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THE PAST AND PRESENT STATUS OF SUNFLOWER AND PROSPECTS FOR FUTURE DEVELOPMENT IN AUSTRALIA

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INTRODUCTION

Sunflower has been grown in Australia for a century, but the crop does not feature in agricultural publications until the end of the nineteenth century. Mr. H. A. Tardent, Manager of Biggenden Experiment Farm, Queensland reported in the Queensland Agricultural Journal in October 1899 having grown sunflowers for 10 years. In drawing attention to their potential importance to Australia he quoted their then importance to U.S.A. and U.S.S.R. He reported having seen thousands of acres in U.S.S.R. and described the value and importance of this crop both as a source of food and non food (both industrial and domestic) products. He stated that although he did not know them to be grown commercially in Australia, they were well adapted to deep well drained loams in many areas of Queensland.

The Agricultural Gazette of N.S.W. included brief notes on sunflower growing and harvesting in 1896 and 1897 respectively, and in 1900 of the value of sunflower seed cake as a stock feed. Subsequently notes appeared on sunflower grown experimentally and sunflower rust. Commercial production was tried from time to time, but as demand for sunflower for confectionery and birdseed purposes was limited, only sporadic limited production ensued.

TRENDS

Sunflower has been grown commercially in both Queensland and N.S.W., more particularly the former State, this century but production remained small until 1970.

QUEENSLAND

Statistics for Queensland for the last 30 years show that less than 1,000 hectares were grown at the beginning of the period, rising

to 2,653 hectares in 1949/50, 4,024 hectares in 1959/60, and 5,155 hectares in 1966/67. Because the domestic demand for sunflower oil was negligible during this period, production was at a low level and only for birdseed and confectionery purposes.

Towards the end of this period the N. S. W. Department of Agriculture was building up seed supplies of high oil yielding types introduced from U.S.S.R. This Department supplied the Queensland Department of Primary Industries with seed of a number of cultivars including Peredovik, VNIIMK 8931, and VNIIMK 6540 in 1966, and from this time, sunflower production increased much more rapidly — see table 1.

Table 1

Sunflower Area, Production and Yield in Queensland

	1967/68	1968/69	1969/70	1970/71	1971/72	1972/73	1973/74 (a)
Hectares	3,314	11,466	15,581	20,086	53,676	80,121	68,500
Tonnes	1,612	4,709	6,297	14,194	23,965	45,428	35,000
Tonnes/ha	0.49	0.41	0.40	0.71	0.45	0.58	0.511

Source: Australian Bureau of Statistics
(a) Estimated.

NEW SOUTH WALES

The changes in sunflower production in N.S.W. were even more dramatic. Prior to 1960/61, production was negligible, and frequently none was produced. Regular production occurred thereafter. In 1962/63, 445 hectares were sown but little was harvested because of dry growing conditions. By 1966/67, 415 hectare were grown — production continued to expand for 5 years, but has subsequently contracted — see table 2.

Table 2

Sunflower Area, Production and Yield in N.S.W.

	1967/68	1968/69	1969/70	1970/71	1971/72	1972/73	1973/74 (a)
Hectares	258	1,797	9,199	54,047	238,865	158,635	65,000
Tonnes	160	1,181	6,034	43,172	121,023	54,260	30,000
Tonnes/ha	0.62	0.66	0.66	0.80	0.51	0.34	0.46

Source: Australian Bureau of Statistics
(a) Estimated.

AUSTRALIA

Australian sunflower areas, production and yield are shown in table 3. When considered in relation to tables 1 and 2, these figures

demonstrate the importance of N.S.W. and Queensland production. There is little production in other States.

Table 3

Sunflower Area, Production and Yield in Australia

	1967/68	1968/69	1969/70	1970/71	1971/72	1972/73	1973/74 (a)
Hectares	3,629	13,648	26,007	75,601	295,136	241,840	132,700
Tonnes	1,801	6,247	13,247	58,939	147,525	102,069	63,800
Tonnes/ha	0.50	0.46	0.51	0.78	0.50	0.42	0.48

Source: Australian Bureau of Statistics
(a) Estimated.

TRADITIONAL VERSUS ALTERNATIVE INCOME SOURCES

Australia's most important agricultural products have traditionally been wool, meat and wheat. Returns from these sources fell sharply after 1968/69, causing farmers to seek alternative sources of income.

WOOL AND SHEEP

Australian sheep numbers rose steadily during the decade ending 1970/71 when they reach 180.1 million.

By 1973/74 numbers had fallen to 140.1 million. Similarly between 1966 and 1967 world wool stocks (clean basis) tripled to 146.5 million kilograms, and then fell slowly to 80 million kilograms in 1973.

Average Australian greasy wool auction prices fell from almost 100 cents per kilogram to near 60 cents per kilogram in 1970/71, rose slightly in 1971/72, moved up strongly to more than 180 cents per kilogram in 1972/73, and are now receding again.

WHEAT

Wheat production expanded during the period 1959/60 to 1968/69 from 5.4 million tonnes to 14.8 million tonnes. Australian carry over stocks of wheat rose to 7.25 million tonnes in 1969 and 1970, meanwhile grower returns fell from \$A54 per tonne for the 1967/68 crop to \$A46 per tonne for the 1968/69 and 1969/70 crops.

Because of these difficulties annual wheat delivery quotas (see table 4) were imposed on growers in an attempt to regulate the supply/demand relationship. However, unfavourable weather conditions compounded the problems so that production fell short of quotas in 4 out of 5 years, further restricting farmer incomes.

Table 4

Australian Wheat Quotas and Production 1969/70 to 1973/74 in million tonnes

	1969/70	1970/71	1971/72	1972/73 (p)	1973/74 (a)
Quotas	9.7	8.6	9.2	11.1	14.0
Production	10.5	7.9	8.5	6.4	11.5

Source: Australian Bureau of Statistics
 (p) Preliminary - subject to revision
 (a) Estimated.

MEAT

Production of meat as beef, veal, mutton and lamb also increased from 1965/66 to 1971/72. Beef cattle numbers continued to increase in response to high beef prices until 1973/74, but as indicated in the comments on wool, sheep numbers fell after 1970.

Saleyard prices for sheep fell until 1972, but rose as reduced sheep numbers, increased wool and meat demand influenced prices.

FARM INCOMES

The financial position of Australian farmers was seriously impaired by the marketing situations outlined for wool, meat and wheat and other factors such as inflation and Britain's proposals to enter the E.E.C.

Farm costs rose annually in Australia but the gross value of rural production did not maintain farm incomes nor their purchasing power — see table 5.

Table 5

Trends in Gross Value of Farm Production, Costs and Incomes (Million \$A)

Year	Gross Value of Rural Production	Total Farm Costs	Farm Income
1960/61	2,745	1,728	1,012
1967/68	3,342	2,511	827
8 year average ending			
1967/68	3,222	2,090	1,126
1968/69	3,947	2,695	1,270
1969/70	3,790	2,734	1,076
1970/71	3,609	2,730	892
1971/72	3,986	2,790	1,146
1972/73	4,909	2,906	1,888
1973/74 (a)	6,220	3,335	2,885

Source: Australian Bureau of Statistics
 (a) Estimated.

OIL SEED PRODUCTION RESPONSES

These factors caused Australian farmers and graziers to seek alternative sources of income. The commodities produced included oilseeds, coarse grains, protein seeds, beef and pig meats.

In Western Australia, production of sweet lupins, rapeseed and linseed expanded. In Victoria, rapeseed and linseed areas increased while in N.S.W. and Queensland, as shown in tables 1 and 2, sunflower expanded rapidly. However linseed, rapeseed, safflower and soybean production also increased rapidly in N.S.W. but not to the same degree as sunflower. In Queensland, linseed, soybean and safflower production increased but less than sunflower.

PRODUCTION AND CONSUMPTION OF OILSEEDS IN AUSTRALIA

The consumption of vegetable oils in Australia for both edible and inedible use has been steadily expanding. Relative to the standard of living, per capita consumption is less than in many countries having a similar living standard. This is usually attributed to the importance

Table 6:

**Australian Production, Imports and Exports of Vegetable Oilseeds,
Oils and Meals — in Tonnes**

	1969/70	1970/71	1971/72	1972/73	1972/73 (July-Dec)	1973/74 (July-Dec)
<i>Production</i>						
Seed	162,337	210,509	394,961	285,503	—	—
<i>Imports</i>						
Seed	49,433	40,936	28,391	58,963	31,787	49,745
	(a)	(a)	(b)	(c)		
Oil	40,732	41,227	36,176	34,361	16,131	26,651
Meal	33,039	33,783	24,055	11,504	2,484	2,708
<i>Exports</i>						
Seed	5,581	9,407	103,164	48,286	26,339	194
			(d)	(e)		
Oil	165	161	1,251	319	159	1,105
Meal	18,393	12,641	4,199	19,310	12,620	198

Source: Australian Bureau of Statistics

(a) Includes approximately 30,000 tonnes copra

(b) Includes 21,000 tonnes copra

(c) Includes 17,600 tonnes copra, 20,000 tonnes safflower, and 14,000 tonnes rapeseed

(d) Includes about 90,000 tonnes sunflower

(e) Includes 33,400 tonnes sunflower.

of livestock — sheep especially — in rural production, and hence the availability of fats from animal sources. An Australian Government survey of 3rd May, 1974 shows 1973/74 domestic vegetable oil use as 106,825 tonnes and tallow use as 137,153 tonnes.

In the past eight years the Australian consumer has been made increasingly aware of the value and uses of vegetable oils in human diets. Thus, consumption is increasing more rapidly than before, and the consumer is more conscious of polyunsaturated oils for which demand is expanding. Sunflower is more easily produced in Australia than safflower, resulting in a strong demand for greatly increased production. Although Australia has been and oilseed producer, it has always been necessary to import some oilseed products — oilseeds, oils and meals.

In 1970/71, 40,936 tonnes of oilseeds and 41,227 tonnes of vegetable oils were imported, whereas 9,407 tonnes of oilseeds were exported. These were primarily linseed and cottonseed from Western Australia and 2,032 tonnes of sunflower from Queensland and N.S.W.

Australian oilseed production is composed of cottonseed, linseed, peanuts, rapeseed, safflower, soybean and sunflower. Only cull peanuts and production in excess of edible nut requirements are crushed. As a result cottonseed and sunflower seed have constituted most of Australian produced crushing seed, followed by rapeseed.

THE FUTURE OF SUNFLOWERS IN AUSTRALIA

Because of the higher linoleic fatty acid contents of safflower and sunflower these are in considerable demand. Over a long period attempts to produce safflower have not been physically or economically successful.

Average yields of sunflower have been disappointing as current sunflower cultivars are poorly adapted to the main areas of production. Research results, and individual commercial yields, in differing soil and climatic situations have indicated that yields can be improved to allow sunflower to compete with other crops.

Crushing capacity in Australia is expanding rapidly. Current capacity approaches 500,000 tonnes and this will expand to about 750,000 tonnes in 1975. Oilseed production must be expanded rapidly if these crushing plants are to use locally produced seed.

Cultivars in current commercial production are derived from introductions from U.S.S.R., principally Peredovik, VNIIMK 6540, and VNIIMK 8931. Variety improvement programmes have been established using these U.S.S.R. introductions as basic material. More recently hybrid parental lines have been introduced and a careful examination of hybrid potential is now being made. Plans have been made to introduce cultivars not already in Australia from other regions to expand the range of germplasm available to private and public plant breeders.

Research into cultural, physiological, insect pest and disease aspects of sunflower is expanding consistent with the number of workers available.

In September, sunflower workers from C.S.I.R.O. (a national Government research body), State Government Departments, Universities, plant breeding companies, merchants and oilseed crushers examined the research required to improve and expand sunflower production in Australia and co-ordinate future research work.

It was concluded that the production of regionally adapted cultivars having satisfactory yields of high oil content grain, and resistant to the existing important diseases are the most pressing requirements. The introduction programme mentioned above, the better definition of physiological characteristics, and the cultural and nutritional requirements of sunflower in the various production regions also needed early attention.

Sunflower seed production has burst into Australian agriculture in the past few years, without the benefit of previous research programmes, and in the circumstance has climbed to remarkable levels. With renewed competition from established farm enterprises, as with other dryland oilseeds, production has fallen but not to the same degree. In the next few years research will provide the data and cultivars to promote improved competitiveness of sunflower in its role of providing domestic supplies of polyunsaturated oils, and seed, oil and meal for export from an expanded oilseed crushing industry in Australia.

The combined research efforts of governments, universities and industry, together with the impetus provided by the demand for seed, oil and meal, from oilseed crushers and merchants, margarine manufacturers will be a steady expansion of sunflower production in Australia in the next decade.