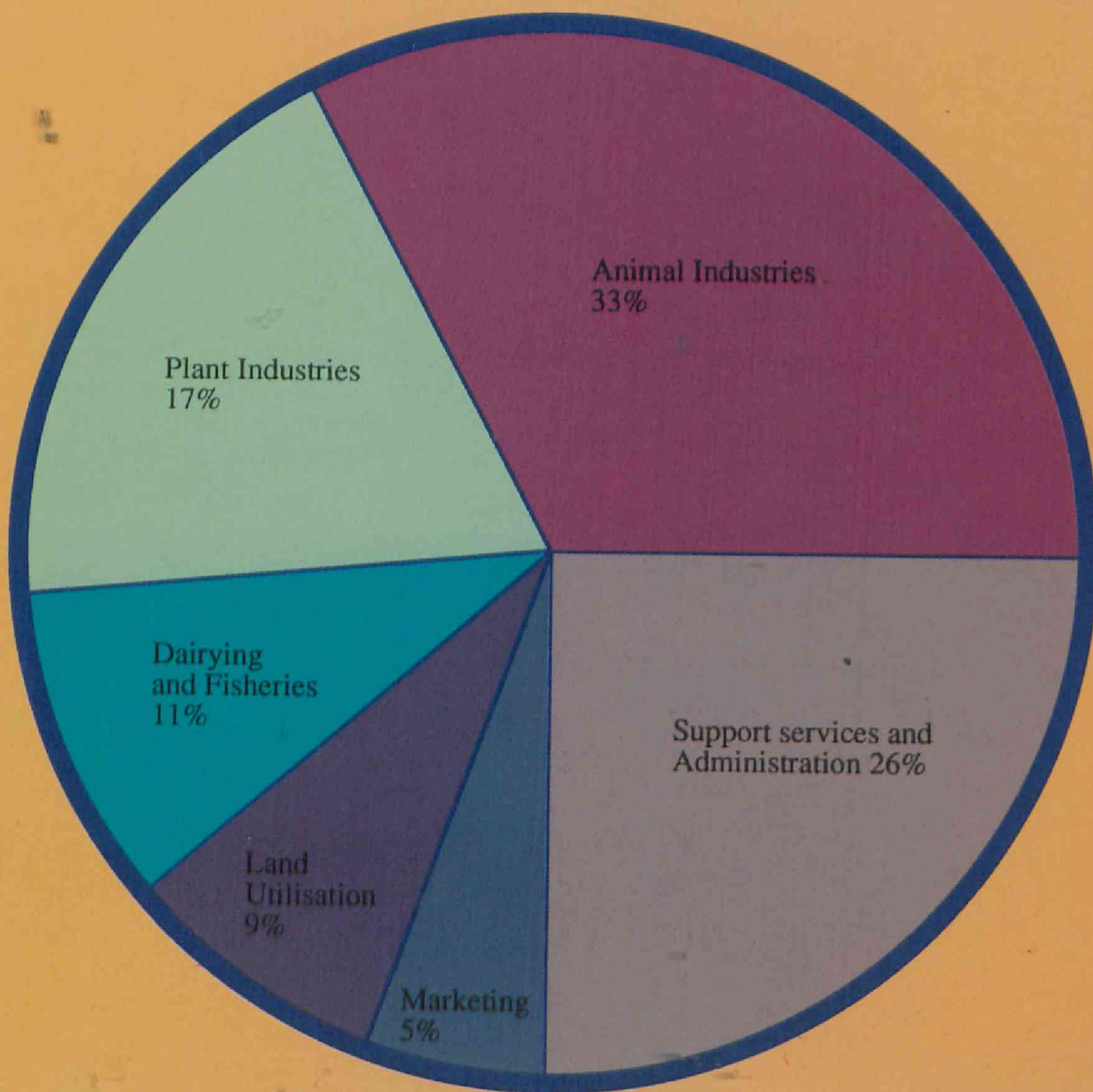
TABLE OF CONTENTS

Statement of Receipts and Payments All Funds	13
Consolidated Revenue Receipts and Payments	13
Loan Fund Receipts and Payments	13
Trust and Special Funds Receipts and Payments	14
Notes to and Forming Part of the Financial Statements	14
Human Resources	15
Statement of Sources and Application of Funds	16

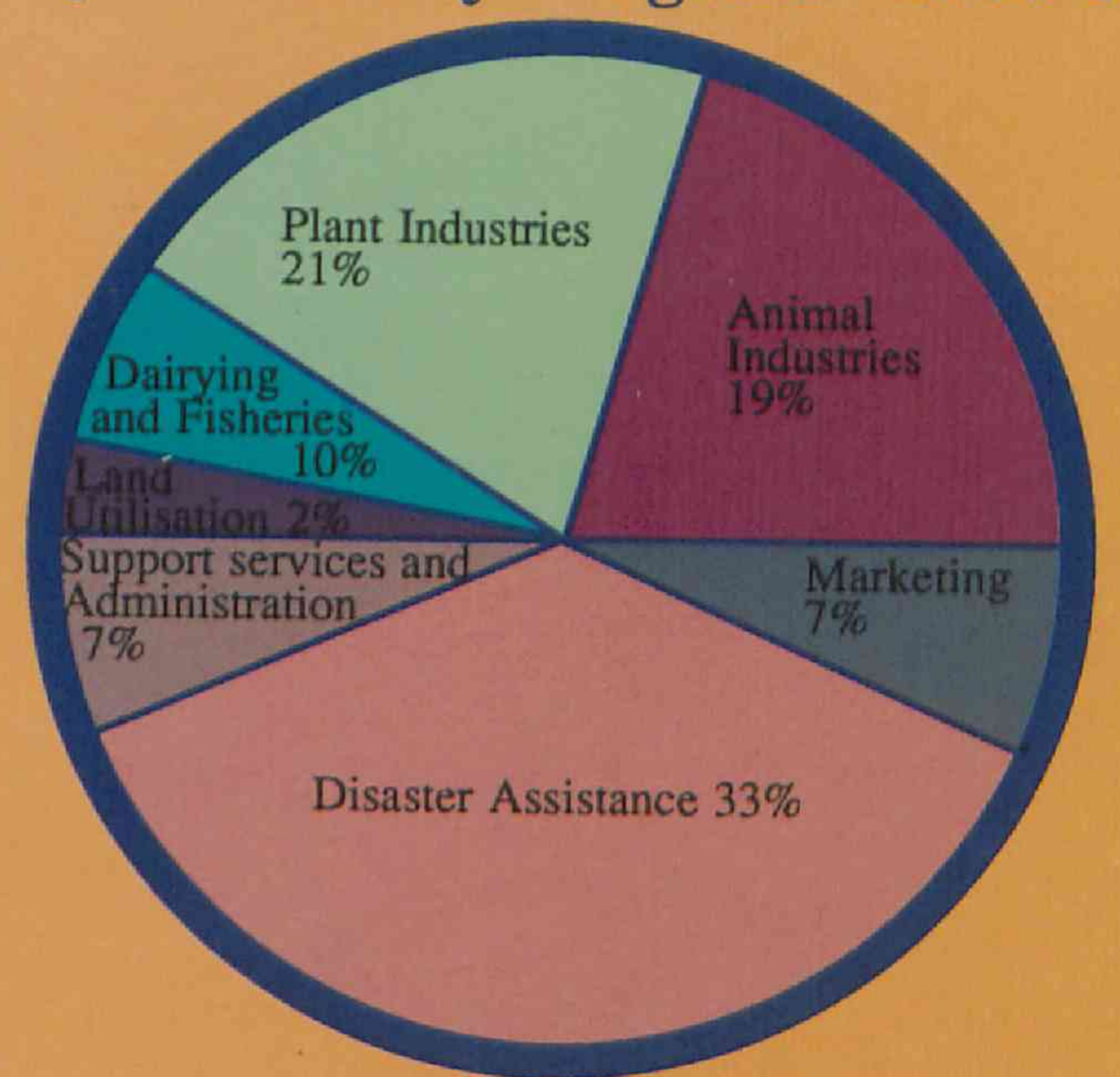
ALL FUNDS
Expenditure by Program - 1988-89



CONSOLIDATED REVENUE FUND
Expenditure by Program - 1988-89



TRUST AND SPECIAL FUNDS
Expenditure by Program - 1988-89



DEPARTMENT OF PRIMARY INDUSTRIES
RECEIPTS AND PAYMENTS ALL FUNDS FOR THE YEAR ENDED 30 JUNE 1989

Fund	Receipts		Expenditure	
	1988-89 (\$'000)	1987-88 (\$'000)	1988-89 (\$'000)	1987-88 (\$'000)
Consolidated Revenue Fund	20 410	24 100	124 236	117 815
Loan Fund	223	210	223	210
Trust and Special Funds	51 471	46 332	49 073	47 108
	72 104	70 642	173 532	165 133

CONSOLIDATED REVENUE FUND
RECEIPTS AND PAYMENTS FOR THE YEAR ENDED 30 JUNE 1989

	1988-89 (\$'000)	1987-88 (\$'000)
RECEIPTS		
Commonwealth Payments	13 428	16 907
Taxation, Regulatory Fees and Fines	556	502
Property Income	5	..
Receipts for Goods and Services	3 123	2 680
Capital Recoveries	2 401	3 229
Miscellaneous Receipts	897	782
TOTAL RECEIPTS	20 410	24 100
PAYMENTS		
Animal Industry Program	22 882	21 654
Plant Industry Program	19 261	18 280
Dairying and Fisheries Program	13 682	13 249
Land Utilisation Program	10 203	10 418
Marketing Program	6 519	5 728
Support Services and Administration Program	31 097	28 980
Special Allocations	20 592	19 506
TOTAL PAYMENTS	124 236	117 815
Net Cost of Consolidated Revenue Fund (C.R.F.)	103 826	93 715

LOAN FUND
RECEIPTS AND PAYMENTS FOR THE YEAR ENDED 30 JUNE 1989

	1988-89 (\$'000)	1987-88 (\$'000)
RECEIPTS		
Intra Public Accounts—Unrequited Transfer	223	210
PAYMENTS		
Research Station Development Work	223	210

TRUST AND SPECIAL FUNDS
RECEIPTS AND PAYMENTS FOR THE YEAR ENDED 30 JUNE 1989

	Balance 1-7-88 (\$'000)	Receipts 1988-89 (\$'000)	Payments 1988-89 (\$'000)	Balance 30-6-89 (\$'000)
Banana Industry Fund	54	385	334	105
Commonwealth Poultry Industry Assistance Fund ..				
Commonwealth Quarantine & Export Inspections Fund	45	5 650	5 530	165
Commonwealth Rural Industry Grants Fund	719	4 841	4 736	824
Exotic Diseases Expenses & Compensation Fund ..				
Fisheries Research Fund	217	715	551	381
Meat Inspection Account	679	3 686	3 325	1 040
Poultry Industry Fund	18	1 036	1 038	16
Stock Diseases Compensation & Improvement Fund	38	0	21	17
Sugar Cane Prices Fund	2 756	2 733	2 660	2 829
Swine Compensation Fund	57	0	40	17
Primary Industries Dept Special Standing Fund				
Animal Industry Program	323	2 564	2 268	619
Plant Industry Program	309	1 963	2 038	234
Dairying and Fisheries Program	620	3 415	4 137	(102)
Land Utilisation Program	(49)	1 325	992	284
Marketing Program	533	2 549	2 224	858
Support Services & Admin Program	937	4 204	2 769	2 372
Recoverable Services				
Disaster Assistance	0	16 405	16 410	(5)
Funds Administered	7 256	51 471	49 073	9 654

NOTES TO AND FORMING PART OF THE FINANCIAL STATEMENT

Accounting methods and policies

- (a) For the first time, the financial statements have been prepared on a program basis. To provide a valid comparison with the new format, certain comparative figures for the previous year have been restated to conform with the Australian Accounting Standards.
- (b) The Department's financial statements have been prepared on the basis that the transactions of the Public Accounts are reported on a cash basis except for the Public Service payroll, which is charged on the number of working days in the financial year. This is to avoid the major distortion that occurs in those years in which 27 fortnightly Public Service pays occur.
- (c) The financial details in this Report have been compiled from 'The Departmental Statements of the Accounts subsidiary to the Public Accounts' as laid before the Legislative Assembly by the Premier, Treasurer and Minister for State Development and the Arts of Queensland. The subsidiary accounts have been prepared by the Department's Accountable Officer and certified by the Auditor-General.

Payments consist of:

	1988-89 (\$'000)		1987-88 (\$'000)	
	C.R.F.	TRUST	C.R.F.	TRUST
Salaries, wages and related payments	74 463	16 081	73 329	15 538
Operating and other expenses	18 059	29 148	16 425	24 111
Capital payments				
Purchase of computers	2 374	476	944	514
Purchase of motor vehicles	4 648	1 128	4 860	1 053
Purchase of plant and equipment	2 826	1 007	2 140	1 678
Purchase of livestock .....	..	705	..	718
Upgrade of buildings and research facilities ..	1 274	528	611	3 496
Special Allocations				
Bovine Brucellosis and Tuberculosis Eradication and Compensation Direct Costs	15 482	..	14 569	..
Grant to Poultry Industry	737	..	715	..
Grant to Sugar Experiment Stations Board	850	..	850	..
Grant to The Livestock and Meat Authority Queensland	500	..	490	..
Grant to Meat Inspection Account .....	..	..	963	..
Necessitous Growers Seed Schemes	160	..	..	..
Cash Equivalent of Long Service Leave	817	..	1 919	..
Contribution to GOSUPER	2 046	..	..	..
	124 236	49 073	117 815	47 108

HUMAN RESOURCES

Staff

The Department; total staff is comprised of 2 519 public servants and 492 other staff employed under various other awards. Salaries, Wages and Related Payments amounted to \$90.5 m which represented 52% of the total payments made by the Department

STAFF BY PROGRAM	No.	%
Animal Industry	1 039	35
Plant Industry	586	19
Dairying and Fisheries	298	10
Land Utilisation	242	8
Marketing	233	8
Support Services and Administration	613	20
	<u>3 011</u>	<u>100</u>



**STATEMENT OF SOURCES AND APPLICATIONS OF FUNDS
FOR THE YEAR ENDED 30 JUNE 1989**

	(\$'000)	(\$'000)
Sources:		
Funds held at 1 July 1988		
Trust and Special Funds		7 256
Funds provided during 1988-89:		
State Government—Consolidated Revenue Account	121 720	
Commonwealth Government:		
Subsidies and Grants	25 776	
Reimbursements	231	
Industry	570	
Licences Fees Levies	7 044	
Capital Recoveries	2 401	
Financing Transactions	161	
Property Income	333	
Receipts for Goods and Services	7 898	
Other	9 573	
		175 707
TOTAL		182 963
 Applications:		
Departmental operations:		
Recurrent	110 867	
Capital	14 966	
Rural assistance:		
Repayable advances	160	
Grants	2 087	
Agricultural research and other funds	35 635	
Commonwealth Quarantine and inspectorial services ..	5 530	
Other	4 064	
		173 309
Funds held at 1 July 1988		
Trust and Special Funds		9 654
TOTAL		182 963

ACTS AND REGULATIONS

The Minister for Primary Industries administers the Acts and Regulations set out below.

Acts

Agricultural Chemicals Distribution Control Act 1966-1983
Agricultural Standards Act 1952-1981
Apiaries Act 1982
Artificial Breeding of Stock Act 1979
Banana Industry Protection Act 1989
Biological Control Act 1987
Brands Act 1915-1979
Bread Industry Committee Act 1979
Canned Fruits Marketing Act 1981-1985
Chemical Usage (Agricultural & Veterinary) Control Act 1988
Chicken Meat Industry Committee Act 1976
City of Brisbane Market Act 1960-1985
Dairy Industry Act 1989
Deer Farming Act 1985-1989
Exotic Diseases in Animals Act 1981-1982
Farm Produce Marketing Act 1964-1986
Fisheries Act 1976-1989
Fishing Industry Organization and Marketing Act 1982-1989
Fishing Industry Organisation and Marketing Act and Other Acts Amendment Act 1987
Fishing Industry Organization and Marketing Act and Other Acts Amendment Act 1989
Fruit and Vegetables Act 1947-1972
Fruit and Vegetable Act and Other Acts Amendment Act 1988
Fruit Marketing Organisation Act 1923-1985
Grain Research Foundation Act 1976
Hen Quotas Act 1973-1987
Liens on Crops of Sugar Cane Act 1931-1981
Meat Industry Act 1965-1988
Plant Protection Act 1989
Poultry Industry Act 1988
Primary Producers' Co-operative Associations Act 1923-1988
Primary Producers' Organisation and Marketing Act 1926-1989
Primary Producers' Organisation and Marketing, Fruit Marketing Organisation, Wheat Pool and Diseases in Plants Act Amendment Act 1930-1984
Primary Producers' Organisation and Marketing Acts and Other Acts Amendment Act 1941-1973
Queensland Grain Handling Act 1983-1988
Regulation of Sugar Cane Prices Act 1962-1989
Rice Industry Stabilization Act 1973
Soil Conservation Act 1986
The Soil Survey Act of 1929
Stock Act 1915-1989
Sugar Acquisition Act 1915-1989
Sugar Board Act 1966-1982
Sugar Experiment Stations Act 1900-1983
Sugar Milling Rationalization (Far Northern Region) Act 1987-1989
Swine Compensation Fund Act 1962-1975
Tobacco Industry Stabilisation Act 1965-1972
Torres Strait Fisheries Act 1984
Veterinary Surgeons Act 1936-1986
Wheat Delivery Quotas Act 1970-1974
Wheat Marketing Act 1984-1986
Wheat Pool Act 1920-1989
Wheat Pool Act Amendment Act of 1925
Wine Industry Act 1974-1982

Regulations

Agricultural Chemicals Distribution Control Regulations of 1970
Agricultural Standards Regulations 1984
Apiaries Regulations 1983
Artificial Breeding of Stock Regulations 1981
Banana Industry Protection Regulations 1987
Brands Regulations 1987
Bread Industry Committee Regulations 1986
Brisbane Market By-laws Brisbane Market Trust (Appointment of Licensed Buyers Representative) Regulations
Brisbane Market Trust Form of Accounts Regulations 1985
Brisbane Market Trust Inscribed Stock Regulations of 1962
Chemical Usage Regulations 1989
Chicken Meat Industry Committee Regulations 1977
Committee of Direction Levy Regulations of 1973
Dairy Industry Authority (First Constitution) Regulations 1989
Dairy Produce Regulations 1980
Deer Farming Regulations 1985
Diseases in Plants Regulations 1987
Exotic Diseases in Animals Regulations 1981
Farm Produce Marketing Regulations 1984
Fisheries Regulations 1977
Fishing Industry Organization and Marketing Regulations 1983
Fruit Marketing Organisation Regulations of 1964
Fruit and Vegetables Grading and Packing Regulations 1979
Hen Quota Regulations 1988
Margarine Regulations of 1958
Meat Industry Regulations of 1973
Milk Supply Regulations 1978
Poultry Industry Regulations of 1946
Primary Producers' Co-operative Associations Regulations 1987
Queensland Commercial Fishermen's Organization Regulations 1984
Regulations under the Primary Producers' Organisation and Marketing Act 1926-1989: Commodity Marketing Boards Elections Regulations 1987
Atherton Tableland Maize Marketing Board Levy Regulations of 1936
Barley Marketing Board Hail Insurance Levy Regulations of 1930
Central Queensland Egg Marketing Board Administrative Levy Regulations of 1947

Central Queensland Grain Sorghum Marketing Board Levy Regulations of 1970
Central Queensland Grain Sorghum Marketing Board Special Research Levy Regulations 1989
Cotton Marketing Board Hail Insurance Regulations 1985
Cotton Marketing Board General Reserve Revolving Fund Regulations of 1965
Council of Agriculture Regulations of 1936
Egg Marketing Board Regulations
Navy Bean Marketing Board Levy Regulations of 1970
Peanut Marketing Board Levy Regulations of 1927
Queensland Cane Growers' Council Regulations 1987
Queensland Commercial Pig Producers' State Council Regulations 1978
Queensland Dairyfarmers' State Council Regulations of 1947
Sugar Levies 1979-1981 Seasons
Sugar Levies 1983 Season
Sugar Levies 1984 Season
Sugar Levies 1985 Season
Sugar Levies 1986 Season
Sugar Levies 1987 Season
Sugar Levies 1988 Season
Tobacco Leaf Marketing Board Levy Regulations of 1948
Queensland Fish Board Regulations 1984
Queensland Dairyfarmers' Organisation (Brucellosis Slaughter Out Loss of Income Insurance) Regulations 1989
Queensland Grain Handling Authority (Elections) Regulations 1983
Queensland Grain Handling Authority By-laws 1984
Regulation of Sugar Cane Prices Regulations of 1963
Stock Regulations 1988
Identification of Stock Regulations 1985
State Wheat Board General Regulations 1987
State Wheat Board Meeting By-laws 1988
State Wheat Board (Elections) Regulations 1988
Hail Insurance Scheme Regulations 1972
Hail Insurance Reserve Fund Regulations of 1926
Sugar Experiment Stations Regulations 1987
Tobacco Industry Protection Regulations 1988
Tobacco Industry Stabilisation Regulations 1988
Veterinary Surgeons Regulations 1986
Exemption from Delivery of Wheat Regulations 1984
Wine Industry Regulations 1979

In December-January, a 60-day State-wide amnesty gave holders of banned organochlorines an opportunity to surrender such chemicals before the May 1989 proclamation of the *Chemical Usage (Agricultural & Veterinary) Control Act of 1988*. The Act is designed to ensure that agricultural chemicals are used safely and that Queensland produce does not contain residues in excess of maximum acceptable levels.



LEGISLATION

During 1988-89, the Minister for Primary Industries had 12 pieces of legislation enacted through the Queensland Parliament.

Banana Industry Protection Act 1989

This Act repealed and replaced the *Banana Industry Protection Act 1929-1937*. Disease control provisions are now brought under the *Plant Protection Act 1989*. The Banana Protection Industry Protection Board is retained and given powers to deal with prevention, control and eradication of pest infestation during production and distribution, and to investigate varietal improvement.

Chemical Usage (Agricultural & Veterinary) Control Act 1988

This Act is concerned with possession and use of agricultural and veterinary chemicals that can harm human or animal life, property, trade or the environment.

Dairy Industry Act 1989

This Act repealed and replaced (so far as is relevant) the *Dairy Produce Act 1978-1979*, the *Filled Milk Act 1958-1982*, the *Margarine Act 1958-1982*, and the *Milk Supply Act 1977-1986*. It is aimed at providing the dairy industry with simplified and efficient management. A new Dairy Industry Authority, with expanded industry representation, replaces several bodies created under the repealed Acts. Milk franchising, licensing and entitlements are continued.

Deer Farming Act Amendment Act 1989

This amending Act deregulated certain aspects of deer farming, particularly fencing, registration and eartagging. A single statewide standard now applies, and statutory concepts and controls are simplified.

Fishing Industry Organization and Marketing Act and Other Acts Amendment Act 1989

This Act amended the *Fishing Industry Organization and Marketing Act 1982-1987*, the *Primary Producers' Organisation and Marketing Act 1926-1987*, and the *Fisheries Act 1976-1984*. Its major aims are to rationalise and expand provisions for managing commercial fisheries, to enhance protection of marine life breeding environment and to bring the Commercial Fishermen's Organisation under the provisions of the Primary Producers' Organisation and Marketing Act. Queensland Fish Management Authority membership is expanded to allow for enhanced representation. Waters governed by State law under Offshore Constitutional Settlement arrangements will be subject to both the Fishing Industry and Organization and Marketing Act and the Fisheries Act.

Pig producers are using on-farm performance tests to select better breeding stock. Here, a producer is using ultrasonic equipment to determine back-fat depth for selecting lean animals.



Plant Protection Act 1989

This Act provides for the protection of plants from pests introduced into Queensland and from the movement of pests in Queensland. It repealed and replaced (as far as is relevant) the *Diseases in Plants Act 1929-1972*, the *Cotton Industry Act 1923-1926*, the *Peanut Industry Protection and Preservation Act 1939-1965*, and the *Tobacco Industry Protection Act 1965-1985*.

Poultry Industry Act 1988

This Act repealed and replaced the *Poultry Industry Act 1946-1984*. It is mainly concerned with the efficiency of egg and poultry meat production. The Poultry Advisory Committee is retained, along with many health and quality-control provisions. The Act has a 'sunset clause' setting an expiry date of 31 December 1994.

Primary Producers' Co-operative Associations Act Amendment Act 1988

This amending Act was designed to help the formation and registration of co-operative federations between Queensland and interstate primary producers' co-operatives.

Regulation of Sugar Cane Prices Act and Another Act Amendment Act 1989

This amending Act institutes further sugar industry reforms such as smaller industry bodies, more flexible land use and a register of mortgages for better industry financing. Growers and millers may also enter into agreements, subject to Central Sugar Cane Prices Board control.

Stock Act Amendment Act 1989

This amending Act will enable better control of brucellosis and tuberculosis eradication programs. It expands the Governor in Council's authority to implement brucellosis and tuberculosis eradication program target dates and enables the Chief Inspector to order or carry out destocking if a person fails to comply with the program.

Sugar Acquisition Act Amendment Act

This amending Act empowers the Sugar Board to enter directly into contracts in its corporate name for domestic and export raw sugar sales and for related matters.

Wheat Pool Act and Another Act Amendment Act 1989

This amending Act is designed to enable the State Wheat Board to efficiently market the Queensland wheat crop, with consequential amendments to the Primary Producers' Organisation and Marketing Act. Vesting of crops is provided for by Order in Council; the Board's marketing and financing powers are enhanced; and flexible payment and pricing options are provided.

A QDPI laboratory technician uses high-performance liquid chromatography to measure pesticide residues in soils, as part of a study on the fate of pesticides on the farm.

Stubble mulching involves leaving a cover of plant residue on the soil surface to protect the soil from erosion damage caused by heavy rain. This converted chisel plough/planter was designed and built by the QDPI to plant through surface stubble. It is lent to farmers to demonstrate the value of stubble mulching.

Amarillo pinto peanut produces a dense, low-growing and grazing-tolerant pasture for dairy and beef cattle in coastal Queensland. This legume combines well with low-growing grasses. It also finds use as a ground cover in orchards and banana plantations. A specialised harvester has been designed and built by the QDPI engineering section to recover underground pods containing Amarillo seed.



ANIMAL INDUSTRIES

The purpose of the QDPI animal industries program is to improve the productivity, efficiency and economic value of animal industries and to improve the quality of food, fibre and other products of these industries for domestic and export markets, in a way that conserves natural resources and maintains public health standards.

Animal health issues

On 1 January 1989, after 15 years and 15 million tests, the expert team of QDPI field, inspectorial and laboratory staff and the producers of Queensland reached a landmark in animal health history: the entire State was declared a 'brucellosis free area'. On the same date, the State achieved a 'tuberculosis provisionally free' status; given Queensland's diverse geography and climate, few other places in the world can match this feat.

WORMBUSTER, a program providing a means of cost-effective worm control to delay the onset of anthelmintic resistance, proved successful.

On the Darling Downs and in the Maranoa district, an initial adoption rate of about 70% of sheep producers was achieved.

A major review of the cattle tick control program gave producers incentives — through access to better markets — to improve their tick status. A total of 470 properties, from the New South Wales Border to the Arcadia Valley, were removed from quarantine.

An exercise to test the preparedness of both industry and Government to cope with an outbreak of exotic Newcastle disease of birds was conducted in May.

Genetic improvements

The number of breeders using the QDPI beef genetic improvement program (incorporating BREEDPLAN) had doubled since its launch in November 1988 to achieve a 15% adoption rate. LAMBPLAN, a national meat sheep program, was also launched in 1988, and WOOLPLAN, the national recording scheme

for Merino sheep, had been adopted by 24 merino stud breeders, including most of the main suppliers.

The Pig Artificial Breeding Centre, at Wacol, was commissioned and was supplying semen to 270 customers in Queensland, other states and overseas. This facility, integrated with the central board testing and on-farm performance testing programs, is helping Queensland pig producers maintain economic efficiency.

With the goal of improved productivity in the beef and goat industries, QDPI animal quarantine officers were formulating protocols to acquire centuries of tropical and pest resistance by importing embryos from Africa. A live bird importation protocol was devised to increase the poultry genetic pool, without endangering the Australian flock's disease-free status.

The Animal Genetics Centre at Warrill View was being developed as a centre for genetic improvement, animal breeding technology and reproductive physiology. The centre's work on the tropically adapted AFS dairy breed continued, and the multiple ovulation and embryo transfer (MOET) program for AFS cattle and cashmere goats was being fully implemented. Many inquiries were received from South-East Asia, particularly the Philippines and Thailand, for AFS semen. One Filipino company announced plans to establish a 2000 head dairy based on the AFS breed.

More than 50 agents had been appointed to sell Wacol AB Centre products in Australia. Pasture Glen Miranda Citation (ANDA) had sold more than 60 000 doses of semen throughout Australia. This is the largest sale of semen from a single Holstein-Friesian bull.



QDPI is supporting WOOLPLAN, the national recording scheme for Merino sheep. The scheme provides studs and their clients with the most accurate tool available for selecting high-performing sheep.

Product quality

To meet consumer expectations of a pure product, QDPI animal industry branches reduced the number of properties quarantined for chemical pesticide residues by 70%. The clean-up rate satisfied United States and EEC inspection authorities that the QDPI testing, traceback monitoring and field extension system was reliable. Since unacceptable residue levels were first detected in beef destined for the United States, 120 000 samples had been analysed.

In line with the total quality assurance approach (Q-SAFE), QDPI inspectors were providing a new pig health monitoring service at abattoirs. Moves were underway to have every school child in Queensland taught safe food-handling practices.

Research in the poultry industry has provided diets for faster and more efficient growth of chickens with less carcass fat, a feature highly desirable in today's market.

Trials showed that oiling eggs on the day of lay greatly improved the freshness of unrefrigerated eggs for up to 2 to 3 weeks after lay.

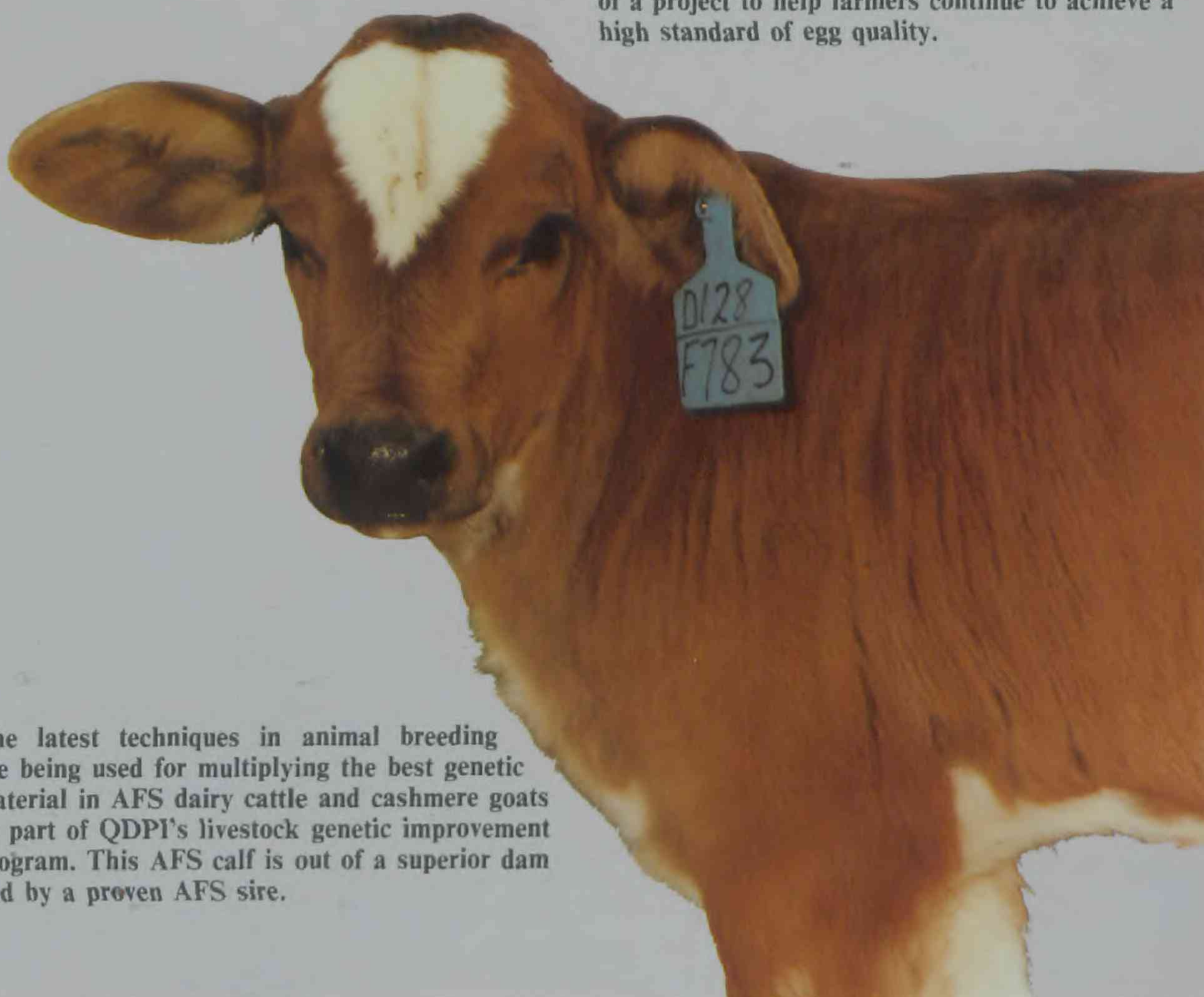
New technologies

DNA finger printing to compare isolates of infectious bovine rhinotracheitis (IBR) was used for the first time in Queensland when a pen of cattle at Toowoomba saleyards showed clinical signs suspiciously like those of an exotic vesicular disease. The test showed that IBR virus isolates from the saleyard cattle were identical to each other, but different from all other strains of the virus known to occur in Australia.

Vaccine research on bovine leucosis virus entered the arena of molecular biology. Genetic engineering techniques were being employed to clone the gene encoding a protein that may afford protective immunity. The cloned gene will be used to construct a recombinant virus vaccine.



Yolk colour of eggs is an important requirement for commercial egg producers and for consumers. Here, QDPI staff at the Poultry Research Centre, Cleveland, examine yolk-colour intensity as part of a project to help farmers continue to achieve a high standard of egg quality.



The latest techniques in animal breeding are being used for multiplying the best genetic material in AFS dairy cattle and cashmere goats as part of QDPI's livestock genetic improvement program. This AFS calf is out of a superior dam and by a proven AFS sire.

PLANT INDUSTRIES

The purpose of the QDPI plant industries program is to research, develop and promote improved productivity and economic value of field crop, horticultural, beekeeping and pastoral industries and their capacity to supply high-quality food, fibre and other products for domestic and export markets, consistent with conservation of basic soil, water and vegetation resources.

Plant breeding

Genetic improvement research continued as a major program activity. Two new wheat varieties, Janz and Perouse, were released by the Queensland Wheat Research Institute, Toowoomba. Manark, a new, higher yielding soybean with resistance to phytophthora root rot and bacterial pustule, together with Bisset creeping bluegrass and Amarillo pinto peanut pasture legume, are the first QDPI-developed plant varieties submitted for Plant Variety Rights protection.

The tomato breeding program released Delta Tristar to overcome the losses caused by fusarium wilt race 3 in the Bowen area. Delta Tristar is the world's first commercial tomato variety combining resistance to all three races of fusarium wilt.

Varieties of Geraldton wax, an important ornamental plant for export, were selected to overcome gall formation, a problem inhibiting export to the profitable United States market.

Under an international program to obtain improved banana germplasm resistant to fusarium wilt and Sigatoka disease, banana germplasm has been collected from Papua New Guinea and other sources for tissue culture propagation and banana breeding. The development of a diagnostic probe for banana bunchy top was advanced.

QDPI began marketing improved plant germplasm to the commercial seed industry for incorporation into private breeding programs. Two sorghum parental lines, QL38 and QL39, which combine high levels of midge resistance, disease resistance, yield potential and standability, were licensed to seed companies.

The recently released rice variety Fin has doubled rice yields in the Burdekin River Irrigation Area to 10 t/ha, a clear demonstration of the benefits of plant breeding activities.

A QDPI researcher samples Geraldton wax foliage from an experimental plot at Crows Nest to examine galls caused by minute wasps. The galls are swellings in leaves and stems caused by the wasps laying their eggs in the plant tissue. In the background, a 'sticky trap' placed in the plot catches wasps flying over the plants to see if seasonal wasp activity matches the degree of galling on the plants.



Seed heads of sorghum showing the effect of midge infestation on the midge-susceptible variety compared with the resistant variety.

Banana research at South Johnstone Research Station, near Innisfail, aims to find a control for fruit maturity bronzing. This skin-blemish disorder prevents fruit from reaching market, even though the pulp is sound.



Crop and pasture management

Research and extension staff have combined to develop computer-based crop management decision-support systems. A software program WHEATMAN was released commercially to help wheat growers, and a range of other farm decision-support systems were field-trialled.

New extension strategies to improve regional resources for transfer of technical information to producers were initiated. Regional access to information databases through a statewide computer network was further advanced. A new concept of 'farmer information centres' was implemented at Maroochy Research Station.

The need for greater use of legumes such as Seca and Verano stylo and Wynn cassia in native pastures, and better pasture and stock management for conservation of native pasture and soil resources were also highlighted.

Pesticide usage

Plant protection activities focused on the safe use of pesticides. Pest management systems that integrate biological and cultural control methods and reduce the level or frequency of chemical pesticide use were further developed. The systems being developed include a combination of bunch injection and naturally occurring predators and parasites for banana pest control, and biological control for nematodes, where the use of chemical fumigants is being phased out.

QDPI released INFOPEST, a pesticide registration and use database. This provides direct access to up-to-date pesticide information and enhances development of regional or crop-specific extension guides.

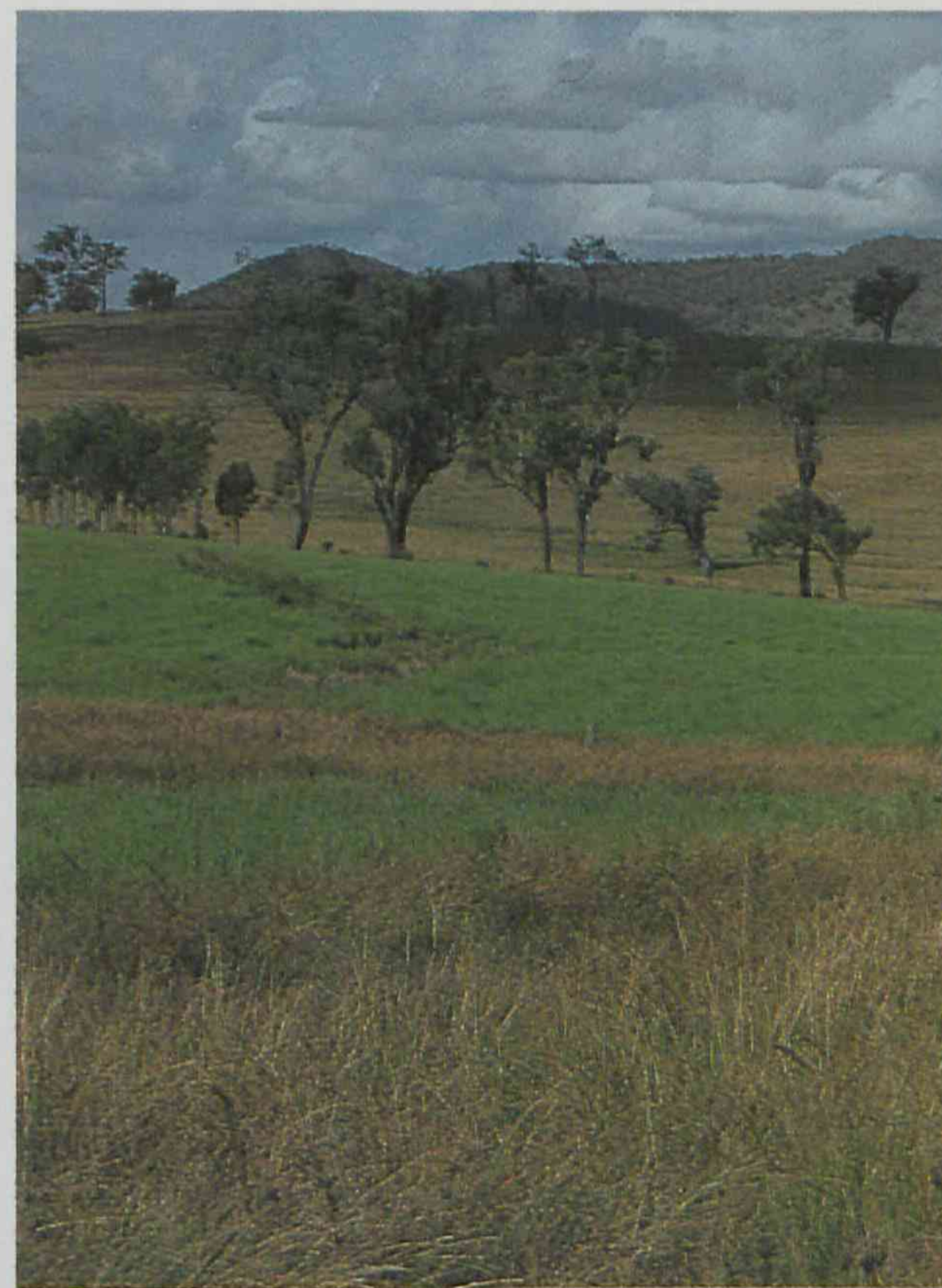
Export of horticultural crops was enhanced through product quality assurance and management projects. QDPI initiated a significant new project on non-chemical treatments for postharvest disinfestation; a vapour-heat treatment unit was bought for this research.

Soil fertility

Research and extension projects focused on declining soil fertility, particularly in grain-growing areas, and on the benefits of a grain legume, such as chickpeas, being included in crop rotations. Special-focus extension activities included 'Operation Wheat Quality', a campaign to highlight the need to maintain high-quality wheat production.

Plant genetic resources

The Australian Tropical Crops Genetic Resource Centre, at Biloela, was opened in October 1988 to provide a national germplasm resource for all tropical field crops. The Queensland Herbarium at Indooroopilly improved its collection of some 500 000 native and naturalised plants; the herbarium's botanical expertise was used heavily in documenting the plant resources of Queensland's wet tropical rainforests and Cape York Peninsula.



Bisset creeping bluegrass in early May contrasts with mature brown spear-grass native pasture near Kilkivan, west of Gympie. Bisset grows particularly well on loam and clay soils in sub-coastal and sub-humid areas of Queensland, including the black spear grass and brigalow lands. Its main role is as a long-term pasture grass.

One of the major constraints in the expansion of sown pastures is the availability of seed. QDPI extension agronomist in Rockhampton, John Wildin, has been developing suitable seed harvesters in conjunction with a local engineering firm. Here, one of these harvesters is tested in Hymenachne ponded pastures at St Lawrence in central Queensland.



FOOD TECHNOLOGY

The purpose of the QDPI food technology program is to help Queensland food industries, through research, extension, regulation and service, to achieve high product quality and efficiency of post-harvest handling, processing and distribution, consistent with community needs.

Dairy products

Studies on pasteurising conditions and storage temperatures of milk indicated that lower storage temperatures provide the greatest gains in product shelf life. Increasing the severity of pasteurising conditions provides no additional benefits in this regard, and, under certain conditions, may even be counter-productive.

Meat

Bruised beef may not need to be discarded, but could be incorporated into added-value products such as salami and other smallgoods. Early results of investigations into using bruised tissue in processing showed no difference between bruised and unbruised beef in microbiological and functional properties. Bruising in cattle now costs Queensland's beef producers \$24m yearly.

Seafood

Tropical reef fish retain their eating quality longer than many other fish species, according to a joint QDPI-Northern Territory Government study. When stored whole on ice, the 11 tropical reef species examined had storage lives of 19 to 29 days.

Fruit and vegetables

A quantity of aseptically packaged (bag-in-box type) mango puree was produced for export market evaluation. The joint project between Austrade, the Committee of Direction of Fruit Marketing and QDPI could lead to export markets for processed products from Queensland Kensington mangoes.

High-quality, nutritious fruit and vegetable chips can now be produced using QDPI designed and built pro-



Bruised beef is presently discarded and represents a substantial loss to the Queensland beef industry. Trials are being carried out to develop products in which bruised beef can be profitably incorporated. One promising product is salami, which is smoked during its manufacture.

Optimal cooking of seafoods for maximum weight recovery and the best eating quality is important to the seafood processor. Steam cooking of mud-crabs was compared with the conventional boiling method.



totype equipment. The new process, involving low-temperature frying under high vacuum, reduces oil uptake by the product, minimises vitamin losses, and retains the natural flavour and colour of the fruit or vegetable.

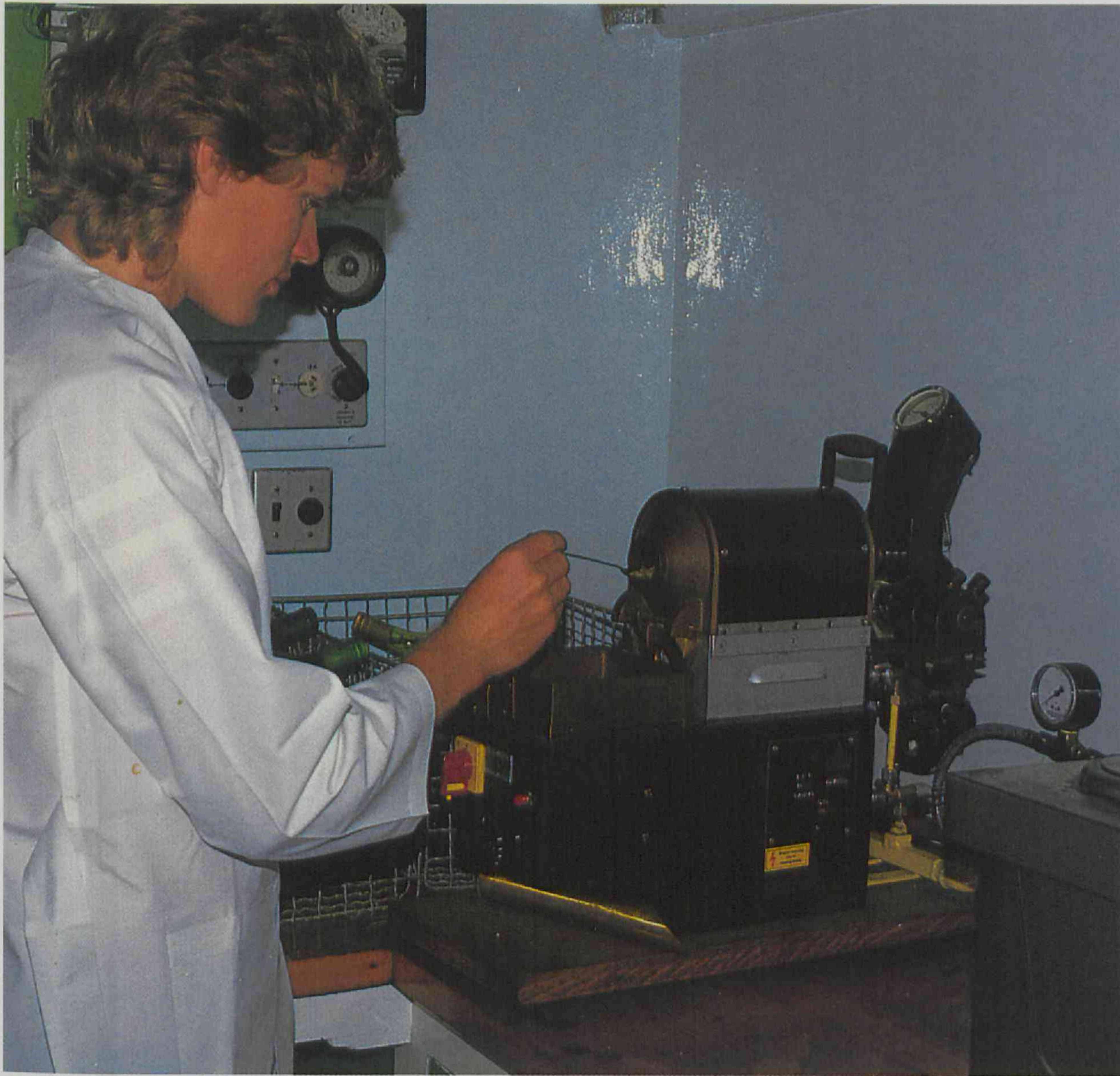
Coffee

The liquoring quality of experimentally grown north Queensland arabica coffee showed promise. This has provided the incentive for further development towards a significant north Queensland industry.

A QDPI coffee technology seminar enabled QDPI officers involved in coffee research and commercial processors to discuss worldwide trends in coffee production, processing, economics and marketing. The consensus was that, to achieve a viable Australian coffee industry, advanced technology had to be employed and the high-price roast-and-ground coffee market penetrated.

Food engineering

The energy efficiency of commercial ginger-drying was determined for a rotary drier used with whole and sliced ginger. The study recommended reducing energy usage by up to 24% through improved insulation of recirculation ducts and alterations to the recirculation system.



The coffee industry is small but potentially very valuable to the Queensland economy. Horticultural and postharvest aspects of coffee production are being examined in a major QDPI program. North Queensland arabica coffee beans are roasted for evaluation of their liquoring quality.



Analytical services

The range of tests offered to the Queensland food industry continued to expand. The service now includes testing foodstuffs for organisms of emerging public health significance, such as *Listeria* and *Yersinia*.

Regular testing for pesticide residues in dairy products revealed no samples above the maximum recommended limit.

Contract research and consulting

Demand from the food industry for confidential, fee-for-service contract research and consulting work increased dramatically. Companies and cooperatives from the dairy, meat, seafood, wine and grain industries sought assistance. Services most in demand were product development, quality assurance systems implementation and training, and food analyses.

Extension services

'Building quality into food' was the theme of QDPI's first quality management workshop for food processors. Participants from the dairy, meat, poultry, ginger and macadamia nut processing industries were made aware of this QDPI program and instructed in quality management.

More than 2000 technical enquiries relating to the processing of food products were handled by QDPI officers in Brisbane and country centres. Over 70% of enquiries were from established processors and potential new processors; the remainder were from consumers, equipment suppliers, government sources and private consultants.

The constant surveillance of food products for unwanted residues is necessary to ensure the safety of Queensland's food products. The QDPI regularly tests dairy products to ensure the absence of pesticide residues.

FISHERIES

The purpose of the QDPI fisheries and wetlands management program is to improve fishing industry productivity and value, enhance the quality of fresh and processed seafoods for domestic and overseas markets and effectively manage and conserve the natural resource supporting these industries.

Aquaculture

The aquaculture industry continued to develop. More than 100 properties had aquaculture permits. Through its aquaculture extension service, QDPI is providing information and advice to proposed and existing operations.

Considerable progress was made in designing and constructing the new Bribie Island Aquaculture Centre, the first stage of which is due for completion in late 1989.

Red claw

The aquaculture potential of north Queensland's freshwater crayfish ('red claw') was investigated at Walkamin Research Station. Many aquaculturists have expressed great interest in

this animal as an alternative to West Australian marron. The future for 'red claw' aquaculture looks promising.

Barramundi

Barramundi breeding techniques continued to be refined by QDPI fisheries staff at Cairns, Walkamin and Deception Bay. Improvements in broodstock maintenance, spawning induction, larval nutrition and pond grow-out resulted in more than 60 000 fingerlings being stocked into north Queensland impoundments. Larval nutrition findings have significantly benefited the barramundi aquaculture industry.

Barramundi fingerlings stocked into Lake Tinaroo and Lake Morris have shown remarkable growth rates over the last two to three years. Three-year-old barramundi in Lake Tinaroo now weigh as much as 7.3 kg. Other native species stocked into Lake Tinaroo are providing excellent fishing, but barramundi remain hard to catch. Reasons for this were being investigated.

Recreational fishing

The recreational fishing enhancement program, to which the Queensland Government has contributed \$1m annually, completed its third year. About 660 000 golden and silver perch, murray cod, saratoga and bass fish were stocked in 1988. Post-stocking monitoring programs had been introduced, in conjunction with local stocking groups. Good catches were being recorded from many of the 40 impoundments stocked in the program's first two years.

Commercial fisheries database

CFISH, the commercial fisheries database established in conjunction with the Queensland Fish Management Authority, completed its first year of operations. All commercial fishermen now provide daily catch records and have an almost one hundred percent compliance rate. Data is entered within four weeks of its receipt. Computer programs for 34 report styles enable timely reports to be prepared.



QDPI fisheries staff treat barramundi broodstock with acriflavine for bacterial infection and parasite infestation before releasing them in spawning tanks at QDPI's Southern Fisheries Research Centre, Deception Bay.

Prawn fisheries

Projects designed to evaluate the effectiveness of management measures, particularly seasonal closures, continued on prawn fishing grounds in the Torres Strait, Princess Charlotte Bay and Moreton Bay, and off Cairns, Bowen and Mackay. The emerging picture was one of separate fisheries, each with a different species mix (up to seven commercial species in one fishery) and different times when juvenile prawns enter the fishery. A greater understanding of these differences is required before existing closures can be evaluated and alternatives recommended.

Seagrass studies at Mornington Island (Gulf of Carpentaria), Torres Strait and Cairns, and surveys along the entire east coast highlighted the critical importance of seagrasses as

QDPI fisheries officers organised the eradication of a feral population of Tilapia, an African native fish, from a small dam at Port Douglas in March. Twelve tonnes of Tilapia were removed, after growing in about 18 months from an original population of five fish. Tilapia, a noxious species, have the capacity to dominate native fish species, if they manage to spread through Queensland's river systems.



A QDPI fisheries technician checks a fish trap as part of the preliminary stage of a project to assess the impact of fishing within Great Barrier Reef waters.

tiger prawn nursery grounds. Two key publications were published: one on Moreton Bay seagrass beds, to add to the growing list of reports on east-coast seagrass types and their distribution, and one on the mangrove communities in Moreton Bay and surrounds, documenting changes over the last 10 years.

Inspection/liaison

Fisheries inspection and liaison officers, stationed at Brisbane, Rockhampton and Townsville, were involved with commercial and recreational fishermen, aquaculture operations and the seafood marketing sector on matters such as scallop shell and meat surveillance, oyster operations, inspections of seafood premises and noxious fish eradication.



LAND CONSERVATION

The purpose of the QDPI land conservation programme is to investigate and promote the adoption of agricultural and pastoral systems that protect the stability and productivity of rural lands, that maintain the quality of food and fibre produced from them, and that have minimum adverse impact on water resources, public infrastructure and the environment.

Land resource assessment

Soil studies in southern Queensland's Beenleigh and Maryborough areas have focused on the availability of land for growing sugar-cane. The information from these studies will help local authorities and the industry in planning land use.

Land use studies identified areas of potential cropland along the upper Herbert River and in the Einasleigh-Atherton areas of north Queensland and the upper Lockyer Creek of south Queensland.

Results of studies, in the Burdekin River Irrigation Area, indicate that furrow irrigation of upland soils raises the groundwater level leading to potential salinity development.

The increasing incidence of acid soils was studied. Results show that high nitrogen fertiliser usage can lead to soil acidification and lower productivity in some pastures, while manganese toxicity causes low barley yields on some acidic red soils.

A survey of the mulga lands of western Queensland was undertaken in collaboration with Department of Lands officers. The study report indicates a serious degradation problem and identifies management options to overcome the problem.

Satellite technology is being used in collaboration with the Department of Geographic Information to monitor the effect of drought and drought management strategies on land and pasture condition.

Soil conservation

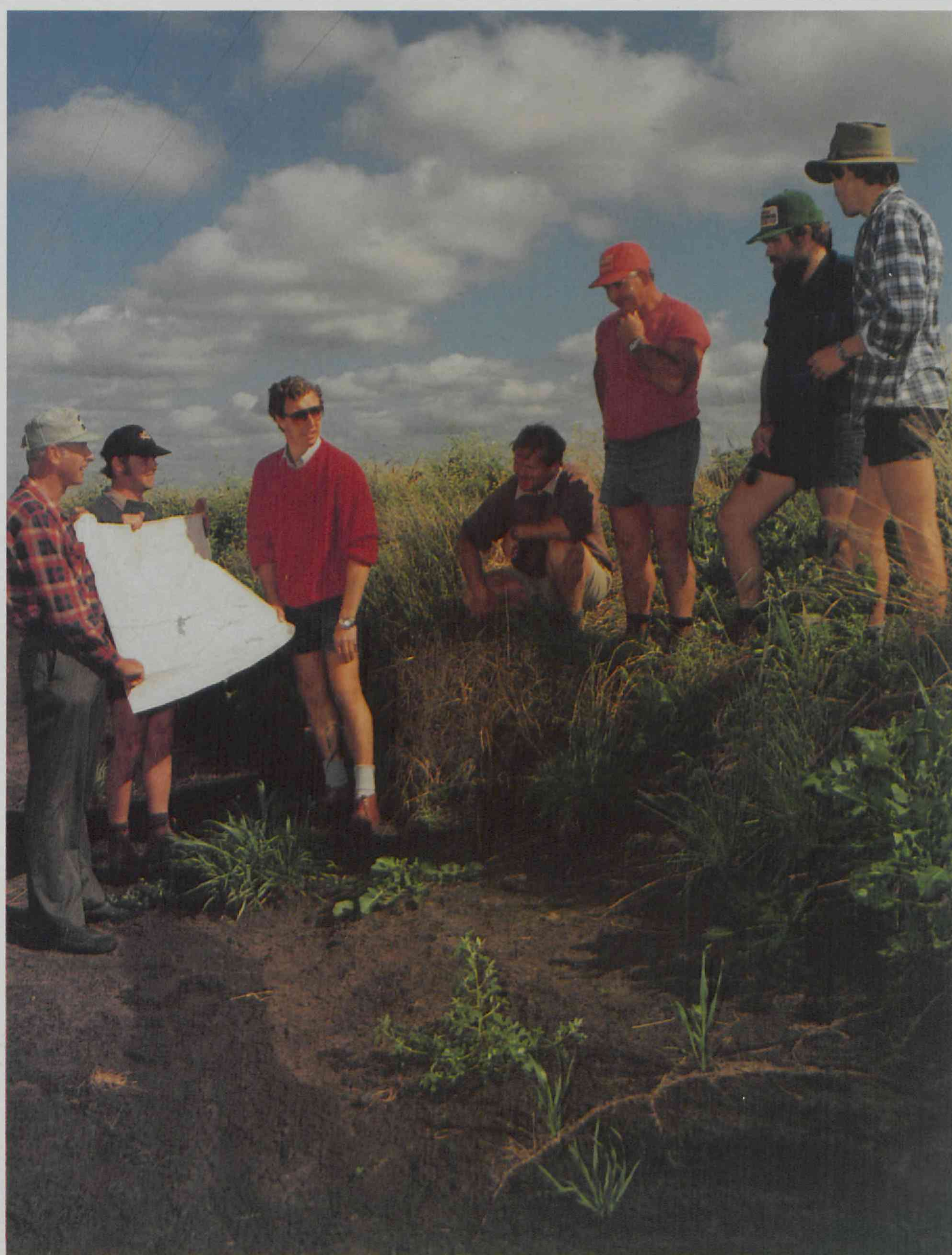
Conservation cropping research in the Central Highlands has shown that zero and reduced tillage practices provide

more scope for opportunity cropping than do conventional tillage practices. Research has also found that, contrary to popular belief, lower rainfall rather than limited water-holding capacity restricts crop yield on the major cropping soils of the Maranoa.

The adoption of green-cane harvesting increased in most districts, with 33% of last season's sugar-cane crop in the Childers district being harvested in this way.

QDPI Soil Conservation Services Branch field officers help landholders prepare management plans. Here, a plan is discussed with members of a local land care committee.

A pleasing trend, which began in 1988, was the increasing acceptance by rural communities of responsibility for good land management. At the year's end, 31 localities had formed, or were forming, land care committees, coordinated and supported by the Queensland Government. The committees' conservation activities include organising field days, farm walks, discussion nights, bus excursions and displays, and preparing land management field manuals.



More than 53 000 ha of Queensland's cropping lands were protected with soil conservation measures (contour banks, waterways and strip cropping layouts) in 1988-89, bringing the State's total protected cropping lands to more than 1.16m ha. A further 4800 ha of grazing lands were protected with pondage banks, pasture furrows and water spreading systems.

Soil fertility and product quality

The fate of pesticide and heavy metal residues on the farm was being investigated. Analyses indicated no Lockyer Valley groundwater contamination by atrazine, a herbicide used extensively for weed control in cropping. Research on soil atrazine breakdown rates resulted in safe replant periods being established for susceptible crops.

Cereal chemists were investigating the characteristics of wheat that produces high-quality alkaline noodles, to help maintain the value of Queensland export wheats.

Landholder interest in trash farming in sugar-cane ensures good attendance at farm days in the Bundaberg area.

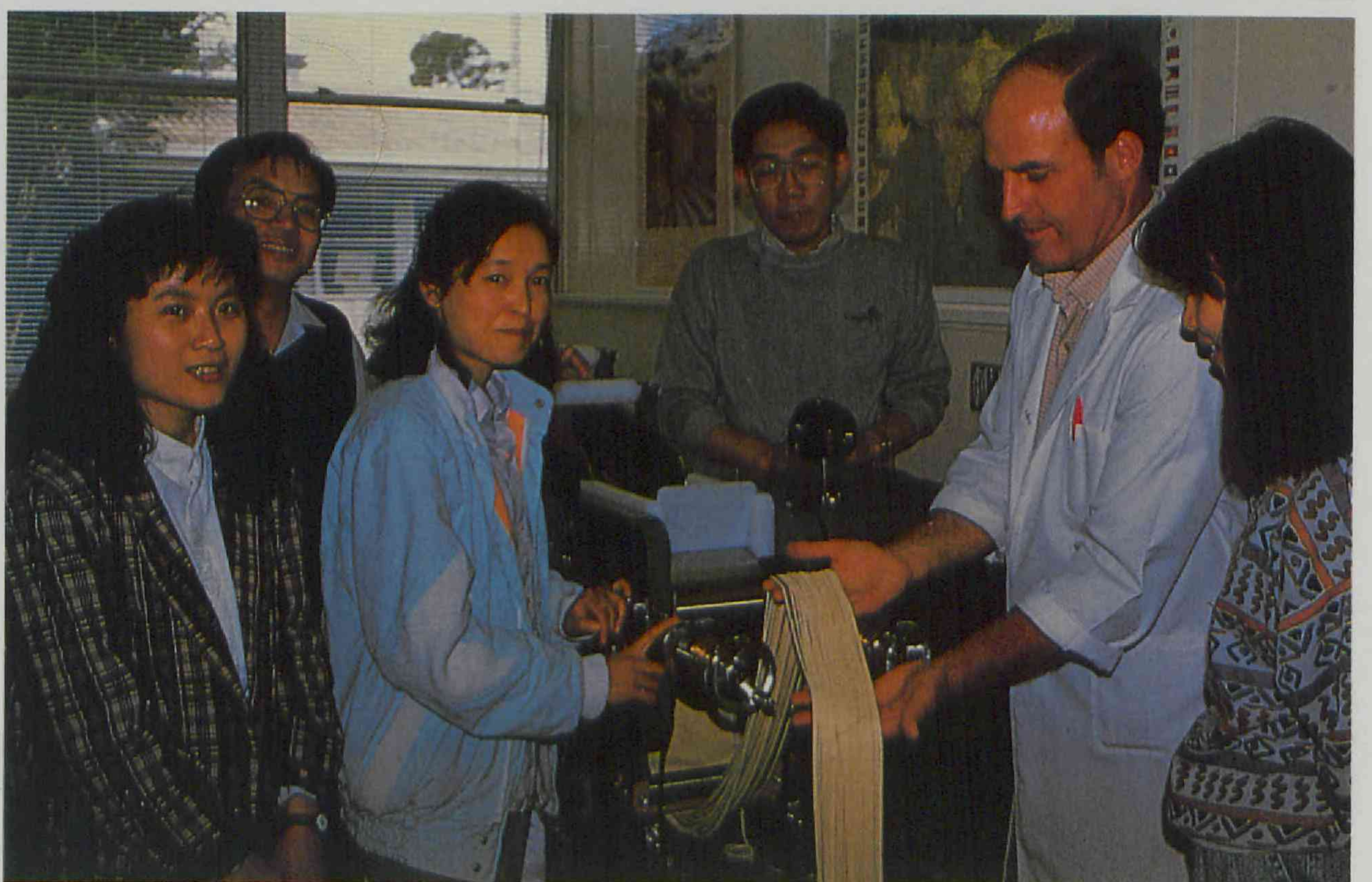
A QDPI cereal tester demonstrates noodle production and testing in the QDPI's Agricultural Chemistry Branch laboratories in Toowoomba. Since 80% of Queensland's wheat production continues to be exported to predominantly Asian countries, this work is ensuring that Queensland's exported wheat is well suited to Asian requirements.

LAND CARE COMMITTEES



Land degradation is affecting the production in Queensland's mulga lands. Research experiments have been established to understand the processes involved. Runoff is being monitored in the mulga lands to define desirable levels of protective plant cover and, hence, stocking rates.

This map highlights the area covered by land care committees, formed or being formed with Queensland Government coordination and support. These committees draw local people together into community groups to work towards good land management and to secure their lands' productive future.



AGRIBUSINESS SERVICES

The purpose of the QDPI agribusiness program is to promote efficient and effective marketing and farming systems and quality standards relevant to Queensland's agricultural and fishing industries through research and information services in marketing, economics, finance management and agricultural standards.

Commodity marketing boards

Marketing officers deputised for the Director of Marketing on several boards and contributed to substantial changes to marketing arrangements for declared commodities. New corporate entities to replace the Cotton Marketing Board and the Butter Marketing Board were proposed; the implications of New South Wales egg-marketing deregulation on Sunny Queen Eggs' operations were assessed; and amendments to legislation were drafted in response to the Commonwealth Government's proposed changes to wheat marketing. The Tobacco Leaf Marketing Board was helped to prepare submissions relating to new stabilisation arrangements and recompense to the industry after imposition of a State licensing fee on tobacco products.

Financial and management services

A Green Paper proposing substantial amendments to the Primary Producers' Co-operative Associations Act was prepared. Rights and responsibilities of growers and sellers under the Farm Produce Marketing Act were publicised at meetings throughout Queensland. Fifty-four complaints under the Act were investigated and seven breaches of the Act were prosecuted successfully. Workshops for directors and senior executives of boards and co-operatives were conducted in collaboration with the Council of Agriculture.

Marketing research and development

Information on new farming, grazing and other related activities, to supplement traditional enterprises, was published in the popular book, *Choices and Challenges — Farming Alternatives for Queensland*. A computer-based information system and a daily facsimile service to key subscribers enhanced the daily market reports from the Brisbane Markets. Marketing research, including consumer and retailer surveys, underpinned marketing plans and promotional campaigns for mangoes,

bananas, vegetables, lychees, passion-fruit, tea tree oil and the wine industry. Business plans for the QDPI beef genetic improvement program, tick fever vaccine and the duboisia industry were prepared.

Farm financial counselling

This service, to help producers in financial difficulties, was expanded to 12 counsellors located throughout Queensland. By 30 April 1989, 1500 producers had been assisted, including many hit by drought. QDPI agricultural economists and other technical officers helped financial counsellors assess assistance applications under the primary industry productivity enhancement scheme. More than \$9m had been advanced by 30 April.

Economic research

An economic study of peanut growing highlighted the plight of growers suffering below-average seasonal conditions and depressed market prices. Assessment of expected economic returns from plant-breeding activity was completed for the Queensland Wheat Research Institute, Toowoomba. Similar studies were examining returns for sorghum, sunflower and maize breeding programs. Economic payoffs from a range of oilseed research projects were evaluated at Biloela Research Station.

Computer-based decision-making aids were devised for the beef industry in north Queensland, fertiliser management in the South Burnett, diversification into macadamias on the Sunshine Coast and export citrus production in the Mundubbera district.

Mr Harry Onji (left), marketing director with the Queensland Government Office in Tokyo, discusses export citrus quality with Mr Darrel Wallis (right), of Auburnvale Citrus Pty Ltd, Mundubbera, and Mr Laurie Bell, of QDPI's marketing development section. Mr Onji visited Queensland in May 1989 on an orientation visit.



Agricultural standards

New legislation to impose stricter controls on agricultural and veterinary chemical use resulted in Agricultural Requirements Board approvals for about 970 minor uses of chemicals, publication of the INFOPEST and VETMED databases and associated extension pamphlets, and establishment of community committees to reduce friction between primary producers, aerial operators and local townspeople over chemical applications.

New industry training and quality assurance procedures were introduced as a result of negotiations to recommence cucurbit and tomato exports to New Zealand. New export standards resulted in expanded Granite Belt apple exports to Japan. With the approval of cold-treatment disinfection, Valencia orange shipments to Japan increased.

Certification schemes for grain legumes were introduced using contract inspection. Seed testing services were improved through the computerised SEEDTEST system for recording test results and accounting requirements.

Consultancies and training

QDPI officers undertook 37 consultancies in response to requests for technical assistance from 18 countries. Eight projects, undertaken in collaboration with the Australian Centre for International Agricultural Research, returned \$1.5m to QDPI. A major project on cocoa quality improvement began in Papua New Guinea for the Australian International Development and Assistance Bureau.



Members of a delegation from Shanghai, China, discuss Queensland-developed wool-processing technology with representatives of Wool Cleaning Technologies Ltd, Brisbane, during a visit in February 1989.

QDPI farm financial counsellors and agricultural economists use microcomputers to help producers analyse their financial positions and to examine the feasibility of their applications for funding under the primary industry productivity enhancement scheme (PIPES). This scheme is designed primarily to enhance viability through farm build-up and to reduce land degradation.

Technical training for foreign nationals was provided in short courses on extension and communication, animal husbandry and breeding in the tropics, acaricide analysis, pasture management and beef management. Placements for 25 foreign nationals with QDPI technical staff were arranged for varying periods.

Business development

Patents were registered for a relocatable shelter, an automatic weighing machine, a mechanical fruit processor and a grass-seed harvester as part of the QDPI initiative to market its own technology and services. This process was aided by presentation of workshops on 'Adopting a marketing approach' and publication of a newsletter, *DPI Intrapreneur*.

Trade promotion and liaison

Major 1988-89 commitments were participation in the Primary Industries Pavilion at World Expo 88 and response to enquiries through the QDPI Overseas Visitors Centre. Briefing sessions and tour guides were provided to an average of more than two groups a week, predominantly visitors from China, Philippines, Taiwan and Japan.



TECHNICAL SERVICES

The purpose of the QDPI technical services program is to ensure that QDPI research, development and extension activities efficiently and effectively meet the strategic needs of Queensland's rural and fishing industries.

The QDPI Executive Services Board began two major strategic initiatives:

- to decentralise management of QDPI western Queensland activities as an integrated arid zone focal program; and
- to revise QDPI extension policy in response to cost-recovery directions and substantial changes in the rural education, private consultancy and agribusiness advisory sectors.

The deployment of microcomputers at regional centres completed a comprehensive extension information network to provide decision-support computing. An integrated programme in Capricornia region had several software products at an advanced stage for commercial release.

The PYRAMID host at the QDPI Indooroopilly research laboratories was upgraded to support computer database and information system growth and access. All QDPI research and extension projects are now incorporated in the project management information system (PMIS). Transfer of PMIS project data to ARRIP — the national research project database on CSIRONET — was accomplished.

In future, PMIS data will be transferred annually.

Regional management groups, established in 1986, contributed to the planning for the grazing lands, stability and productivity unit at Charters Towers and to operational activities in information systems, professional development and program coordination.

Agricultural engineering activities continued on a broad front, with expanded effort relevant to animal production and transport. A mango peeler and slicer became available commercially and was expected to create alternative pathways for mango exports.

CORPORATE SERVICES

The purpose of the QDPI corporate services program is to ensure that QDPI's physical, financial and human resources efficiently and effectively support QDPI strategic goals.

Staff training and development continued to be high priorities. Staff skills in marketing, creativity and managing change, in response to the Quality Queensland strategy, were given special emphasis. By year's end, most QDPI managers had attended this training, and an increase was evident in customer-driven, entrepreneurial values.

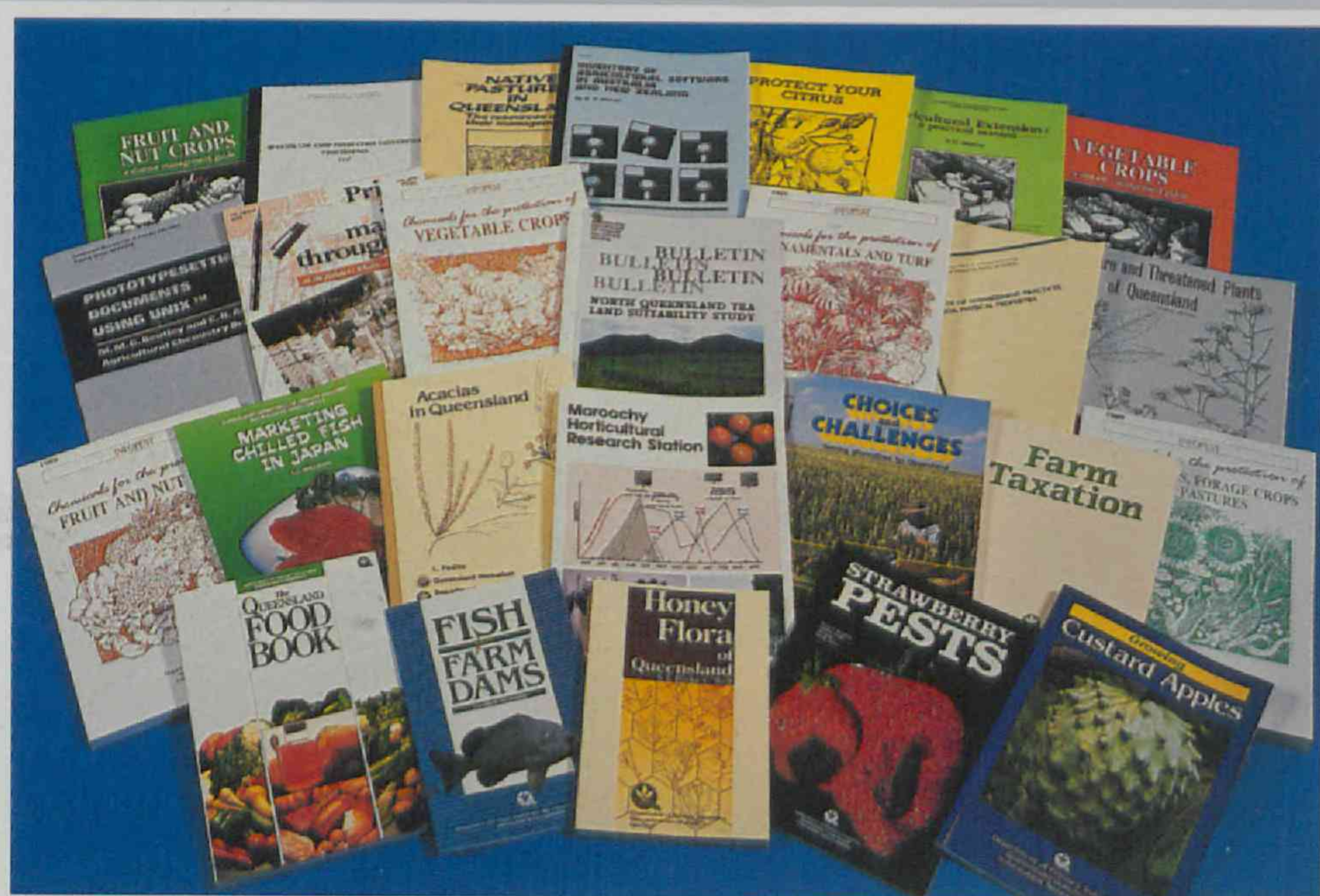
Book publishing and marketing, in support of QDPI technical information initiatives, were important growth activities, with an ever-increasing demand for such information from primary producers and other audiences, both rural and urban. Altogether, 26 new or revised titles were published, bringing the total number of QDPI technical titles to

109, all of which were being sold through selected QDPI offices and through book wholesalers and retailers. Each new title was being given its own marketing plan.

Administrative efficiencies were achieved through continued computer applications in accounting, personnel and stenographic services. Cost savings resulted from a review and

redesign of administrative systems and practices.

Thirty-eight microcomputer systems were installed in 31 centres. A biometrical and computing unit was established at Mareeba, and a new computer package, QDPI Consultant, was developed to simplify the writing of expert-system decision aids for producers.



As part of the QDPI's 1988-89 book-publishing program, these new and revised titles were released in Queensland, other States and overseas. QDPI books are attracting widespread interest in the marketplace.

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