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Agriculture in South Australia

THE UPPER NORTH

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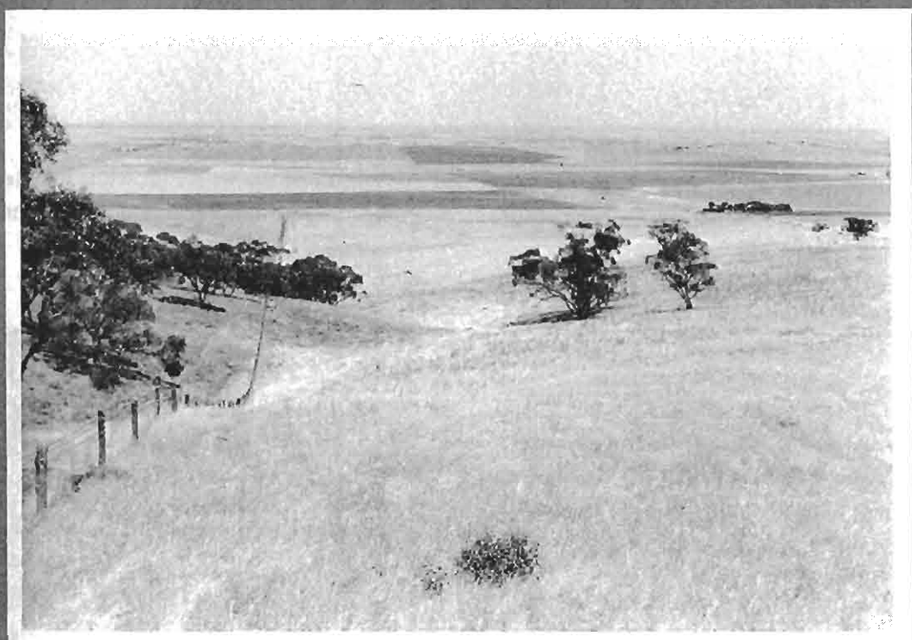


Standing oats on hill country (in foreground) have greatly improved sheep carrying capacity. Part of the loamy mallee zone near Crystal Brook is shown beyond.

Besides being admirably suited to cropping, the Upper North agricultural district is the home of the South Australian Merino Stud Industry. The area covers nearly three million acres, comprising Counties Victoria, Frome, Dalhousie, and the agricultural land in Counties Burra and Kimberley.

This is undulating and hilly country. It rises from the coastal plain on the western side and for the most part, the district is between 1,000 and 1,500 ft. above sea level; some places exceed 2,000 ft. and Mount Bryan rises to just over 3,000 ft. The terrain is gently undulating rather than rugged, with wide valleys between the ridges running generally north and south.

Most of the rain falls in winter, the heaviest occurring between April and October. But local annual averages of rainfall vary – on about 40 per cent of the area, rainfall exceeds 15 in. while all but six per cent receives more than 10 in. (See Map).

Because it is mainly range country, this part of the State is prone to low day temperatures and frost in winter and spring. This characteristic is more pronounced in the eastern half of the district where such places as Yongala and Mount Bryan are well known for their cold weather.

The predominant soils are brown solodized (mallee) and red-brown earths, with areas of podzols, sandy mallee and brown soils of heavy texture.

The area now farmed was originally open grassland; savannah woodland covered the wetter areas. Natural grasses have largely been replaced by the introduced annuals – barley grass, brome grass, wild oats, medics and subterranean clovers.

This is primarily a cereal-sheep area and although agricultural production has been quite diversified on the smaller farms, the "sideline" enterprises have either been discontinued or developed into a larger source of income in recent years. Allied with this move to larger enterprises, property size has been increasing steadily, resulting in a nine per cent decrease in the total number of farm holdings in the 10 years under review.

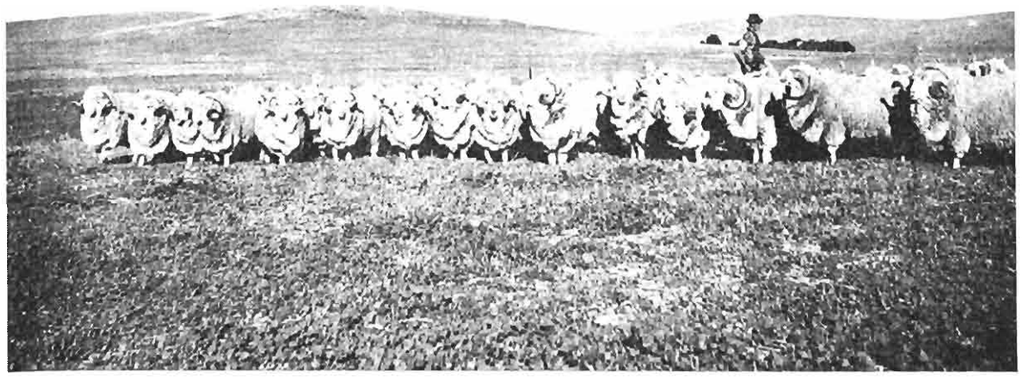
Wheat is the major crop; about 300,000 acres are sown each year. The average production during the 10 year period 1959-68 of over six and a quarter million bushels, was one-sixth of the State's total. The peak year was 1968, when 11½ million bushels were produced at an average of 27 bushels per acre. This was grown on a record 430,000 acres following the drought of 1967.

Almost all of the wheat grown is handled in bulk through the 19 regional silos in the district, and the grain is shipped from the terminal silo at Port Pirie.

Barley acreages declined markedly in the middle 1960's, but returned to the 10 year average figure of about 60,000 acres sown, for a total yield averaging one and a quarter million bushels.

The area sown to oats does fluctuate, but is increasing; most of the crops are grazed green in winter and are allowed to recover for hay, grain or further grazing. As a result, the area harvested for grain, and yields, vary greatly from season to season.

The acreage sown to field peas rose steadily from 3,500 acres in 1959 to a peak of 7,000 acres in 1966, then fell sharply to 4,000 acres in 1968. The combination of variable yields, disease and insect pests, and uncertain markets were factors influencing the reduction of the acreages sown.



Most of the studs that produce the South Australian type Merino breed are located in the Upper North.

Lucerne seed growing has long been a profitable enterprise in the Upper North. After cutting the lucerne for hay in November, paddocks are closed and seed is harvested in March. In 1966-67, 380 tons of seed were reaped.

Two horticultural crops are grown in the district – tomatoes and garden peas; these are produced on the coastal plain north and east of Port Pirie for the Adelaide and Melbourne markets. Annual production is 120,000 bushels of peas and 50,000 bushels of tomatoes. While most of the crops depend solely on rainfall, some supplementary irrigation is applied.

The competitive weeds, wild oats, Wimmera annual rye grass and the seedling weeds (particularly deadnettle, fumitory and sheepweed) are the most damaging to cereal crops in the district. Saffron thistle and wild turnip can also lower income through contamination of the grain.

Soursob, cape tulip, wild artichoke, hoary cress and three-corner Jack are also problems in certain areas.

Several outbreaks of skeleton weed are being eradicated at present; this weed is the greatest potential threat to cereal production.

Most of the studs that produce the South Australian type Merino breed of sheep are located here, and as a result the Upper North sheep industry is based almost entirely on this breed. The majority of flock owners breed their replacement stock, and

stud rams, surplus and cull ewes, and wether lambs predominate in the sales.

Dairying in the district still remains a small sideline but has declined markedly since 1964. This is largely due to the reduction in milk processing facilities in the area and an expansion of container milk and cream services throughout the district. Herds have generally been reduced in size from five to 15 cows to one to three cows – large enough for farm needs only. Pig units are often maintained in association with dairies to profitably use skim milk. The number of pigs kept in the district has risen steadily during the past 10 years. Most of this growth has been the result of small increases on many farms which are still maintaining pigs as a sideline. There are some larger pig units in the western part of County Victoria.

Beef cattle are run on the larger grazing properties and most of these are breeding herds. But, some store cattle are bought annually for fattening.

More detailed information on the district's production in the period 1959-68 is shown in Tables 1, 2, 3, 4, and 5.

For the discussion on land use, the district has been divided into five zones. These are the red-brown earth zone, the sandy mallee, the loamy mallee, the heavy soil and the hill country zone.

THE RED-BROWN EARTH ZONE

The red-brown earth zone extends from County Victoria, where it predominates, north to County Frome and County Dalhousie; here it is often associated with the more common loamy mallee zone.

The annual rainfall varies from 13 to 20 in. and higher in a few areas. Farms are small, from 640 to 1,200 acres, and mostly arable.

Harvesting wheat in the red-brown earth zone. The Upper North produces one sixth of the wheat in South Australia.

Harvesting barley in the Upper North.

Their value, depending on rainfall, ranges from $45 to $110 per acre.

Since the north was the home of wheat growing in this State, the red-brown earths have been the most important wheat growing soils and still are today.

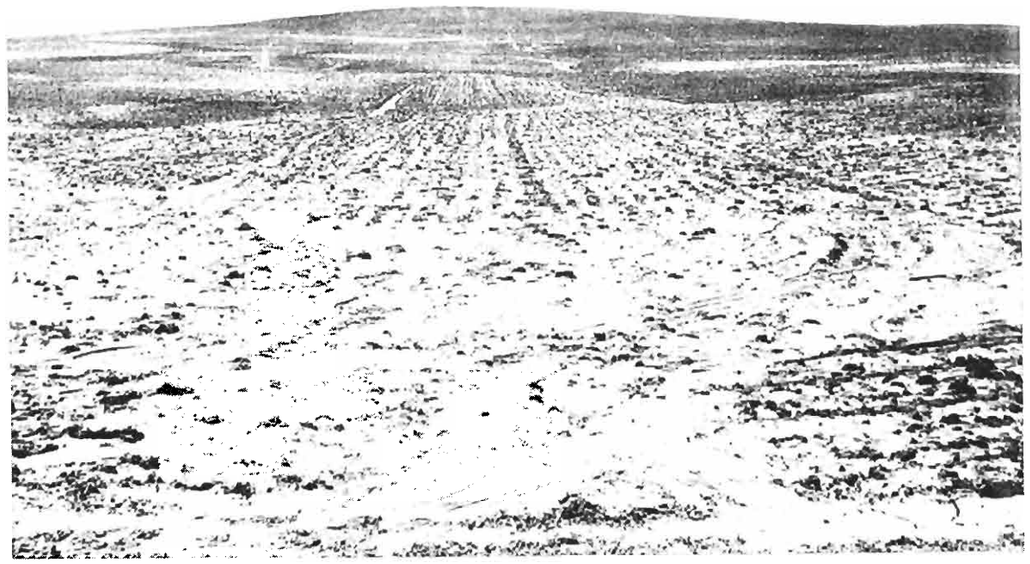
Many farms still follow a fallow-wheat-pasture rotation, and rely on the one year of pasture to replenish fertility. However, good clover growth rarely occurs naturally on these soils and as a result, soil structure and fertility have been depleted with this rotation.

To meet the problem where the annual rainfall exceeds 16 in., early maturing strains of subterranean clover are now being sown. To enable this clover to develop sufficiently, the pastures are left for three years and this can be followed by two successive wheat crops.

In the drier parts of the zone, the soils are not as hard setting and are frequently alkaline on the surface. Medics perform well in these conditions and the fallow-wheat-pasture rotation can be satisfactorily maintained.

As for perennial legumes, the deep clay subsoils of the red-brown earths store large quantities of moisture through the dry summer and autumn; this suits the growth of lucerne, which is widely grown in this zone, mainly in County Victoria.

Farms in this zone, particularly those of less than 1,000 acres, often have small sideline units of dairy cattle and pigs, but as dairying has decreased and pig numbers have



Sheet erosion — one of the problems of the sloping ground in the red-brown earth zone.

increased, there has been a sharp reduction in the amount of surplus skim milk fed to pigs and now they are almost always fed with dry rations.

The most severe problem facing farmers in the red-brown earth zone is soil erosion. Soil structure is soon lost with the frequent cultivations necessary for intensive cropping. And fallows then shed water during summer thunderstorms. The result is sheet erosion and the formation of gutters.

On the other hand, improved soil structure through better rotations, together with contour banks on the steeper slopes, has done much to reduce this hazard. There is room still for much improvement.

While the present level of production in the red-brown earth zone is not low, there has been little improvement over the last 30 years.

A number of farmers have made a determined effort to improve fertility and soil structure by growing dense clover pastures. As a result they have been rewarded with marked rises in grain yields as well as dramatic increases in sheep carrying capacity and wool production.

Increases on these farms make evident the potential for production this zone can offer.

THE SANDY MALLEE ZONE

The sandy mallee zone is situated on the western coastal plain south of Port Pirie, and consists of relatively flat country interspersed with sand ridges.

The average annual rainfall ranges from 13 to 15 in., and reticulated water is available both for stock and domestic purposes.

Farms are mainly arable, although some natural vegetation remains on the shallow soils and very sandy rises. The area of most farms is now more than 1,200 acres, and current land values range from $50 to $70 an acre.

Wheat, barley and oats are all grown for grain, and the area sown to barley is equal to that of wheat. Oats are mostly sown into stubbles of previous wheat crops.

Frequency of cropping varies with soil fertility. Where an annual medic is well established, a cereal crop is sown every three years. On these soils, the medics do not develop as well as on the loamy mallee soils, but they can be established and maintained if they are sown and adequately fertilized.

Once fertility has been recovered with medic pastures, fallowing can be discontinued; this greatly reduces the risk of wind erosion. Fallows offer no advantage where fertility is high, as these soils are unable to store much subsoil moisture.

Although stock numbers have increased with improved pastures in the sandy mallee areas, the sandy rises do restrict the rate of stocking. For this reason, the greatest improvement in production here has come from grain.

But if attention is paid to subdivision, placement of water points, and use of areas with natural vegetation or stony ground, then stock numbers can, with care, be increased.

THE LOAMY MALLEE ZONE

Loamy mallee soils predominate in the drier portions of the Upper North. With a rainfall of from 12 to 17 in., these areas are well suited to grain and sheep production. Farms vary from 700 to 2,000 acres, and with few exceptions are entirely arable. Depending on the rainfall, land values range from $50 to $90 an acre.

Wheat is the main cereal, and it is frequently grown on a three-year rotation, with oats or barley sown into the stubble. Sheep are bred on the properties and stock numbers are kept fairly constant by annually selling wether lambs and cull ewes.

Peas are produced on the loamy mallee soils where the rainfall exceeds 16 in. and the area is relatively frost free. Whereas crops were often sown on wheat stubbles, the increase in prevalence of weeds and insects has led to better seed bed preparation before sowing. Hence peas now fit into the rotation in a variety of ways.

While fertility can rapidly deteriorate with frequent cropping, medics thrive on these soils if phosphate levels are maintained. Adequate phosphate levels ensure a ready response from superior medic species.

Wider rotations are sometimes used on larger properties, where grazing has greater emphasis. Here, lucerne can be used, as production from annual pastures declines rapidly if the paddocks are not cultivated every two or three years.

Erosion is not a general problem because of the good natural structure of these soils, but contour banking is recommended on the steeper slopes.

In future, production from the loamy mallee zone can be expected to expand just as it has done during the last decade. With ade-

Preparing a wheat stubble for peas on the Georgetown plain.

Dry sowing oats into a wheat stubble in the loamy mallee zone.

quate superphosphate to encourage legume growth, and with rotations aimed at utilizing this growth, increases will occur in both grain and sheep production.

THE HEAVY SOIL ZONE

The heavy soil zone is divided into two parts. (See Map)

Land use in the area near Port Pirie is similar to that in the loamy mallee zone, but low rainfall limits production in most years.

The soil of the Georgetown plain is a dark brown clay loam. This is one of the best wheat growing soils in the State; its fertility is high, and large quantities of moisture can be stored in the deep subsoil after fallowing.

Farms in the area average 1,000 acres in size and are valued at $90 to $130 an acre. The annual rainfall is 18 in.

Wheat is the main cereal, while relatively less barley and oats are grown than in the rest of the district. Field peas are also grown to a lesser extent.

Pastures include the medics which have to be re-sown after periods of concentrated cropping. Wheat is generally sown in a three-year rotation, and barley, oats or peas are sown into the stubbles.

Sheep production is not as high as in other parts of the district as a result of the more intensive cropping.

Future production on the Georgetown plain will depend on the maintenance and improvement of soil fertility through annual legumes. While wheat prices continue at their relatively high level, this crop will remain the most frequently grown cereal.

THE HILL COUNTRY

The hill country of the north, which occupies a considerable proportion of the total area, is to a great extent unimproved and is used for sheep and cattle grazing.

Annual rainfall varies from 13 in. to more than 20 in.

The hills run generally north and south, and the soils are a complex of skeletal, red-brown earth and limy soils with frequent rocky outcrops. An area of podzolic soils occurs at Wirrabara.

Grazing has removed many of the natural perennial grasses, which have been replaced by annuals. Legumes are primarily woolly burr medic on the alkaline soils and cluster clover on the red-brown earths.

As the soils are shallow, feed grows only during late winter and spring. Autumn grazing is poor. Overgrazing further reduces production and recovery is slow.

Where subterranean clover has been established with the use of superphosphate in the wetter areas, improved production has occurred, and in the drier sections superphosphate applications have resulted in increased carrying capacity.

The greatest improvement has followed the introduction of oats and annual legumes to the semi-arable areas of the hills. Provided a reasonable seed-bed is prepared, oats and suitable strains of legumes can be established.

Oats are best harvested or left standing to be grazed in autumn and early winter. This provides high quality feed when elsewhere it is in short supply.

This method is being used successfully on all soil types in the north and has markedly improved the production of some properties. A big potential exists for increased wool and meat production in this hill country.

TABLE A – GENERAL

Zone	Rainfall	Soils	Water supply	Farm size	Farm value
1	13 in. in the north, up to 20 in. in the south.	Red-brown earths (R.B.E.) – deeper soils are found in the valleys. Shallower types, developed from shale and slate, occur on the slopes and tops of moderate hills. Lower rainfall areas often associated with loamy mallee. Deteriorated structure has posed erosion and water absorption problems.	Largely reticulated supply, but farm supply from bores in the northern areas.	500 to 1,200 acres, all mixed cereal-livestock properties.	$45 to $110 per acre.
2	13 in. in the north, grading to 15 in. in the south.	Sandy mallee soils – coarse yellow-brown sand over a subsoil with some clay. Usually occurs as a dune-swale system, across the prevailing winds. Subject to wind erosion.	Reticulated supply.	1,200 to 2,500 acres, with some larger properties – all mixed cereal-livestock.	$40 to $70 per acre.
3	12 in. in the north to 17 in. in the south.	Loamy mallee soils – a sandy loam surface overlying a clay-loam. Often mixed with R.B.E. soils in the northern areas.	Some reticulated supply in the southern areas, but mainly farm supply from bores. Water suitable for stock only.	700 to 2,000 acres, cereal-livestock farming.	$50 to $90 per acre.
4	13 to 18 in.	Heavy loams in the Port Pirie district. Other areas are dark brown clay loams – very fertile. Become sticky when wet, then crack on drying.	Mostly reticulated supply except for the northern areas.	800 to 1,400 acres.	$80 to $130 per acre.
5	13 to 25 in.	A complex of skeletal, sandy R.B.E's, loamy mallees and podsolic soils. Dominantly shallow soils over rock.	Mostly farm supply from bores.	Usually associated with some arable land, big variation in property size.	$25 to $70 per acre.

TABLE B – TYPE OF PRODUCTION

Zone	Crops	Rotations	Fertilizers	Pastures	Livestock
1	Wheat is the dominant crop. A little barley and oats. Lucerne seed production is important where sub soil moisture is reliable – usually associated with creeks and some alluvial soil.	FWP as this is all arable land. Small decrease in this in latter years with more emphasis on pasture management to assist soil fertility and structure.	90 to 120 lb. superphosphate with the cereal crop; wide variation on pastures – from 0 to 112 lb. per acre. Nitrogen only used in special circumstances.	Strong annual legume growth rarely occurs naturally. The early maturing sub. clovers suit the southern areas with above 16 in. rainfall, but the medics, particularly Jemalong, adapt to the lower rainfall situations. Wimmera annual ryegrass and silver grass and some barley grass also add to the pasture.	Dominantly sheep for wool production. Increasing numbers of beef cattle, and static small dairy numbers.
2	Wheat and barley in equal ratio, with oats as a secondary crop – often for fodder conservation.	Ranges from one crop in 3 years where medic has been established up to one crop in 5 years where relying on natural pastures.	Superphosphate at 60 to 100 lb. per acre for cropping – very little on pasture land. Nitrogen used particularly to assist stabilization of wind eroding areas.	Woolly burr medic occurs naturally and profusely. Harbinger medic is the best of the introduced cultivars. Barley grass and several brome types can dominate the pasture.	Dominantly sheep. Pigs are often run both as a sideline and as intensive enterprises, based on farm grown barley.
3	Wheat is the main cereal, then barley and some oats. Peas are an important crop where rainfall exceeds 16 in.	Either a 3 or 4 year rotation, with and without fallow. More flexible rotation in this soil Zone.	80 to 112 lb. superphosphate with cereals, and usually some on pastures – 40 to 60 lb.	Burr and Hannaford medic occur naturally; strengthened with sowings of Jemalong medic; barley grass is the major grass species.	Dominantly sheep; increasing beef cattle numbers as a sideline. Intensive pig and poultry enterprises are increasing in the south-western areas.
4	Wheat; also barley in the lower rainfall areas near Port Pirie. Peas in better rainfall areas.	Cropping is usually in an intensive period broken by 2 or 3 years of pasture. FWB Peas PP is common, although many variations are used.	100 to 150 lb. superphosphate.	Hannaford and snail medics and barley grass grow well. Recent sowings include Paragosa and Jemalong medics.	As for Zone 3.
5	Small acreages of wheat grown on the lower slopes. Oats are sown on both arable and semi-arable ground and are utilized in many ways.	Infrequent cropping – usually with minimum preparation.	80 to 120 lb. superphosphate with cereals. Wide variation in top-dressing of natural pastures.	Natural grass, legume and herbaceous species in the lower rainfall areas. Pasture sowings of both medics and sub. clover have been successful in better rainfall areas.	Dominantly sheep grazing, with small but increasing beef cattle numbers.

TABLE C – PROBLEMS

Zone	Weeds	Cereal diseases	Erosion	Trace elements	Insects
1	Wild oats, ryegrass, deadnettle, fumitory, three corner Jack and soursob are main concern. Cape tulip and artichoke in particular areas. Saffron thistle is widespread, and salvation Jane in low rainfall areas.	Not a major problem– cereal eelworm and rhizoctonia are main concern. Rust is prominent in odd years.	Water erosion is an ever present hazard, particularly on the sandy loam red brown earths.	No trace elements are used.	Pastures – red-legged earthmite, lucerne flea and cutworm species. Sitona weevil spreading rapidly, particularly in the southern areas.
2	Turnip, mustard, saffron thistle, three corner Jack. Onion weed and horehound are mainly roadside worries.	Take-all and cereal eelworm are problems in occasional years.	Wind erosion is a constant and serious problem.	As for Zone 1	Red-legged earthmite and lucerne flea.
3	Wild oats, deadnettle, fumitory, three corner Jack, wild turnip with soursob becoming an increasing problem. Some Lincoln weed in particular areas.	As for Zone 1	Water erosion can occur under extreme conditions.	As for Zone 1	As for Zone 1
4	Wild turnip and saffron thistle in light rainfall areas; then ryegrass, wild oats. Many other weeds of little concern.	As for Zone 1	No concern	As for Zone 1	As for Zone 1
5	Wild turnip, saffron thistle, salvation Jane, and Ward's weed. Some onion weed and horehound.	Nothing of concern.	Water erosion is a hazard with cultivation. Any heavily grazed steep areas are a danger to lower slopes.	As for Zone 1	Red-legged earthmite and lucerne flea are troublesome wherever pastures have been developed.

TABLE D – POTENTIAL FOR INCREASED PRODUCTION

Zone	Increased production	Alternative land use
1	The greatest increase will come from the regular use of superphosphate in association with an annual legume based pasture. Both cereal and livestock production will benefit from improvement in soil fertility and in soil structure.	This Zone is suitable for the production of any winter cereal or oil seed crop and for any grazing livestock. Lucerne is the only crop that will regularly produce during the summer.

TABLE D – POTENTIAL FOR INCREASED PRODUCTION (continued)

Zone	Increased production	Alternate land use
2	As for Zone 1, except that an improvement in soil fertility and an increase in organic matter content will result in higher yields and stock carrying capacity and a greater resistance to wind erosion.	Possibility of increasing intensive meat production – poultry, pigs – using farm grown grain as the basis for rations.
3	As for Zone 1.	As for Zone 1 except for the use of lucerne.
4	Necessary to maintain a high soil fertility level.	As for Zone 1.
5	Non arable – the regular application of superphosphate and some annual legume introduction will improve carrying capacity. Semi-arable – as above, then adding oats or barley for grazing or fodder conservation. Perennial grasses will establish where rainfall is above 20 in.	Nil

TABLE 1 – HOLDINGS

	1959-60	1960-61	1961-62	1962-63	1963-64	1964-65	1965-66	1966-67	1967-68	1968-69
COUNTY FROME										
Numbers	617	629	631	623	612	601	592	582	566	557
Acres	940,108	937,871	938,664	940,760	931,827	934,164	926,224	917,180	919,220	913,590
Average, acres	1,520	1,490	1,490	1,510	1,523	1,554	1,559	1,576	1,624	1,640
COUNTY DALHOUSIE										
Numbers	372	370	364	359	345	342	334	325	323	312
Acres	1,144,058	1,107,540	1,107,270	1,101,142	1,115,957	1,085,631	1,088,814	1,079,084	1,082,683	1,093,219
Average, acres	3,080	2,990	3,040	3,067	3,235	3,174	3,260	3,320	3,352	3,504
COUNTY VICTORIA										
Numbers	945	935	937	938	937	926	932	924	916	914
Acres	833,328	829,261	839,297	838,049	846,541	839,793	840,928	841,286	843,413	845,390
Average, acres	880	890	900	893	903	907	902	910	921	925
COUNTY BURRA										
Numbers	231	226	219	214	210	207	207	205	200	197
Acres	1,420,922	1,404,275	1,406,838	1,294,277	1,345,020	1,298,849	1,398,269	1,395,602	1,386,429	1,416,364
Average, acres	6,151	6,214	6,424	6,048	6,405	6,275	6,755	6,808	6,932	7,190

TABLE 2 – WHEAT

	1959-60	1960-61	1961-62	1962-63	1963-64	1964-65	1965-66	1966-67	1967-68	1968-69
					COUNTY FROME					
Acres	70,269	81,122	81,604	99,647	104,559	100,049	98,504	106,004	96,862	121,116
Yield, bushels	584,820	2,166,291	1,008,738	1,239,864	2,273,853	2,060,778	1,242,570	1,983,144	1,232,778	3,343,914
Yield, bushels/acre	8.32	26.70	12.36	12.44	21.75	20.60	12.61	18.71	12.73	27.61
					COUNTY DALHOUSIE					
Acres	35,825	41,666	48,890	61,196	63,927	59,922	59,342	64,189	62,447	79,870
Yield, bushels	318,150	1,138,548	646,020	773,427	1,365,846	1,198,842	774,507	1,268,303	605,004	2,296,893
Yield, bushels/acre	8.88	27.33	13.21	12.6	21.3	20.0	13.1	19.7	9.60	28.76
					COUNTY VICTORIA					
Acres	97,372	126,465	138,554	153,209	168,811	154,913	146,347	153,249	136,823	188,586
Yield, bushels	638,142	3,712,053	2,287,635	2,366,694	4,141,278	3,188,871	2,069,193	3,254,822	1,294,767	4,989,429
Yield, bushels/acre	6.55	29.35	16.51	15.45	24.53	20.58	14.14	21.24	9.46	26.46
					COUNTY BURRA					
Acres	14,049	20,448	23,139	27,935	26,579	25,145	23,687	24,192	24,802	42,252
Yield, bushels	117,519	518,862	358,443	570,837	518,784	528,084	344,163	481,375	183,822	1,039,911
Yield, bushels/acre	8.36	25.37	15.49	20.43	19.52	21.00	14.53	19.90	7.41	24.61

TABLE 3 – BARLEY

	1959-60	1960-61	1961-62	1962-63	1963-64	1964-65	1965-66	1966-67	1967-68	1968-69
					COUNTY FROME					
Acres	15,853	19,308	11,512	9,158	8,299	5,986	6,716	6,137	7,309	10,644
Yield, bushels	118,519	531,434	131,792	93,232	174,811	130,075	55,472	104,904	74,085	220,662
Yield, bushels/acre	7.48	27.52	11.45	10.18	21.06	21.73	8.26	17.09	10.14	20.73
					COUNTY DALHOUSIE					
Acres	9,120	12,738	5,874	4,263	4,517	4,828	4,409	4,035	3,957	5,225
Yield, bushels	68,101	324,692	71,892	59,570	91,009	98,787	50,207	70,350	23,523	117,444
Yield, bushels/acre	7.47	25.49	12.24	14.0	20.1	20.5	11.4	17.4	5.94	22.48
					COUNTY VICTORIA					
Acres	59,034	74,060	48,461	34,313	36,660	32,079	33,384	32,983	37,975	45,751
Yield, bushels	319,008	2,229,222	761,246	458,452	964,503	734,807	414,763	707,140	247,557	1,333,880
Yield, bushels/acre	5.40	30.10	15.71	13.36	26.31	22.91	12.42	21.44	6.52	24.78
					COUNTY BURRA					
Acres	2,925	5,285	2,815	1,558	1,666	1,112	987	954	2,118	3,559
Yield, bushels	19,397	133,896	42,832	31,090	31,774	31 917	11,755	15,915	9,384	57,219
Yield, bushels/acre	6.63	25.34	15.22	20.00	19.07	28.07	11.91	16.68	4.43	6.08

TABLE 4 – OATS

	1959-60	1960-61	1961-62	1962-63	1963-64	1964-65	1965-66	1966-67	1967-68	1968-69
					COUNTY FROME					
Acres	7,837	10,109	3,992	6,835	10,842	6,323	6,544	8,909	11,380	11,368
Yield, bushels	29,845	259,501	31,347	51,330	222,043	121,149	35,277	126,303	58,311	252,735
Yield, bushels/acre	3.81	25.67	7.85	7.51	20.48	19.16	5.39	14.18	5.12	22.23
					COUNTY DALHOUSIE					
Acres	6,846	8,597	3,437	5,098	8,260	6,136	6,344	8,134	9,354	10,335
Yield, bushels	27,854	242,206	40,698	45,537	193,125	150,350	53,844	128,493	57,498	240,459
Yield, bushels/acre	4.07	28.17	11.84	8.9	23.4	24.5	8.5	15.8	6.15	23.27
					COUNTY VICTORIA					
Acres	24,300	24,368	7,758	13,584	17,386	14,926	15,625	20,384	21,194	23,005
Yield, bushels	71,715	709,457	108,198	164,934	440,312	394,532	160,584	411,009	93,537	597,858
Yield, bushels/acre	2.95	29.11	13.95	12.14	25.33	26.43	10.28	20.16	4.41	25.99
					COUNTY BURRA					
Acres	5,118	5,376	2,995	3,661	4,831	5,333	6,483	5,736	9,204	10,692
Yield, bushels	23,901	146,170	45,829	76,845	99,465	119,828	53,661	117,666	36,234	293,409
Yield, bushels/acre	4.67	27.19	15.30	20.99	20.59	22.47	8.28	20.51	3.94	27.44

TABLE 5 – FIELD PEAS AND OTHER CROPS

	1959-60	1960-61	1961-62	1962-63	1963-64	1964-65	1965-66	1966-67	1967-68	1968-69
FIELD PEAS					COUNTY FROME					
Acres	157	236	175	105	135	75	225	122	26	276
Yield, bushels	F	1,530	75	1,200	360	765	225	400	150	1,042
Yield, bushels/acre	–	6.48	0.43	11.4	2.7	10.2	1.0	3.3	5.8	3.8
					COUNTY VICTORIA					
Acres	3,373	3,339	4,514	5,277	4,872	5,661	5,982	6,928	4,093	4,106
Yield, bushels	2,211	53,945	37,907	40,750	84,889	100,831	54,558	84,759	6,942	74,273
Yield, bushels/acre	0.66	16.16	8.40	7.7	17.4	17.8	9.1	12.2	1.7	18.1
MISCELLANEOUS CROPS					COUNTY FROME					
Lucerne, cwt.	1,354	2,386	2,097	1,033	2,254	577	718	1,769	320	2,096
Green peas, bushels	49,624	154,456	79,589	95,329	161,680	107,838	95,793	111,664	63,796	67,922
Tomatoes, bushels	9.692	8,674	8,410	10,545	11,136	17,205	14,088	16,868	18,108	10,700
					COUNTY VICTORIA					
Lucerne, cwt.	2,591	2,940	2,906	4,467	4,071	4,067	2,834	5,739	2,386	5,074
Green peas, bushels	8,335	21,518	12,218	22,957	38,341	23,059	19,300	26,912	12,385	14,031
Tomatoes, bushels	25,605	21,041	31,324	39,241	38,488	50,946	58,988	104,517	113,812	54,934

TABLE 6 – TOPDRESSED PASTURES

	1959-60	1960-61	1961-62	1962-63	1963-64	1964-65	1965-66	1966-67	1967-68	1968-69
					COUNTY FROME					
Acres	9,902	6,666	10,253	6,861	7,451	14,876	19,228	20,982	21,739	14,977
Tons	405	338	416	337	355	694	957	1,086	1,037	681
lb./acre	92	114	91	110	101	105	111	116	107	102
					COUNTY DALHOUSIE					
Acres	5,390	2,890	3,017	2,618	4,030	7,381	8,770	10,413	11,173	9,615
Tons	267	121	124	116	225	381	437	526	600	490
lb./acre	111	94	92	99	125	116	112	113	120	114
					COUNTY VICTORIA					
Acres	27,502	17,342	20,108	22,438	30,700	37,358	39,676	53,103	45,263	36,079
Tons	1,385	749	838	1,025	1,696	1,727	1,896	2,561	2,166	1,686
lb./acre	113	97	93	102	124	104	107	108	107	105
					COUNTY BURRA					
Acres	7,120	4,092	5,599	6,312	9,972	20,457	15,359	21,613	22,610	10,923
Tons	315	186	251	323	535	982	838	1,024	999	536
lb./acre	99	102	100	115	120	108	122	106	99	110

TABLE 7 – SHEEP AND WOOL

	1959-60	1960-61	1961-62	1962-63	1963-64	1964-65	1965-66	1966-67	1967-68	1968-69
					COUNTY FROME					
Sheep, numbers	295,379	321,425	343,969	291,321	320,827	320,970	318,285	320,228	287,207	322,294
Sheep and lambs shorn	370,359	318,694	386,229	363,255	329,795	364,438	367,207	367,751	349,315	324,699
Wool, lb.	3,857,468	3,355,645	4,005,936	4,008,730	3,704,522	3,844,943	3,956,365	4,248,054	3,898,913	3,766,257
Wool/head, lb.	10.42	10.53	10.37	11.04	11.23	10.55	10.77	11.55	11.56	11.51
					COUNTY DALHOUSIE					
Sheep, numbers	252,274	257,212	268,985	245,475	266,889	261,342	275,359	266,500	216,336	269,575
Sheep and lambs shorn	333,103	253,763	309,804	301,958	284,543	294,070	309,095	314,161	287,304	266,553
Wool, lb.	3,820,213	2,716,277	3,377,533	3,485,241	3,271,836	3,110,262	3,351,170	3,668,734	3,325,279	3,155,783
Wool/head, lb.	11.47	10.70	10.90	11.54	11.50	10.58	10.85	11.68	11.58	11.8
					COUNTY VICTORIA					
Sheep, numbers	384,121	452,890	523,062	449,614	483,571	505,555	490,146	492,618	391,319	453,168
Sheep and lambs shorn	547,160	429,074	570,119	567,016	521,828	572,555	572,852	600,876	527,608	466,938
Wool, lb.	5,500,906	4,381,820	5,937,555	6,064,323	5,652,797	5,886,309	5,970,285	6,560,300	5,610,338	5,158,571
Wool/head, lb.	10.05	10.21	10.41	10.70	10.83	10.28	10.42	10.92	10.63	11.05
					COUNTY BURRA					
Sheep, numbers	225,893	228,146	271,016	272,742	283,616	279,711	287,145	259,699	211,289	240,482
Sheep and lambs shorn	292,234	241,470	290,609	327,990	316,977	338,667	327,307	319,297	291,167	241,159
Wool, lb.	3,154,601	2,605,401	3,247,885	3,849,601	3,772,235	3,704,082	3,711,994	3,607,245	3,186,987	2,802,623
Wool/head, lb.	10.79	10.79	11.18	11.74	11.90	10.94	11.34	11.30	10.94	11.27

TABLE 8 – CATTLE

	1959-60	1960-61	1961-62	1962-63	1963-64	1964-65	1965-66	1966-67	1967-68	1968-69
					COUNTY FROME					
Dairy	3,467	3,451	3,857	3,556	3,122	2,563	2,368	2,077	1,853	1,592
Beef	1,359	3,248	3,291	2,525	3,770	3,426	2,788	2,783	2,318	3,300
Total	4,826	6,699	7,148	6,081	6,892	5,989	5,156	4,860	4,171	4,892
					COUNTY DALHOUSIE					
Dairy	2,510	2,460	2,746	2,393	1,817	1,803	1,666	1,456	1,118	1,066
Beef	1,291	1,557	1,857	1,670	2,304	2,450	2,496	2,414	1,992	3,639
Total	3,801	4,017	4,603	4,063	4,121	4,253	4,162	3,870	3,110	4,705
					COUNTY VICTORIA					
Dairy	5,131	5,079	5,779	5,209	4,599	4,125	3,629	3,217	2,576	2,302
Beef	1,755	4,290	5,289	3,959	5,612	4,240	5,364	4,614	3,778	6,919
Total	6,886	9,369	11,068	9,168	10,211	8,365	8,993	7,831	6,354	9,221
					COUNTY BURRA					
Dairy	793	832	864	934	796	704	583	414	344	303
Beef	641	891	1,337	1,466	1,623	1,598	1,730	1,429	1,124	1,275
Total	1,434	1,723	2,201	2,400	2,419	2,302	2,313	1,843	1,468	1,578

TABLE 9 – PIGS

	1959-60	1960-61	1961-62	1962-63	1963-64	1964-65	1965-66	1966-67	1967-68	1968-69
					COUNTY FROME					
Numbers	2,394	3,456	3,969	2,751	2,848	3,630	4,045	3,916	3,782	4,580
					COUNTY DALHOUSIE					
Numbers	906	1,277	1,453	1,209	1,238	1,701	1,960	1,903	1,935	2,440
					COUNTY VICTORIA					
Numbers	5,651	7,768	9,871	8,770	8,938	11,623	12,283	11,616	10,639	13,154
					COUNTY BURRA					
Numbers	207	295	313	265	310	394	353	478	597	1,131

TABLE 10 – RAINFALL (in.)

	1959-60	1960-61	1961-62	1962-63	1963-64	1964-65	1965-66	1966-67	1967-68	1968-69
					COUNTY FROME					
April–November	6.47	18.35	11.68	8.07	13.61	13.15	10.22	9.20	6.62	18.22
Year	9.76	20.67	14.17	11.15	15.74	14.65	11.08	17.43	9.07	21.97
					COUNTY DALHOUSIE					
April–November	5.16	16.79	10.55	6.43	11.95	12.46	9.89	7.37	4.99	15.84
Year	8.85	18.61	12.34	10.28	13.37	14.04	11.05	14.97	6.87	18.76
					COUNTY VICTORIA					
April–November	6.52	20.40	13.49	9.24	15.02	14.76	11.96	9.88	5.85	17.16
Year	9.92	22.98	15.52	13.23	16.76	16.36	12.91	17.36	8.14	20.18
					COUNTY BURRA					
April–November	5.94	18.20	13.06	9.65	16.17	14.28	11.68	10.21	5.50	16.75
Year	8.31	20.27	14.48	16.51	17.28	16.63	12.79	17.05	7.41	19.33

Rainfall and land use - Upper North

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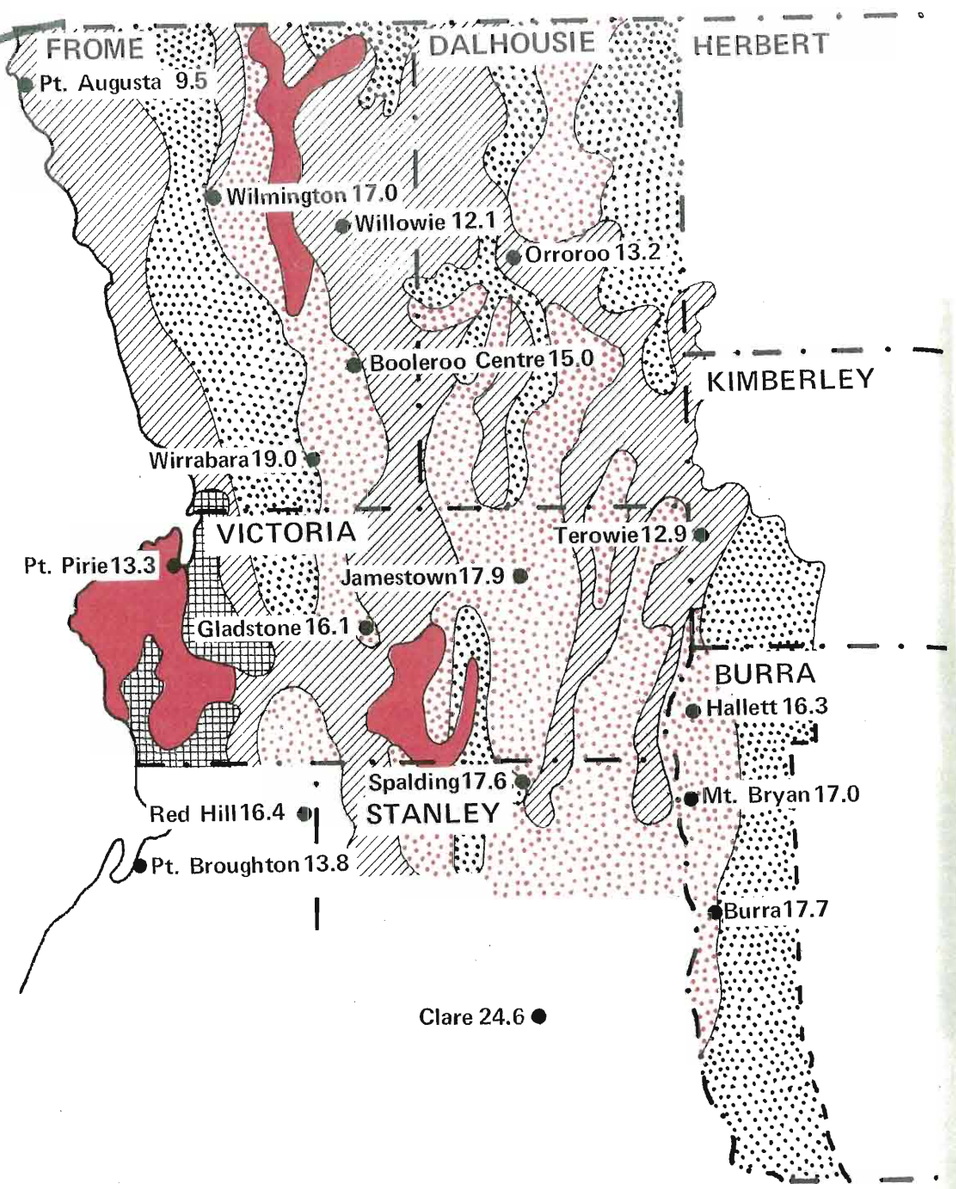

Zone

1 Red-brown earth

2 Sandy mallee

3 Loamy mallee

4 Heavy soil

5 Hill country

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