AGRICULTURE IN SOUTH AUSTRALIA —the Central District

DEPARTMENT OF AGRICULTURE, SOUTH AUSTRALIA

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AGRICULTURE IN SOUTH AUSTRALIA
The Central District

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Orchards and mixed farming—typical of the high rainfall areas of the Central District.

The higher areas of the Mount Lofty Ranges close to Adelaide, the Adelaide Plains, the Southern Districts, and Kangaroo Island together form the Central District—made up of the three Counties, Adelaide, Hindmarsh, and Carnarvon.

As most of the district is undulating or steep, we find a good deal of the land farmed at elevations of 1,000-2,000ft. above sea level. And because these areas receive a higher annual rainfall than most of the State, livestock production and horticulture become important agricultural industries.

South Australia's first settlement took place in the Central District nearly 130 years ago, but even now new lands are still being cleared and settled.

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SOILS

The main soil type in the Adelaide Hills and Southern Districts is a leached grey sandy loam, generally 12-15in. deep, overlying a heavy clay. This changes to shallow ironstone gravelly-sandy-loam, 6-12in. deep, also overlying heavy clay on Kangaroo Island and the elevated areas of the Southern Districts. In the Southern Districts and on the south coast of Kangaroo Island as well, there are considerable areas of deep acid sands that are "problem" soils. Fertile clay-loams and sandy mallee soils are the main soils of the Adelaide Plains.

RAINFALL

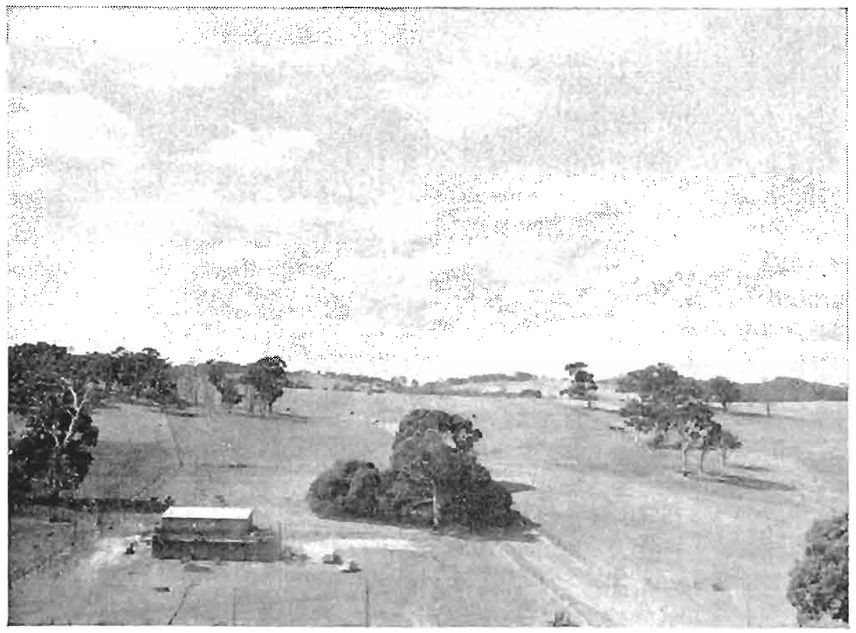
The average annual rainfall over most of the district is higher than 20in. and much of this occurs between April and October.

The highest rainfall is in the vicinity of Mt. Lofty, where 40-47in. a year is recorded; the more elevated parts of the Adelaide Hills, of the Southern Districts and of Kangaroo Island receive 30-40in. The lower slopes and foothills of the ranges and most of Kangaroo Island have a 20-25in. rainfall, and on the plains 14-20in. are received—the areas most distant from the ranges having lightest rainfall.

FARMS

With good soils, high rainfall and the Adelaide markets at its front door, land is intensely used. About 80 per cent of the district's 7,523 farms may be classed as small. Of these, there are 2,300 orchards and market gardens ranging in size from 10 to 50 acres (some have grazing land as well) and 1,200 dairy farms of from 40 to 200 acres, with an average area of 120 acres.

On the other hand, most of the usable land in the Southern Districts and on Kangaroo Island is devoted to grazing. The properties here average about 1,000



Dairy farming country in the Adelaide Hills. Farms range from 40 to 200 acres.

acres, ranging from 400 acres on the good soils to 1,500 acres on the poorer class soils. However, there are a few farms of 4,000-7,000 acres.

Cereal farms on the plains and the drier parts of Kangaroo Island are generally 600-700 acres in area. Some are as small as 400 acres, with the largest about 2,000 acres.

The number of part-time farms has increased considerably in the past 10 years (1955-65), so that now there are more than 700 within 20 miles of Adelaide, or close to main towns. Operators of these farms are generally employed in factories or businesses, working small dairy, grazing or orchard properties in their spare time.

To be economically worthwhile, grazing properties must be large enough to run 1,500-2,000 wool producing sheep or their equivalent. A dairy farm must have 40 milking cows whilst a cereal farm must be big enough to grow 5,000 bushels of grain and run 700-1,000 dry sheep or their equivalent.

The total number of farms in the Central District rose from 6,626 to 7,523 in the 1953-1962 period. This comprises an increase of 673 in County Adelaide, 130 in County Hindmarsh and 94 on Kangaroo Island (County Carnarvon).

LAND DEVELOPMENT

The first areas farmed were selected for their fertile soils, good water supplies and comparative ease of clearing. But large tracts of low fertility soils covered with dense scrub were not touched until the early 1940's.

Modern developments have assisted in bringing most of these once useless high-rainfall scrub lands into production. The developments include land clearing equipment, the use of trace elements and the discovery of methods of establishing productive clover-based pasture on poor soils.

In recent years, 40,000 acres in the Adelaide Hills, 100,000 acres south of Adelaide and 220,000 acres on Kangaroo Island have been cleared and developed.

PASTURES

Increasing use is being made of annual legume pastures to maintain and improve soil fertility on farms and orchards. In fact, subterranean clover is the basis of both agricultural and horticultural development—the most suitable strains being Mt. Barker, Yarloop, Clare, Woogenellup, Geraldton and Dwalganup.

However, for the more limited areas of plain country with lower rainfall and neutral to more alkaline soils, the medic strains, barrel, barrel 173 and harbinger, are more adaptable.

As to the perennial legumes, lucerne is grown on all soils with good drainage. On the other hand, strawberry and white clovers prefer moist situations or irrigated pastures.

Perennial rye grass and phalaris are the most satisfactory pasture grasses for this area. Wimmera rye grass is used in annual pasture, particularly in the lighter rainfall areas. Currie cocksfoot is slowly coming into use as an alternative perennial grass where soils are deep enough.

SHEEP AND WOOL

Sheep numbers have increased steadily with new lands coming into production. For instance, from a total of 962,422 in 1953, the sheep population rose to 1,507,306 in 1962. The number of lambs marketed increased from 200,000 to 400,000. The amount of wool grown in 1953 was 10,250,000 lb.—by 1962 it had risen to 17,000,000 lb., when wool and lambs formed 65 per cent of the total livestock income.

Although 85 per cent of the sheep are Merinos, the Corriedale is becoming popular, especially on Kangaroo Island and in the Southern Districts. Crossbred ewe flocks are a source of quality prime lambs.

Stringy bark scrub on Kangaroo Island—220,000 acres of this type of country have been cleared and sown to pasture in recent years.

Sheep grazing subterranean clover pasture. Together with the better medics, subterranean clovers provide the means of increasing soil fertility over much of the Central District.

The Adelaide Hills and Southern Districts account for 55 per cent of South Australia's dairy production.

Poultry raising—a valuable sideline industry on many farms.

BEEF CATTLE

Beef cattle are an important adjunct to wool growing, and in this regard, a lot of good cattle country is available south of Adelaide, particularly along the coast of St. Vincent Gulf. Beef cattle numbers in the district have increased by 298 per cent to 36,425 during the 10-year period under review.

Unfortunately, inadequate water supplies and transport limit cattle raising on Kangaroo Island. However, there were 7,792 head of beef cattle on the island in 1962, and this number has since increased.

DAIRYING

Of South Australia's total dairy production, 55 per cent comes from the Adelaide Hills and Southern Districts; dairying is not important on Kangaroo Island.

Dairy production stands at 20 million lb. of butterfat, and the industry is well organized with milk factories in the heart of the main dairying districts. Most of the production is used as whole milk and cream in the Adelaide metropolitan area.

PIGS

Good markets for pig products have encouraged the development of this industry. Pig numbers rose to 21,450 in 1962 from 12,370 in 1953.

Pig raising units are operated in conjunction with dairying and cereal growing.

POULTRY

Besides a number of large units in the vicinity of Adelaide and in nearby Hills areas, poultry raising is a valuable sideline industry for many types of farms. At the present time the total output from the district is worth £2,500,000 a year.

Turkey raising is a valuable industry on Kangaroo Island. Because of its freedom from foxes, the flocks can be run free-range on the island.

WHEAT

Wheat growing is mainly confined to the Adelaide Plains and the districts adjacent to Lake Alexandrina—in these areas a total of 517,000 bushels are produced on 22,100 acres. Only 5,944 acres of wheat are sown on Kangaroo Island. Areas receiving 14-20in. annual rainfall grow 95 per cent of the wheat in the district. Recommended varieties are Dirk 48, Gamenya, Insignia 49 and Heron.

BARLEY

The main cereal of the drier fringes of the district is barley. The area sown has been static at about 32,000 acres; total production in 1964-65 was 817,000 bushels with an average yield of 25 bushels an acre.

In 1964, 6,000 acres of barley were sown on Kangaroo Island, and at that time production was 112,000 bushels with an average yield of 22 bushels an acre.

All types of malting, milling and feed barley are grown in the district, with Prior and Noyep the recommended varieties of malting two-row barley.

OATS

This is the most important and the most useful cereal in the Central District. In 1964, the areas sown consisted of about 11,300 acres in the Adelaide Hills and adjacent plains, 21,300 acres in the Southern Districts and 24,400 acres on Kangaroo Island. Of these, 21,250 acres were harvested, yielding 24 bushels an acre and 510,000 bushels of grain, which were used mainly as stock feed.

Oats have proved useful in pasture rotation, and are frequently employed as a cleaning crop before resowing to an improved pasture. In addition, this crop is invaluable for autumn and winter grazing, for sod seeding into pasture and for hay. The recommended varieties are Avon, Kent and Early Kherson.

PEAS

Field, canning and fresh peas are grown in suitable areas of the district. Each year about 40,000 bushels of field peas are produced, mainly south of Adelaide. Early Dun is the most popular variety.

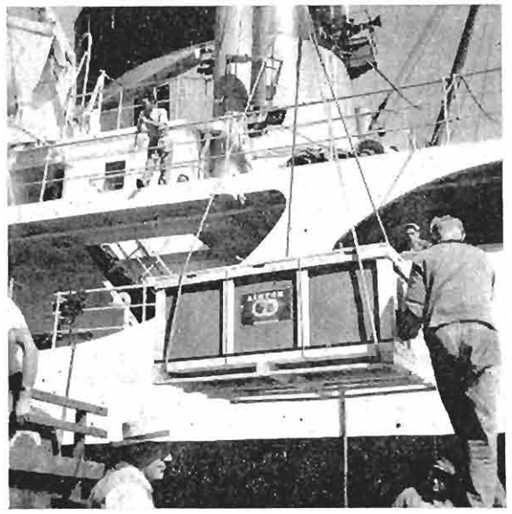
Canning peas come from the McLaren Vale and Willunga districts—300-500 acres being planted each year.

Fresh peas for the Adelaide market are grown with the aid of irrigation in the Myponga and Mt. Compass districts. They are also used as a rotation vegetable crop in the market gardens of the hills and plains.

POTATOES

Of South Australia's potato crop, 80 per cent is grown in the Adelaide Hills and on market gardens in the vicinity

The availability of water for irrigation at Virginia helps to make potatoes a profitable crop.



Part of South Australia's large export consignment of apples goes aboard a freighter at Port Adelaide. Most of this fruit is grown in the Adelaide Hills.

Vine growing at Modbury. This industry produces 17,000 tons of grapes annually.

of Virginia. In addition, potatoes are a valuable cash crop for pasture lands.

Suitable soils, the availability of irrigation water and the proximity of markets make potatoes a profitable crop. Improved methods have lifted yields and production to about 36,000 tons at the present time.

HORTICULTURE

Most of South Australia's apples and pears are grown in the Adelaide Hills because of the high rainfall, suitable soils and cool climate. About 1¼ million bushels of apples and 200,000 bushels of pears are produced each year for the local and export markets.

Stone fruit such as peaches, apricots and plums are grown for the fresh fruit and canning trades, while one of the few good cherry growing areas in Australia is located within the shadow of Mt. Lofty.

Along the Mt. Lofty Range foothills from Reynella to Willunga, there are 8,000 acres of vines, producing 17,000 tons of grapes each year.

Fertile clay-loam soils, a good rainfall and cool coastal climate make the Willunga and McLaren Vale districts the only extensive almond growing area in Australia.

The bulk of Adelaide's vegetable supply is grown in the fertile valleys of the Mt. Lofty Ranges, a few miles from the city. However, on the plains around Adelaide, and up to 20 miles northward, abundant supplies of underground water and well-drained loamy soils make vegetable growing possible.

On the plains, tomatoes are grown in glass houses, together with field production of green vegetables, root vegetables, celery, onions, potatoes and cucurbits.

This industry employs a large number of people who grow 18,000 tons of vegetables annually.

FORESTRY

Plantations of Pinus radiata covering 17,000 acres have been established at Mt. Crawford and Meadows in the Adelaide Hills, and at Second Valley in the Southern Districts.

The pine forests are mainly owned by the State Government and are growing in importance as a source of case, post and building timbers.

Because of the value of land for agricultural purposes, substantial extension of existing forest areas is unlikely in the future. But there is scope for more forestry on the deeper sandy soils of the Southern Districts and on some of the steeper slopes of the Adelaide Hills.

IRRIGATION

An increasing area of pasture, lucerne, fodder crops, potatoes, apples and other orchard crops, vineyards and many vegetable crops is being irrigated in the Adelaide Hills and Southern Districts.

Water is obtained from sub-artesian sources on the Adelaide Plains, from bores and dams, as well as rivers and creeks in the Hills, and from the River Murray and lakes in the vicinity of Goolwa and Milang.

Areas at present being irrigated amount to 17,000 acres of pasture and 12,000 acres of horticultural crops. Except for a few hundred acres of vegetable crops, this irrigation has come into existence during the past 15 years.

FARM WATER SUPPLIES

In the Adelaide Hills and south, water for livestock and farm requirements is supplied from bores, wells and dams, waterholes and springs. Small areas are on a reticulated supply, while the plains and foothills districts are served by the main reticulation system.

On Kangaroo Island, water comes entirely from farm dams and rainwater

Hay-making at Oakbank in the Adelaide Hills.

catchments on farmstead buildings. The problem on the island with its sandy soils, short streams and lack of underground water is to keep water supplies in step with the increasing number of livestock.

TRANSPORT

Road transport caters for 90 per cent of farm produce and farm requirements. At the same time, 120 miles of railway service some of the Hills and Southern Districts.

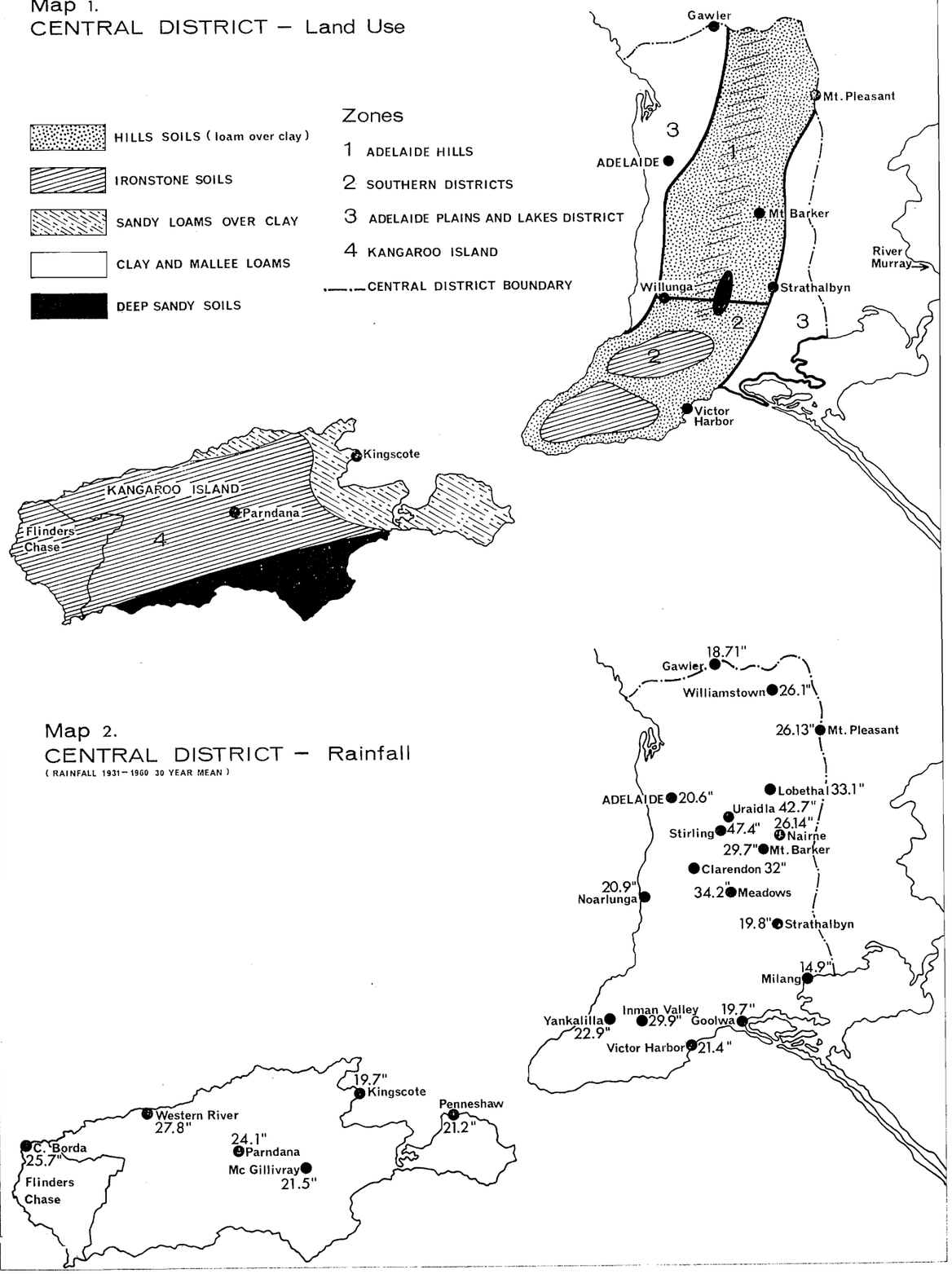
Kangaroo Island has a combined sea and road transport service, and an air service operates for passenger traffic and light freight. Motor vehicles provide the only transport on the island itself.

LAND USE ZONES

Topography, dominant soil type and rainfall divide the district into four land-use zones—the Adelaide Hills, the Southern Districts, the Adelaide Plains and Lakes District, and Kangaroo Island.

These divisions are fairly broad, because of soil variations. For example, the soils of the Hills Zone are mainly leached sand over clay, but there are small areas of ironstone gravel over clay and deep sandy soils. Similar variations from the dominant soil type occur in the other three Zones.

Map 1.
CENTRAL DISTRICT – Land Use



Map 2.
CENTRAL DISTRICT – Rainfall
(RAINFALL 1931–1960 30 YEAR MEAN)

Table 1—HOLDINGS

	1952-53	1953-54	1954-55	1955-56	1956-57	1957-58	1958-59	1959-60	1960-61	1961-62
COUNTY ADELAIDE										
Number	4,727	4,664	4,441	5,241	5,137	5,068	5,156	5,307	5,352	5,400
Acres	525,398	539,925	546,326	564,320	555,846	551,747	559,709	556,210	552,639	551,847
Average, Acres	111	116	123	107	108	111	108	105	103	102
COUNTY HINDMARSH										
Number	1,555	1,850	1,677	1,770	1,722	1,714	1,700	1,700	1,697	1,685
Acres	552,224	604,803	621,397	615,696	602,543	609,904	606,502	603,035	600,324	598,562
Average, Acres	354	327	370	347	350	352	357	355	354	355
COUNTY CARNARVON										
Number	344	340	321	376	354	345	360	422	434	438
Acres	537,496	544,639	556,142	610,607	591,854	602,807	630,184	782,092	759,879	791,572
Average, Acres	1,563	1,602	1,733	1,597	1,675	1,748	1,750	1,853	1.749	1,807

Table 1a—GENERAL

Zone	Rainfall	Soils	Water Supplies	Size of Farms	Value of Farms
1 Adelaide Hills	24in. on western and eastern fringes to 45in. on highlands around Mt. Lofty. Generally 24-35in. average annual rainfall	Leached sands or grey sandy loams, 15in. and less in depth over yellow to red clays. Best soils in valleys and on lower slopes. Areas of ironstone soils near Meadows. Deep sands around Blewett Springs	Bores and wells provide good quality underground water. Earth dams, waterholes, springs, creeks and rivers	Dairy farms 40-200 acres. Sheep, cattle and mixed farms 300-1,000 acres. Few properties to 5,000 acres. Orchards and gardens 10-50 acres. Part-time operated farms 5-50 acres	Dairy farms £100-£200 per acre or £400-£500 per cow area. Sheep and mixed farms £60-£100 per acre or £25-£35 per sheep area. Orchards, gardens and part-time farms £200-£500 per acre
2 Southern Districts	19in. along St. Vincent Gulf coast; 30-40in. on highlands—Mt. Compass, Myponga, Inman Valley, Parawa; 22in. along South Coast	Ironstone gravelly loams on highlands, Mt. Compass to Parawa Loams, sands and clay-loams in south. Deep sandy soils Mt. Compass south to, and around Inman Valley	Reticulated water in some areas Dams, bores, wells, springs, and waterholes. Good quality water 20-80 grains per gallon generally	Sheep, cattle and mixed farms 400-1,000 acres. Some large properties 2,000-11,000 acres. Dairy farms 60-300 acres. Few small orchards and garden properties	Dairy farms £80-£200 per acre or £350-£400 per cow area. Sheep and mixed farms £40-£80 per acre or £20-£30 per sheep area
3 Adelaide Plains and Lakes District	20-24in. south of Adelaide; 14-20in. on plains immediarely north of Adelaide; 13-20in. on plains adioining Murray and Lakes	Red-brown earth soils, grading to mallee loams towards lakes and coast	Reticulated water generally Some dams, sub-artesian water (60-80 grains per gallon), north of Adelaide	Mixed, cereal and livestock farms 300-1,200 acres. Few large farms 2,000-12,000 acres. Dairy farms 100-200 acres. Orchards and farmlets 10-50 acres	£60-£100 per acre for mixed cereal and livestock farms. Farmlets to £200 per acre. Established orchards £300-£500 per acre
4 Kangaroo Island	24-30in. on plateau and north coast. Eastern Kangaroo Island and south coast 16-20in.	Shallow (6-9in.) ironstone gravel—loam over clay, sandy loams and calcareous soils on eastern Kangaroo Island. Deep sands in small areas along south coast	Farm dams, good water-holding clay. Dams fill after surface soil saturated. Wells and springs along coast, underground water (saline)	Grazing properties 1,200-1,800 acres. Mixed, cereal and livestock farms on eastern end 800-1,200 acres. Large properties 2,000-5,000 acres	Few sales, big variation in development and improvements. A lot of leasehold land. £10-£30 per acre or £10-£15 per sheep area

Table 1b—TYPE OF PRODUCTION

Zone	Crops	Rotation	Fertilizers	Pastures	Special Crops	Livestock
1	Oats for grazing and hay—varieties Avon and Kent. Fruit trees, potatoes and other vegetable crops	Crops used as cleaning crops for pasture renovation. 4-6 years' pasture and then oat crop or potato and oat crop. Long term annual and perennial pastures 10-20 years	Superphosphate 1 cwt. to 187 lb. per acre—187 lb. standard for good pasture. 374 lb. per acre for new land. Molybdenum 1 oz. and copper sulphate 3⅛ lb. every 4 years. 7 lb. zinc for new pastures. Potash after hay and potatoes	Mt. Barker, Yarloop, Woogenellup and Howard strains of sub. clovers generally in mixtures 6-20 lb. per acre. Perennial rye grass 8-20 lb., phalaris 2-4 lb., Currie cocksfoot 4-6 lb. per acre	Fodder crops, chou moellier, rape, turnips, sudax, maize. Mt. Barker sub. clover, perennial rye grass and phalaris harvested for seed	Dairy cattle. Sheep for wool and prime lamb production — Merinos, Corriedales and crossbreds. Beef cattle, pigs and poultry

Table 1b—TYPE OF PRODUCTION—*continued*

Zone	Crops	Rotation	Fertilizers	Pastures	Special Crops	Livestock
2	Oats, barley, wheat and field peas. Oats for grazing, hay and grain main crop. Varieties—Avon, Kent, and Early Kherson. Wheat, barley and peas in Yankalilla area	Oats in pasture rotation, 4-10 years' pasture. Barley and wheat, after 2-4 years' pasture. Peas after wheat or barley. Generally long term annual and perennial pastures	Superphosphate 187 lb. per acre; 374 lb. per acre on cleared scrub land; 1 cwt. per acre on crops and old pasture. Molybdenum 1 oz. every 4 years. Potash 1 cwt. per acre where it becomes deficient. Lime for acid soils	Mt. Barker, Yarloop, Geraldton, Clare, Woogenellup and Howard strains of sub. clover 6-12 lb. per acre. Perennial rye grass in 24-40in. areas. Phalaris, Currie cocksfoot on loam and sand over clay soils.	Chou moellier, rape, turnips, sudax, sub. clover, perennial rye grass harvested for seed. Fresh peas in Myponga district	Sheep, prime lambs and wool. Mainly Merino, with Corriedales and crossbred ewes. Beef and dairy cattle, pigs and poultry
3	Barley, wheat, oats and field peas. Wheat varieties—Insignia 49, Heron, Gamenya, Dirk. Barley—Prior. Oats—Avon	Hay farming. Wheat and barley after medic and clover pasture. Oats after wheat or pasture. 2-4 years' pasture then barley or wheat. Peas follow barley or wheat	Superphosphate 1 cwt. per acre with crops. Pastures top-dressed, ½-1 cwt. per acre according to rainfall. 1 cwt. per acre with average 16-20in. rainfall. ½ cwt. per acre under 16in.	Phalaris and Wimmera rye grass, barrel medic 173, also snail medic with harbinger on sandier soils. Early strains of sub. clover near Milang. Clare sub. clover on foothills, Finniss to Victor Harbor. Lucerne all areas	Canning and fresh peas south of Adelaide. Lucerne for meal and green lucerne trades, market garden crops. Pasture seeds	Prime lamb production, wool. Dairying, beef cattle, pigs and poultry
4	Oats for grazing, grain and hay—mainly used for stock feed; varieties—Avon and Kent. Barley—Prior and Noyep. Wheat—Pinnacle, Insignia 49, Heron. Cropping mainly on drier areas	Crops in pasture maintenance programme. Pasture 4-10 years then oat, barley or wheat crop. Old land—two crops after pasture. New land—never more than one	Superphosphate generally 187 lb. per acre. 374 lb. per acre 1st year on new land. Possible to reduce maintenance to 1 cwt. per acre on narrow leaf mallee tree country 16-20 in. rainfall. Trace elements	Yarloop, Woogenellup, Mt. Barker sub. clovers basis of all pastures; Geraldton with Yarloop in drier areas. Medics and lucerne for small areas of calcareous soils. Perennial rye grass, Wimmera rye and phalaris	Fodder crops—chou moellier, turnips, rape best spring sown. Linseed promising	Merino and Corriedale sheep main industry. Prime lambs and small number of beef cattle; limited dairying; pigs on eastern end; turkeys

Table 1c—PROBLEMS

Zone	Weeds	Pasture and Cereal Diseases	Erosion	Trace Elements	Other Problems
1	Capeweed and wild geranium, widespread pasture weeds. Salvation Jane, slender, variegated and Scotch thistles, sorrell. Noxious weeds—cape tulip, African daisy, St. John's wort, furze, dock, wild garlics	Rootrots (hay-die, rhizoctonia, fusarium) and eelworm. Cereal rusts cause minor damage, barley yellow dwarf, loose and flag smuts. Mildews, clover leaf spot, and clover stunt diseases in pastures	Water erosion a constant hazard in all areas. On medium to steep slopes, cultivate as little as possible, and use extreme caution. Permanent pasture best	Molybdenum a general deficiency; 2 oz. per acre, then 1 oz. per acre every 4 years. Copper sulphate 3½ lb. per acre every 4 years or 7 lb. per acre every 7 years, except on best valley soils. Zinc 7 lb. per acre; potash deficiency can be induced	Insects: red-legged earth mite and lucerne flea. Cockchafer and curl grubs in pasture; cutworms, barley grubs in crops. Phalaris and rye grass staggers in sheep and cattle-clover diseases in sheep on dominant pastures
2	Areas of cape tulip in vicinity of Yankalilla, patches elsewhere. Slender, variegated and Scotch thistles, sorrell, capeweed and wild geranium widespread pasture weeds. Garlic, St. John's wort, soursobs, cruciferous weeds	Rhizoctonia, eelworm, hay-die, barley yellow dwarf in oats and barley. Rusts, loose and flag smuts. Mildews, clover leaf spot and clover stunt diseases in pastures	Wind erosion of sandy coastal areas has to be checked. Water erosion can be severe in loam soils, such as Yankalilla area. Agriculture in all areas has to be designed to prevent water erosion of land	Molybdenum 1 oz. per acre every 4 years. Copper sulphate 3½ lb. and 7 lb. per acre; main deficiency on ironstone soils. Manganese for crops. Ironstone soils, molybdenum, copper; zinc for all pastures	Salinity can develop in gullies and watercourses; controlled with drainage and perennials. Cockchafer, earth mite, lucerne flea, cutworms, barley grubs, curculio are pasture and crop insects. Rye grass and phalaris staggers, occasionally clover disease
3	Salvation Jane, soursob, slender, variegated and saffron thistles, fumitory, sheepweed and wild turnips main crop weeds. Onion weed, horehound, capeweed, wild artichokes and small areas hoary cress	Hay-die, rhizoctonia, eelworm, rusts, loose and flag smuts main cereal diseases. Pasture diseases insignificant	Must be farmed to prevent water erosion—risk high. Severe along foothills—contouring required where cropped. Wind erosion of sandy soils—Milang and Strathalbyn areas; permanent pasture prevents this	Zinc on black soils. Copper and zinc on sandy soils—Milang-Strathalbyn area. Manganese—14 lb. per acre for peas	Salinity in coastal areas. Prevent with long-term pasture and minimum cropping. Lucerne flea, red-legged earth mite, cutworms, barley grubs, curl grubs are insect pests of pastures and crops

Table 1c—PROBLEMS—*continued*

Zone	Weeds	Pastures and Cereal Diseases	Erosion	Trace Elements	Other Problems
4	Opportunity on Kangaroo Island to keep area free of noxious and dangerous weeds. Small patches of cape tulip, onion weed, false caper should be eradicated. Capeweed, geranium and thistles are worst pasture weeds	Rhizoctonia, barley yellow dwarf, eelworm affect oats mainly. Hay-die in wheat serious. Mildews and clover stunt main pasture diseases	Water erosion serious mainly north coast side; crop as little as possible and cultivate with care. Wind erosion risk on coastal sandy soils	Molybdenum and copper main deficiencies all areas; 2 oz. molybdenum per acre then 1 oz. per acre every 4 years. Copper 7 lb. per acre every 7 years. Manganese 14 lb. per acre for crops all areas. Zinc 7 lb. per acre for sandy soils	Salinity serious—low lying areas, watercourses, creeks. Winter water-logging—drainage and long-term perennial deep-rooted grasses remedy. Cockchafer, red-legged earth mite, lucerne flea, cutworms. Clover disease in sheep serious in Hundreds of McGillivray and Ritchie

Table 1d—POTENTIAL FOR INCREASED PRODUCTION

Zone	Increased Production	Alternate Land Use
1	Old districts of hills highly developed. Some farms grossing as high as £200 per acre average. Potential in closer settlement of some larger holdings. Increase soil fertility generally with better use of subterranean clovers, especially winter-growing Woogenellup, Yarloop and the mid-season Mt. Barker strains. Preserve clovers with management, particularly insect control. More land to be cleared and consolidate development of existing new land. Develop hill country on eastern and western slopes. Scope for increased production by at least 50 per cent.	Extension of orchard and market garden areas. Increase in dairying, pig and poultry raising. Further development of prime lamb and beef production as an alternative to wool. More forest plantations.
2	Tremendous potential for more intensive land use. Fertility of soils continually improving under pasture. Will take 60-80 years to reach peak. Better use of sub. clovers and better pasture management especially insect control. In the past 25 years, 70 per cent of land cleared. Still 10 per cent to clear. Deep sands brought into production with deep-rooted annual legumes and lucerne. Production in southern areas can be doubled.	More prime lamb, beef and dairy production to replace some woo growing. Oats to replace the small areas of barley still being grown. Special crops—fresh peas and clover seed. More plantation forests.
3	Although all of this area has been settled for 120 years, production can be lifted by restoring and increasing soil fertility. The better medics, barrel 173 and harbinger, as well as Clare, Yarloop, and Geraldton sub. clovers and lucerne are the answer. Special areas of low fertility clay and sandy soils have big potential for improvement.	Intensify livestock production, especially prime lambs, pigs, poultry, beef and dairying. More fodder growing. Some cereal land to be used for almond growing and market gardening. Cereal crops for stock feed rather than grain. Extension of irrigation.
4	Since 1950, 75 per cent of Kangaroo Island cleared and developed. Fertility of soils can be improved by gradually sowing the perennials, rye grass, Currie cocksfoot and phalaris, with Yarloop, Woogenellup, Mt. Barker and Geraldton strains of sub. clover. Good pasture management essential. There is still 25 per cent of the island to be cleared. With greater soil fertility and better water supplies, 1 million sheep or equivalent possible by 1985.	Prime lamb and side-line production on farms can increase when facilities are improved. Some increase in cereals, oats, barley and wheat. Linseed an alternative crop if markets available.

Table 2—WHEAT

	1952-53	1953-54	1954-55	1955-56	1956-57	1957-58	1958-59	1959-60	1960-61	1961-62
COUNTY ADELAIDE										
Acres	6,569	5,364	5,506	5,591	3,854	2,142	3,306	2,836	4,890	4,643
Yield, Bushels	145,674	111,816	132,394	107,577	79,808	29,185	78,810	25,863	126,108	94,413
Yield, Bushels/Acre	22.18	20.85	24.05	19.24	20.71	13.63	23.84	9.12	25.79	19.69
COUNTY HINDMARSH										
Acres	6,051	4,420	5,226	4,813	3,102	2,462	2,568	2,817	3,866	5,376
Yield, Bushels	143,256	82,066	95,853	79,848	62,731	28,255	64,728	42,015	97,332	67,884
Yield, Bushels/Acre	23.67	18.57	18.34	16.59	20.22	11.48	25.21	14.91	25.18	12.63
COUNTY CARNARVON										
Acres	346	655	1,217	1,035	345	382	556	800	1,786	3,438
Yield, Bushels	9,861	16,193	30,280	17,067	6,159	9,258	14,631	17,328	43,104	29,094
Yield, Bushels/Acre	28.50	24.72	24.88	16.49	17.85	24.24	26.31	21.66	24.13	8.46

Table 3—BARLEY

	1952-53	1953-54	1954-55	1955-56	1956-57	1957-58	1958-59	1959-60	1960-61	1961-62
COUNTY ADELAIDE										
Acres	17 257	19,073	16,341	18,151	15,665	14,686	16,126	16,588	18,435	16,346
Yield Bushels	512,956	626,309	485,588	597,832	525,511	379,637	535,005	168,127	609,301	355,220
Yield, Bushels/Acre	29.72	32.84	29.72	32.94	33.55	25.85	33.18	10.14	33.05	21.73
COUNTY HINDMARSH										
Acres	14,582	13,208	12,720	10,878	11 936	11,020	12,650	13,168	15,165	14,094
Yield, Bushels	415,627	326,520	268,024	241,713	309,160	200,400	373,560	264,015	475,456	227,986
Yield, Bushels/Acre	28.50	24.72	21.07	22.22	25.90	18.19	29.53	20.05	31.35	16.18
COUNTY CARNARVON										
Acres	5,403	7.803	5,774	4,536	3,712	2,835	4,122	6,215	8,219	8,929
Yield, Bushels	146,376	200,806	132,163	105,481	69,659	70,851	107,821	155,695	141,428	137,814
Yield Bushels/Acre	27.09	25.73	22.89	23.25	18.77	24.99	26.16	25.05	17.21	15.43

Table 4—OATS

	1952-53	1953-54	1954-55	1955-56	1956-57	1957-58	1958-59	1959-60	1960-61	1961-62
COUNTY ADELAIDE										
Acres	2,393	1,554	2,087	2,042	1,577	2,264	2,744	3,558	3,956	2,188
Yield, Bushels	52,796	30,318	37,258	44,336	34,355	34,104	70,008	18,924	98,951	41,738
Yield, Bushels/Acre	22.06	19.51	17.85	21.71	21.79	15.06	25.51	5.32	25.01	19.08
COUNTY HINDMARSH										
Acres	4,574	2,800	5 171	4,801	4,884	4,462	6,676	4,972	6,223	4,284
Yield, Bushels	88,538	47,088	104,732	89,613	93,245	65,593	198,080	92,332	167,519	55,465
Yield, Bushels/Acre	19.36	16.82	20.25	18.67	19.09	14.70	29.67	18.57	26.92	12.95
COUNTY CARNARVON										
Acres	1,853	1,363	3,608	2,949	2,799	4,296	5,559	7,584	6,382	7,192
Yield, Bushels	33,946	20,028	63,183	43,425	25,544	94,734	180,125	191,121	125,404	123,326
Yield, Bushels/Acre	18.32	14.69	17.51	14.73	9.13	22.05	32.40	25.22	19.65	17.15

Table 5—FIELD PEAS

	1952-53	1953-54	1954-55	1955-56	1956-57	1957-58	1958-59	1959-60	1960-61	1961-62
COUNTY ADELAIDE										
Acres	5,493	5,205	5,979	5,781	5,018	5,316	5,261	3,395	3,282	3,329
Yield, Bushels	87,806	91,270	95,879	114,735	98,667	47,295	88,051	9,181	49,090	31,353
Yield, Bushels/Acre	15.98	17.53	16.04	19.85	19.66	8.89	16.74	2.74	14.95	9.42
COUNTY HINDMARSH										
Acres	2,513	2,025	2,360	1,618	1,127	1,275	1,375	1,323	1,283	1,155
Yield, Bushels	45,440	29,615	31,055	30,650	17,494	10,868	22,172	10,411	13,005	7,620
Yield, Bushels/Acre	18.1	14.62	13.12	18.94	15.52	8.56	16.13	7.88	10.13	6.6
COUNTY CARNARVON										
Acres	229	65	122	125	10	75	132	265	155	161
Yield, Bushels	4,724	656	2,020	2,190	140	939	1,932	2,347	265	1,400
Yield, Bushels/Acre	20.63	10.01	16.56	17.52	14.00	12.52	14.64	88.55	1.71	8.7

Table 6—HORTICULTURAL CROPS (Acres

	1952-53	1953-54	1954-55	1955-56	1956-57	1957-58	1958-59	1959-60	1960-61	1961-62
COUNTY ADELAIDE										
Orchards	13,994	14,023	13,417	13,664	13,621	12,524	12,114	12,301	11,995	11,977
Vines	16,377	16,668	15,887	15,399	15,166	15,103	14,801	14,502	14,192	14,414
Potatoes	4,152	3,145	3,029	2,776	3,114	3,349	3,291	3,282	2,931	3,195
Fresh Peas	653	471	386	705	692	599	746	757	640	627
Other Vegetable Crops	3,764	3,558	3,643	3,774	3,921	3,907	3,848	3,588	3,582	3,715
COUNTY HINDMARSH										
Orchards	503	557	617	618	559	534	536	524	585	600
Vines	286	317	348	327	317	312	319	311	347	312
Potatoes	1,216	1,036	779	778	811	965	903	904	905	792
Fresh Peas	270	348	438	486	534	447	527	546	761	695
Other Vegetable Crops	204	167	106	188	263	194	184	106	185	137
COUNTY CARNARVON										
Orchards	66	72	70	68	65	81	83	78	51	52
Vines	—	2	—	—	—	—	—	—	—	—
Potatoes	57	48	44	35	63	50	51	20	68	43
Fresh Peas	—	1	—	2	1	1	—	—	—	
Other Vegetable Crops	7	5	—	2	19	2	5	12	1	1

Table 7—SHEEP AND WOOL

	1952-53	1953-54	1954-55	1955-56	1956-57	1957-58	1958-59	1959-60	1960-61	1961-62
COUNTY ADELAIDE										
Sheep, Number	360,492	358,266	370,046	389,221	420,303	434,242	419,648	352,053	369,243	419,225
Sheep and Lambs Shorn	380,475	376,486	360,142	382,494	421,418	437,201	420,295	406,731	362,117	415,747
Wool, lb.	3,601,537	3,337,940	3,487,285	3,900,985	4,241,515	3,894,463	3,925,260	3,860,435	3,486,398	4,320.170
Wool/Head (lb.)	9.47	8.87	9.68	10.20	10.06	8.91	9.34	9.49	9.63	10.39
COUNTY HINDMARSH										
Sheep, Number	436,896	454,795	497,030	529,241	564,004	576,797	584,852	561,747	555,499	579,059
Sheep and Lambs Shorn	483,460	515,427	529,258	563,731	623,447	669,257	642,712	668,113	607,941	668,806
Wool, lb.	4,894,792	4,540,939	5,216,468	5,858,637	6,559,651	5,965,059	6,120,723	6,478,856	6,065,018	6,899,533
Wool/Head (lb.)	10.12	8.81	9.86	10.39	10.52	8.91	9.52	9.70	9.98	10.32
COUNTY CARNARVON										
Sheep, Number	165,834	172,735	203,656	257,728	277,117	324,226	368,856	427,198	442,259	509,019
Sheep and Lambs Shorn	183,537	188,592	215,410	282,948	320,638	347,048	394,463	485,749	481,462	567,888
Wool (lb.)	1,763,563	1,602,925	1,982,868	2,695,154	3,063,433	3,070,745	3,581,889	4,458,884	4,481,231	5,829,398
Wool/Head (lb.)	9.61	8.50	9.21	9.53	9.55	8.85	9.08	9.18	9.31	10.27

Table 8—CATTLE

	1952-53	1953-54	1954-55	1955-56	1956-57	1957-58	1958-59	1959-60	1960-61	1961-62	10 Year Increase %
COUNTY ADELAIDE											
Beef	3,983	4,134	5,308	5,538	6,661	6,321	6,829	4,856	7,093	11,292	175
Dairy	43,736	44,757	45,351	47,657	48,922	47,629	45,558	43,733	44,399	48,666	11
Total	47,719	48,891	50,659	53,195	55,583	53,950	52,387	48,589	51,492	59,958	25
COUNTY HINDMARSH											
Beef	7,377	8,921	10,672	11,926	13,476	12,670	12,350	10,674	13,448	17,341	250
Dairy	33,242	36,666	36,748	36,449	37,384	35,901	34,981	35,735	37,863	42,030	37
Total	40,619	45,587	47,420	48,375	50,860	48,471	47,331	46,409	51,311	59,371	50
COUNTY CARNARVON											
Beef	860	1,140	1,356	1,746	1,975	2,303	2,710	2,944	4,228	7,792	907
Dairy	1,641	1,962	2,395	2,644	2,854	2,744	2,834	3,246	3,100	2,951	87
Total	2,501	3,102	3,751	4,390	4,829	5,047	5,544	6,190	7,328	10,743	429

Table 9—PIGS

County	1952-53	1953-54	1954-55	1955-56	1956-57	1957-58	1958-59	1959-60	1960-61	1961-62
Adelaide	7,607	7,979	9,226	9,157	9,976	11,302	10,327	10,370	11,317	12,362
Hindmarsh	4,608	5,129	6,055	5,086	5,475	6,577	5,504	5,991	6,972	6,819
Carnarvon	154	329	614	463	591	531	646	1,102	1,784	2,261

Table 10—RAINFALL (Inches)

	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961
COUNTY ADELAIDE										
April-November	20.91	18.24	15.27	23.56	24.51	13.04	18.44	7.68	21.47	16.00
Year	23.85	21.55	18.02	27.58	26.65	14.32	19.83	12.78	24.99	17.41
COUNTY HINDMARSH										
April-November	18.71	17.13	13.32	23.12	21.79	12.60	19.67	12.20	19.12	11.57
Year	21.28	20.37	16.01	27.60	24.24	13.46	21.62	16.54	22.21	13.16
COUNTY CARNARVON										
April-November	20.43	17.81	16.86	24.33	23.73	16.23	20.67	12.05	20.53	12.88
Year	23.35	20.29	18.63	26.72	26.78	17.34	22.28	16.08	24.55	13.85

Table 11—TOPDRESSED PASTURES

	1952-53	1953-54	1954-55	1955-56	1956-57	1957-58	1958-59	1959-60	1960-61	1961-62
COUNTY ADELAIDE										
Acres	141,154	159,406	155,730	164,047	169,717	177,405	173,760	153,776	149,834	147,842
Tons	8,471	9,552	10,000	10,630	10,654	11,437	11,373	9,657	9,531	9,044
Lb./Acre	134.43	134.23	143.84	145.15	140.62	144.66	146.61	140.67	142.49	137.03
COUNTY HINDMARSH										
Acres	217,952	255,427	265,694	283,653	281,556	287,635	272,619	252,226	248,799	262,051
Tons	12,991	15,093	16,751	17,661	18,407	19,213	16,887	15,908	15,248	15,966
Lb./Acre	132.69	132.36	141.22	139.47	146.44	149.62	138.75	141.28	137.28	136.48
COUNTY CARNARVON										
Acres	155,091	173,583	176,702	207,672	225,553	240,522	251,347	302,223	255,047	283,201
Tons	9,826	11,290	11,105	13,371	16,182	18,555	19,101	23,898	17,148	19,859
Lb./Acre	141.92	145.56	140.77	144.22	160.71	172.80	170.22	177.13	150.61	157.03

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