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COMMONWEALTH OF AUSTRALIA



The Australian Sheep Industry
Survey

1954

South Australia



Australia

BUREAU OF AGRICULTURAL ECONOMICS
CANBERRA, A.C.T.

1957

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FOREWORD

In presenting the results of its survey of the sheep and wool industry, the Bureau of Agricultural Economics is issuing a series of State reports and three zone reports covering the pastoral zone, the wheat-sheep zone and the high rainfall zone. Reports on Queensland, Tasmania and the pastoral zone have already been published.

This report, the third of the State series, deals with the sheep industry in South Australia. The section on the pastoral zone of this State has already appeared in "The Australian Sheep Industry Survey, 1954—Pastoral Zone." It is reproduced here so that the three zones of South Australia may be compared and the industry seen as a whole.

The report deals with the results achieved in the financial year 1952-53, a year in which seasonal conditions were exceptionally good over the whole of South Australia. The financial results should be considered with due regard to this factor.

The Bureau is continuing the economic study of the industry in a series of follow-up surveys. This will enable a continuous study of trends within the industry to be made. It will also provide the answers to some of the objectives of the survey which cannot be obtained from one year's figures.

I must gratefully acknowledge the assistance so readily given by individual property owners who participated in the survey and by the industry organizations, all of whom gave whole-hearted support; also by wool-brokers and accountants, who freely supplied information on the authority of their clients. Without the willing help of all these, the survey could not have been carried out.

T. H. Strong
Director
Bureau of Agricultural Economics

Canberra A.C.T.
February 1957

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The Australian Sheep Industry: South Australia

Summary

THE BUREAU OF AGRICULTURAL ECONOMICS undertook in 1954 a survey of the sheep and wool industry covering all the major sheep and woolgrowing areas of the Commonwealth. It was the first step in a proposed continuing study of the industry, and was designed primarily to obtain details of the financial results of sheep and wool properties for the year 1952-53. At the same time information was collected on certain physical aspects of the industry to provide a background against which the financial results could be set.

The present report deals with properties in South Australia. The sample consisted of 140 properties, 30 in the high rainfall zone, 80 in the wheat-sheep zone and 30 in the pastoral zone. Their approximate location is shown on the map, which also shows the boundaries of the three zones in South Australia.

Tables Nos. 1 and 2 summarize certain physical aspects of the properties and their financial results by showing the averages for the properties in each zone. Although, as the report makes clear, there are wide differences between properties in each zone, a

composite average of properties throughout the State is also shown as a matter of interest. In this State average the number of properties included has been adjusted to give correct weighting to each zone.

In interpreting the results, the following points should be borne in mind :

- (i) They refer to the financial year 1952-53, when seasonal conditions over the whole State were exceptionally good.
- (ii) The average price obtained for all greasy wool sold in Australia was 81.8d. per lb.—25 per cent above the figure for 1955-56, the last complete season, and still well above prices at present (October 1956). In addition, prices obtained for wheat and barley were considerably higher than those ruling today.
- (iii) In all measures there was a wide range about the averages shown in the summary tables. Frequency distribution tables showing the ranges are incorporated in the body of the report.

TABLE No. 1
SUMMARY OF PHYSICAL FEATURES: SOUTH AUSTRALIA
1952-53

Item	Unit	High Rainfall Zone	Wheat-Sheep Zone	Pastoral Zone	South Australia
Properties	no.	30	80	30	110
Area	acres	1,010	2,387	61,000	5,107
Crops	acres	70	342	—	262
Improved pastures	acres	502	219	—	283
Sheep	no.	1,057	946	3,023	1,124
Cattle	no.	13	9	61	10
Ewes mated	no.	415	425	1,203	465
Lambs marked	no.	328	290	801	332
Lambs marked as % of ewes mated	%	79	68	67	71
Sheep shorn	no.	1,217	1,028	3,364	1,238
Wool produced	lb.	10,865	10,023	38,240	12,516
Cut per head	lb.	8.9	9.7	11.4	10.1
Price per lb.	pence	88.3	72.6	79.2	77.1

TABLE No. 2
SUMMARY OF FINANCIAL RESULTS : SOUTH AUSTRALIA
1952-53

Item	High Rainfall Zone	Wheat- Sheep Zone	Pastoral Zone	South Australia
Properties	30	80	30	110
Capitalization	£ 31,443	£ 27,257	£ 44,137	£ 29,761
Returns				
Sheep enterprise	4,770	3,543	14,291	4,598
Cereal cropping	733	4,113	—	3,107
Beef cattle	52	11	528	23
Dairying	155	239	—	207
Other	357	109	10	118
Total	6,067	8,014	14,829	8,053
Costs				
Labour	673	721	2,176	798
Materials	1,215	1,699	2,320	1,653
Services	525	646	1,208	664
Rent and depreciation	438	570	870	558
Total	2,851	3,636	6,574	3,673
Farm income	3,216	4,378	8,255	4,380
Charge against capital (at 5% on total capital)	1,572	1,363	2,207	1,488
Labour and management income	1,644	3,015	6,048	2,892
Farm income	3,216	4,378	8,255	4,380
Charge for operator's labour	658	658	658	658
Return to capital and management	2,558	3,720	7,597	3,722
Rate of return on capital	8.1%	13.6%	17.2%	12.5%

The main points which emerge from the financial analysis may be summarized as follows :

- (1) The results for 1952-53 were generally good and the financial position of property owners was sound.
- (2) The good results obtained from the sheep enterprise arose principally from the high fleece weights achieved and from the high proportion of lambs bred to total sheep.
- (3) A large number of sheep in South Australia are run on cropping properties ; the financial

stability of these properties depends on the returns from cereal cropping as well as on those from sheep. In 1952-53 both wheat and barley yields were high and prices were good ; wheat-sheep properties with the emphasis on cereal production were more profitable than those concentrating more on sheep.

- (4) There was a general tendency for profitability to increase with scale of operations ; losses occurred more frequently on small properties than on large ones.

Part I : Introduction

THE BUREAU OF AGRICULTURAL ECONOMICS undertook in 1954 a survey of the sheep and wool industry in all the major sheep and woolgrowing areas of the Commonwealth.

Its principal aims were :

1. To establish the relationship between costs and returns, the structure of costs, the returns to capital and management, and the capital structure of the industry in each of Australia's three main sheep zones : the high rainfall zone, the wheat-sheep zone, and the pastoral zone,
2. To establish within each of the three zones the inter-State and inter-regional differences in the financial structure of the industry,
3. To examine the effect on the financial structure and performance of sheep properties of the scale of operations and associated pastoral or

farming enterprises, e.g. beef cattle or wheatgrowing,

4. To examine the effect on financial performance of various practices in management, e.g. pasture improvement, and in sheep husbandry, e.g. merino woolgrowing, fat lamb production, crossbred woolgrowing,
5. To discern general trends in the industry, e.g. any widespread and increasing preference for crossbreds or non-Merinos,
6. To examine the industry's capacity for expansion, and any circumstances which might restrict it.

To meet all these objectives data for more than one year are required, and the Bureau is continuing its economic study of the industry by means of a series of follow-up surveys.

SURVEY METHOD

For the purposes of the survey, the sheep areas of Australia have been divided into three zones : high rainfall, wheat-sheep and pastoral. Their boundaries have been determined somewhat arbitrarily by reference to statistics of cropping activity, using the smallest statistical areas available ; these were counties in the case of South Australia.

The number of properties in each zone in South Australia which were included in the survey is shown in Table No. 3.

TABLE No. 3
SOUTH AUSTRALIAN SAMPLE : BY ZONES

Zone	No. of properties included in survey	No. of properties included in total South Australian analysis
High rainfall	30	24
Wheat-sheep	80	80
Pastoral	30	6
Total	140	110

In the analysis of South Australia as a whole, the number of properties included has been adjusted as shown in the final column in order to give the correct weighting to each zone. All the information collected during the survey and analysed pertained to the financial year 1952-53.

Officers of the B.A.E. visited each of the sample properties, interviewed its owner, and obtained from him information about the physical features of his property, its production, capital investment, costs and returns. When necessary the owner gave authority for information on wool production and sales to be collected from his wool-broker, and financial data from his accountant.

For the purposes of the survey, a woolgrowing property was taken to be any property which

- (i) ran 200 sheep or more during 1952-53,
- (ii) provided full-time occupation for one man,
- (iii) was not a stud (as the principal enterprise), a multiple holding, or a property used principally for dealing.

ANALYSIS PROCEDURES AND DEFINITIONS

The sample properties in South Australia have been classified on the basis of property enterprise under one of the following headings :

Sheep only—where any enterprise other than sheep is an unimportant sideline ;

Sheep-cattle—properties which carried at least 40 head of cattle and in addition carried more than three cattle per 100 sheep ;

Sheep-cereal—properties which received income from the sale of grain or cereal hay ;

Sheep-dairying—properties which received income from the sale of milk, cream or butterfat ;

Sheep-other crops—properties which received income from the sale of fruit, vegetables etc ;

Mixed enterprise—properties which received more than 15 per cent of total returns from each of two enterprises other than the sheep enterprise.

Where there were more than one associated enterprise, the classification was made in accordance with the one which provided the greatest gross return, except where the criterion for a "mixed enterprise" was satisfied.

The sample properties were also classified according to the nature of the sheep enterprise. The classes adopted were :

Merino woolgrowing—dry sheep,

Merino woolgrowing—breeding replacements,

Merino woolgrowing—breeding and selling surplus young sheep regularly,

Merino woolgrowing—joining non-Merino ram to Merino ewe and selling crossbred lambs as fats or stores,

Crossbred woolgrowing — including Corriedales and Polwarths,

Crossbred woolgrowing—breeding and selling fat lambs,

Merino/crossbred—running both dry Merino sheep and a crossbred breeding flock.

The first type, i.e. Merino woolgrowing from dry sheep, usually wethers, is self-explanatory. The second type includes those who aim to breed their own replacements, even though in some bad years

they may have to buy sheep. This class normally has sales of cast-for-age but not of young sheep, and in this differs from the third type, which breeds a surplus of young sheep for sale as breeders or wool cutters. In South Australia the dividing line between these two classes was rather fine. For the most part, the breeding surplus type did not sell all their young wethers, so that all properties had some proportion of wethers.

Properties of the fourth type, which join non-Merino rams to Merino ewes, may sell their crossbred lamb drop as either fats or stores, depending on the season and the relative strength of the various markets.

The fifth group, not common in South Australia, contains the crossbred woolgrowers, including those running Corriedales and Polwarths ; they normally breed their own replacements. Those who sell fat lambs have been included in the sixth category.

It was necessary to provide the seventh category because there was a considerable number of properties in the total Australian sample which combined these two most dissimilar sheep enterprises. Such properties usually had some country suitable only for wether running, together with good creek or river flats on which fat lambs could be produced.

The classes of property enterprise and sheep enterprise described are referred to frequently in the financial analyses in later parts of this report. The analyses include studies of the capital structure, gross returns and costs, and, finally, of various measures of income.

Capitalization

A study of capital investment is an essential part of the financial analysis for several reasons :

- (i) It indicates the present value of investment per property,
- (ii) It gives the sum on which the interest charge is calculated,
- (iii) It is a measure against which incomes can be analysed, when comparing properties of various sizes and types.

In arriving at a figure for capital investment it is necessary to make certain arbitrary decisions. The method used to value the various components for the purposes of this survey is described below.

Land and improvements were valued at ruling market values at the time the survey was conducted, namely the latter part of 1954, due allowance being made for title. To enable a full breakdown of the capital structure to be made, the values of fences, yards, buildings and water points were calculated separately and deducted from the value of land and improvements, leaving a residual value for land.

Plant has been valued at written-down cost, using standard depreciation rates (15 per cent for vehicles and 10 per cent for other plant) rather than the special incentive rates allowed for income tax purposes.

Sheep have been valued at the average price of all sheep bought and sold on the survey properties during 1952-53. Separate values were calculated for each State, and the South Australian figure was £2 12s. 0d. The sheep to which this value was applied were the number on hand at July 1, 1952. The values for cattle and horses were arrived at and applied in a similar manner; for South Australia they were £20 and £15 respectively.

The capital value of the property so calculated may be described as its "sold up" value. To this extent, it over-states the actual cash investment in a long-established property; on the other hand it gives a fair indication of the capital required for entry into the industry at present.

Returns

Returns have been grouped as follows:

(i) Sheep enterprise:

- (a) *Wool*: Gross returns from wool sold. Wool selling charges are included among costs.
- (b) *Skins*: Value of sheepskins sold.
- (c) *Sheep trading*: The profit or loss from the sheep trading account. The value used for opening stock and natural increase was that used for calculating capital. Closing stock was valued at average cost on this basis, allowing also for purchases.

(ii) Beef cattle enterprise:

- (a) *Cattle trading*: Profit or loss from the cattle trading account. Opening stock and natural increase were valued as for capitalization, with closing stock valued at average cost.

(b) *Hides*: Value of hides sold.

(iii) **Cereal cropping**: Total value of wheat or other cereals produced in 1952-53, and also any income from the sale of cereal hay.

(iv) **Dairying**:

(a) *Dairy products*: Returns from the sale of milk, cream or butterfat.

(b) *Cattle trading*: As for the beef cattle enterprise.

(v) **Other returns**: All other returns from the sale of farm produce or resulting from the farm enterprise, e.g. agistment.

No account has been taken of income received from non-farming interests or of farm produce consumed on the farm—other than stock killed for rations, which are included in the stock trading accounts.

Costs

In determining the cost structure of the industry all cash costs and depreciation have been included, with the exception of interest paid on borrowed money. Interest is introduced at a later stage of the analysis, when an allowance for interest on the total capital investment is made. However, interest actually paid is shown at the foot of the cost tables, as an indicator of the debt position of the properties.

Some adjustment of wages paid was necessary on those properties employing family labour, or on which there were two or more working partners. All family labour was costed at the award rates ruling in 1952-53, with allowances for age (if junior) and time spent working on the property. In the case of partnerships, one partner was regarded as the owner and the labour of the others costed as for family labour.

Depreciation has been calculated at standard rates rather than at the concessional rates allowed for income tax purposes. It was charged on all items, whether or not the property owner had in fact claimed it. The rates used for the major items were: fences and buildings 3 per cent, dams and wells $2\frac{1}{2}$ per cent, bores $7\frac{1}{2}$ per cent, windmills 5 per cent, vehicles 15 per cent and other plant 10 per cent.

An item "land improvement costs" is shown at the foot of each cost table, although the separate components of these costs—contracts, fuel, seeds, etc.—are included in the cost structure. These are

more truly capital expenditure, involving such projects as land clearing and pasture improvement.

Expenditure on items such as new fences, buildings and bores has been regarded as capital expenditure and is not included in costs.

Income

Income can be measured at various levels. The first measure used in this analysis is *farm income*, which is the difference between gross returns and costs as defined in the preceding paragraphs.

The deduction from farm income of a charge against capital, in this case 5 per cent on the total investment, gives a *labour and management income*.

A further measure of income is the *return to capital and management*, i.e. farm income less an allowance for the operator's labour; in this case £658 per annum, the ruling award wage in the year of the survey. It should be noted that this amount does not include any allowance for management.

When this return is expressed as a percentage of capital, it gives a *rate of return to capital and management*, which is perhaps the best measure for comparing the financial performance of groups of properties of widely differing sizes and undertaking various enterprises.

The various definitions used in the financial analysis may be summarized as follows:

Gross returns = returns from wool, profit or loss from sheep and cattle trading, and other returns

Costs = cash costs + depreciation

Farm income = gross returns — costs

Labour and management income = farm income — interest on capital

Return to capital and management = farm income — charge for operator's labour

Rate of return on capital =
$$\frac{\text{Return to capital and management} \times 100}{\text{capital}}$$

Example of Calculation of Income Measures

Capital value of farm £50,000	
Gross returns :	£ £
Wool	9,000
Sheep trading	500
Cattle trading	250
Other returns	250
	10,000
Costs (cash costs and depreciation)	6,000
	4,000
Farm income	4,000
Less interest on capital at 5 per cent	2,500
	1,500
Labour and management income	1,500
	4,000
Farm income	4,000
Less charge for operator's labour	658
	3,342
Return to capital and management	3,342
	3,342
Rate of return on capital =	
	$\frac{3,342 \times 100}{50,000} = 6.68 \text{ per cent.}$

Part II: The High Rainfall Zone

The number of properties included in the sample for the high rainfall zone of South Australia was 30. For the purposes of the survey this zone was defined as the area included in the counties of Adelaide, Carnarvon and Hindmarsh in the Central Division, the county of Russell in the Murray Mallee Division and all the South-East Division. The location of the sample properties is shown in the map.

The western part of the area is hilly but elsewhere the country is generally flat. Rainfall is extremely reliable, with an annual average of more than 20 inches in most districts. Because of the favourable climate the establishment of improved pastures is a feature of the area, and has resulted in a marked increase in sheep numbers since the early 'thirties. Development has also been stimulated by the findings of research workers in the field of trace elements; on hitherto poor land in the northern portion of the South-East Division large-scale development, such as the A.M.P. scheme at Coonalpyn Downs, is taking place.

Some idea of the progress which has been made can be obtained from Table No. 4, which shows figures of sheep and lambs shorn and of wool produced since 1931-32 at five-year intervals and also for the five latest years.

Over the twenty-five years the number of sheep and lambs shorn has increased from less than two

TABLE No. 4
SHEEP AND LAMBS SHORN AND WOOL
PRODUCED: HIGH RAINFALL ZONE: SOUTH
AUSTRALIA: 1931-32 to 1954-55

Year	Sheep and lambs shorn	Shorn wool production
	'000	'000 lb.
1931-32	1,915	15,025
1936-37	2,412	18,038
1941-42	3,137	26,658
1946-47	2,559	22,509
1950-51	3,015	27,884
1951-52	3,345	33,633
1952-53	3,700	38,473
1953-54	3,926	35,548
1954-55	4,394	42,783

Source: South Australian Government Statist.

million to more than four million. The increase has been much greater in recent years and between 1951-52 and 1954-55 more than one million additional sheep and lambs were shorn. In this period land development has continued, seasons have been good and the effects of myxomatosis have also stimulated production. The full effect was first apparent in 1952-53, the year of the survey, when seasonal conditions were also particularly good and fleece weights were a record for the area.

LAND USE

Nineteen of the sample properties were entirely freehold, while eight consisted partly of freehold and partly of leasehold, principally on perpetual lease. The other three properties were held entirely under lease—two under perpetual lease and the other under the war service land settlement scheme, which in South Australia is akin to perpetual lease.

The total area of the sample properties was 30,290 acres; half this was under improved pasture and a further 7 per cent under crop. There was also a small area consisting of swamps, rocky areas etc. which was not being used. Table No. 5 sets out the land use on the sample properties.

Crops, principally wheat, oats and barley, were grown on 16 of the sample properties. There was also a small area under fruit and vegetables. Of the total area under crop, 20 per cent was sown to wheat, 35 per cent to oats, 38 per cent to barley and the remaining 7 per cent to fruit and vegetables.

TABLE No. 5
LAND USE DURING 1952-53: HIGH RAINFALL
ZONE

Land use	Area	Percentage of total
Crop	acres	%
Improved pasture	2,100	7
Natural pasture	15,060	50
Not used	11,030	36
	2,100	7
Total	30,290	100

Of the 30 sample properties 26 had improved pasture. The area improved at July 1, 1952, the beginning of the year covered by the survey, was 15,060 acres, or nearly one-half the total area. It included 552 acres which had been sown in the previous year. In the survey year itself 1,700 acres and in 1953-54 a further 1,570 acres were sown to

pasture, giving an increase in each of these two years of approximately 10 per cent, and an over-all increase of 25 per cent for the three-year period 1951-52 to 1953-54. Most of this development took place on properties which already had improved pastures.

Even without the additional acreage sown down in 1952-53 and 1953-54, half the properties had more than 60 per cent of their land under improved pasture. Table No. 6 shows the frequency distribution of properties by the percentage of area under pasture.

TABLE No. 6

FREQUENCY DISTRIBUTION: PERCENTAGE OF AREA UNDER IMPROVED PASTURE: HIGH RAINFALL ZONE

Percentage of area improved	Properties
Nil	4
10% and less than 20%	2
20% " " " 40%	4
40% " " " 60%	5
60% " " " 80%	7
80% and more	8

In 1952-53, of the properties with improved pasture all except one gave a maintenance topdressing of superphosphate; the area so treated represented more than 93 per cent of the area then improved. The rate of topdressing was 90 lb. per acre on one-third of the properties, 112 lb. per acre on another third and 180 lb. per acre on the remainder.

Potential Land Use

The owner of each property gave an estimate of more intensive uses to which his land could be put. The categories used to describe the possibilities were
Arable: Land suitable for cropping as well as for sown pastures,

Suitable for improved pastures: Land which could be used for improved pastures but not suitable for regular cropping,

Suitable for topdressing: Not suitable for sown pastures but which could be improved by topdressing,

Suitable for natural pasture: Where only natural pastures can be grown,

Unimprovable: Lacking any apparent economic potential.

Table No. 7 sets out the owners' estimates of the potential of their land.

TABLE No. 7

OWNERS' ESTIMATES OF POTENTIAL LAND USE: HIGH RAINFALL ZONE

Type of land	Area	Percentage of total
	acres	%
Arable	20,580	68.0
Suitable for improved pasture	5,170	17.0
" " topdressing	1,810	6.0
" " natural pasture	2,190	7.2
Unimprovable	540	1.8
Total	30,290	100.0

The area considered to have a potential for cropping, sown pastures or improvement by topdressing was 27,560 acres, representing 91 per cent of the total area, compared with the area under crop or improved pastures in 1952-53, which represented 57 per cent. However, as has been mentioned previously, suitable country was in fact being developed and an additional 3,300 acres was sown to pasture during 1952-53 and 1953-54.

FEATURES OF THE SHEEP INDUSTRY

Property Size

The size of the properties covered by the survey ranged from 220 acres to more than 4,000 acres, but 29 of the 30 were less than 2,000 acres. Table No. 8 shows the distribution of the sample properties by area.

Enterprise Classification

For the purposes of analysis, sample properties were classified in accordance with enterprises in which they were engaged, as set out on p. 4. Table No. 9 shows the number in each category and also the total and average number of sheep carried.

TABLE No. 8

FREQUENCY DISTRIBUTION OF PROPERTY SIZE: HIGH RAINFALL ZONE

Area	Properties
acres	
200 and less than 500	9
500 " " " 1,000	9
1,000 " " " 2,000	11
2,000 " " " 5,000	1
Total	30
Average	1,010 acres

TABLE No. 9
ENTERPRISE CLASSIFICATION : HIGH
RAINFALL ZONE

Enterprise	Properties	Sheep carried	Average flock size
Sheep only	11	13,250	1,205
Sheep-cereal	8	11,170	1,396
Sheep-dairying	8	5,700	712
Sheep-other crops	3	1,600	533
Total	30	31,720	1,057

There were 11 sheep only properties, i.e. those on which any other enterprise was in the nature of a very minor sideline. The average size of these properties was 888 acres, with a range from 252 to 1,900 acres. The rate of stocking ranged from three sheep to four acres to more than two sheep to the acre, and averaged about $1\frac{1}{2}$ sheep to the acre.

The eight sheep-cereal properties fell into two groups. Five were situated in the western part of the zone south of Adelaide, and combined running sheep with barley-growing. The other three were in the drier north-eastern section near Bordertown, and grew wheat and oats.

Sheep-dairying properties were scattered throughout the zone. In the main they were small, and, apart from one close to Adelaide which derived a considerable income from milk sales, dairying was a minor sideline to the sheep enterprise.

No properties in the sample could be classified as sheep-cattle as defined in the introductory chapter, although several had begun to build up a small beef herd. This is in marked contrast to the situation in the high rainfall zones of Victoria and New South Wales where there were a considerable number of sheep-cattle properties.

TABLE No. 10
SHEEP ENTERPRISE CLASSIFICATION : HIGH RAINFALL ZONE

Sheep enterprise	Properties	Sheep carried	Average flock size
Merino woolgrowing— dry sheep	4	3,390	848
breeding replacements with crossbred lamb production	14	15,620	1,116
	1	540	540
Crossbred woolgrowing— and breeding	2	1,750	875
with fat lamb production	8	8,250	1,031
Merino/crossbred	1	2,170	2,170
Total	30	31,720	1,057

Sheep Enterprises

The properties were also classified according to type of sheep enterprise. Table No. 10 shows this, together with the total and average number of sheep carried on properties in each group.

Six different types of sheep enterprise were found on the 30 properties, the principal ones being Merino breeding replacements, and crossbred wool and fat lambs.

There was no consistent relationship between the property enterprise and the type of sheep enterprise on the sample properties. Table No. 12 on p. 10 shows the distribution of properties by both.

The properties in the two main sheep enterprise groups, i.e. Merino breeding replacements and crossbred wool and fat lambs, were evenly distributed among the different enterprise groups.

Flock Size

The flock size distribution of the properties in the survey is shown in Table No. 11.

Table No. 11
FREQUENCY DISTRIBUTION OF FLOCK SIZE :
HIGH RAINFALL ZONE

Flock size	Properties	Sheep
200 and less than 500	4	1,270
500 " " 1,000	16	11,278
1,000 " " 2,000	6	8,819
2,000 " " 5,000	4	10,353
Total	30	31,720

Flocks tended to be small; 20 of the sample properties carried less than 1,000 sheep and none exceeded 5,000.

TABLE No. 12
CLASSIFICATION BY ENTERPRISE AND BY SHEEP ENTERPRISE : HIGH RAINFALL ZONE

Sheep enterprise	Enterprise				Total
	Sheep only	Sheep-cereal	Sheep-dairying	Sheep-other crops	
Merino woolgrowing— dry sheep	1	1	1	1	4
breeding replacements	5	5	3	1	14
with crossbred lamb production	—	—	—	1	1
Crossbred woolgrowing— and breeding	1	—	1	—	2
with fat lamb production	3	2	3	—	8
Merino/crossbred	1	—	—	—	1
Total	11	8	8	3	30

Breeds of Sheep

Sheep on the sample properties were predominantly Merinos. Table No. 13 shows the properties classified by the main breed—in most cases the only breed—on each; it also shows the number of sheep of each breed.

TABLE No. 13
BREEDS OF SHEEP : HIGH RAINFALL ZONE

Breed	Properties	Sheep
Merino	20	21,720
Corriedale	2	3,740
Crossbred	5	3,900
Comeback	3	2,360
Total	30	31,720

TABLE No. 14
FREQUENCY DISTRIBUTION OF BREEDING EWES AS A PERCENTAGE OF TOTAL FLOCK : BY SHEEP ENTERPRISES : HIGH RAINFALL ZONE

Proportion of breeding ewes in the flock	Merino breeding replacements	Cross-bred wool and fat lambs	Other sheep enterprises	Total
20% and less than 30%	5	—	1	6
30% " " " 40%	5	1	2	8
40% " " " 50%	—	—	—	—
50% " " " 60%	4	1	—	5
60% " " " 70%	—	3	—	3
70% " " " 80%	—	1	1	2
80% " " " 90%	—	—	—	—
90% " " " 100%	—	2	—	2
Total	14	8	4	26
Average	33%	67%	39%	39%

Breeding

Ewes

Ewes were joined on 26 of the 30 properties for the 1952-53 lambing. On these the proportion of breeding ewes in the flock ranged from 24 per cent to almost 100 per cent. The distribution by sheep enterprise was as shown in Table No. 14.

The difference between the two main groups is at once apparent. On Merino properties only 33 per cent of the flock were breeding ewes as against 67 per cent on fat lamb properties.

Altogether, almost 12,500 ewes were joined on the sample properties. An analysis of ewes mated, by breed and by sheep enterprise, is shown in Table No. 15.

TABLE No. 15
EWES MATED : BY BREEDS AND SHEEP ENTERPRISES : HIGH RAINFALL ZONE

Breed of ewe	Merino breeding replacements	Cross-bred wool and fat lambs	Other sheep enterprises	Total
Merino	5,124	1,234	350	6,708
Corriedale	—	1,890	—	1,890
Other pure breeds	—	—	450	450
Crossbred	—	2,119	—	2,119
Comeback	—	712	564	1,276
Total	5,124	5,955	1,364	12,443

For the whole sample slightly more than half the ewes mated were Merinos. On crossbred wool and fat lamb properties 80 per cent of ewes mated were non-Merinos (Corriedale 32 per cent, crossbred 36 per cent and comeback 12 per cent). In this group

also Merino ewes were mated on two properties, in one case for fat lamb production and in the other to produce first cross ewe replacements for the fat lamb breeding flock of crossbreds.

Of the 26 breeding properties, 22 joined maiden ewes in 1952-53, 18 joining them at 1½ years and the other four at 2½ years. Maiden ewes were culled before joining on 15 of these properties, and in one instance older ewes were also culled. All breeding properties cast ewes for age, the majority at five or six years, although in some cases ewes were retained longer—on one property till ten years old.

Rams

A total of 264 rams was used on the sample properties for the 1952-53 lambing; this represented just over 2 per cent of the number of ewes joined. Seven different breeds were used and six properties used more than one breed. Table No. 16 shows the breeds of ram used on all sample properties, together with the number and percentage of ewes joined to each.

For comparison the same details are also shown for the eight properties producing fat lambs.

TABLE No. 16
BREEDS OF RAM : HIGH RAINFALL ZONE

Breed	All properties		Crossbred wool and fat lamb properties	
	no. of ewes	%	no. of ewes	%
Merino	5,663	45.6	175	2.9
Corriedale	2,630	21.1	2,230	37.4
Dorset Horn	1,890	15.2	1,890	31.7
Romney Marsh	523	4.2	523	8.8
Suffolk	1,237	9.9	787	13.3
South Down	350	2.8	350	5.9
Border Leicester	150	1.2	—	—
Total	12,443	100.0	5,955	100.0

Merino rams were used on the greatest number of ewes, principally on merino woolgrowing properties. Corriedale and Dorset Horn rams were the main breeds used on the fat lamb properties. It may also be noted that only 50 per cent of ewes on these properties were mated to Downs-type rams, the remainder being mated to wool-type or long wool rams.

Lambing

This is timed to take place just after the normal "break" in the season. On 21 of the 26 properties which joined ewes it occurred in May or June; on the other five it was just before or just after this peak period so that all properties lambed between April and August.

The number of lambs marked as a percentage of ewes joined ranged from 44.9 to 111.8, with the average for all properties 79.0 per cent. For comparison, the South Australian Government Statist's figure for this region in 1952 was 81.4 per cent. Table No. 17 shows the frequency distribution of lambing percentage by sheep enterprises.

TABLE No. 17
FREQUENCY DISTRIBUTION OF LAMBING PERCENTAGE : BY SHEEP ENTERPRISES : HIGH RAINFALL ZONE

Lambing percentage	Merino breeding replacements	Cross-bred wool and fat lambs	Other sheep enterprises	Total
40% and less than 50%	—	1	—	1
50% " " " 60%	2	1	—	3
60% " " " 70%	2	2	—	4
70% " " " 80%	2	1	2	5
80% " " " 90%	7	—	2	9
90% " " " 100%	1	2	—	3
100% and over	—	1	—	1
Average	79.3	79.0	77.4	79.0

The view is generally held that fat lamb properties—particularly those breeding from crossbred ewes—obtain higher lambing percentages than Merino properties, and this is supported by survey results for other areas of Australia. It is therefore surprising to find Merino breeding properties with a lambing percentage even slightly higher than fat lamb properties. In the former group more than half the properties had lambings of over 80 per cent, while on the other hand in the fat lamb group, although three of the eight properties exceeded 90 per cent, four of the others had less than 70 per cent of lambs.

Purchases and Sales

The numbers of sheep purchased by the various groups of properties are shown in Table No. 18.

Purchases by the different groups follow the expected pattern. Those made by the Merino dry sheep properties were almost entirely young wethers, and those made by fat lamb producing properties were basically ewe replacements. The purchase of wethers in the Merino breeding replacements group was almost entirely the result of a dealing transaction by one property which purchased over 1,200 wethers during the year and sold a similar number.

The number of rams purchased by all properties (80) is almost one-third of the number mated, bearing out the view that, on average, the useful life of a flock ram is about three years.

TABLE No. 18
PURCHASES OF SHEEP : BY SHEEP ENTERPRISES : HIGH RAINFALL ZONE

Type of sheep	Merino dry sheep	Merino breeding replacements	Crossbred wool and fat lambs	Other sheep enterprises	Total
Wethers	1,066	1,296	207	712	3,281
Ewes	44	100	1,519	—	1,663
Rams	—	18	44	18	80
Total	1,110	1,414	1,770	730	5,024
Average price paid	£2 13s. 6d.	£3 6s. 0d.	£3 5s. 0d.	£3 0s. 0d.	£3 2s. 0d.

Sales of various classes of sheep from the different groups of properties are shown in Table No. 19.

The pattern of sales is also consistent with the sheep enterprises of the different groups. Merino dry sheep properties sold only aged wethers.

If the 1,200 wethers mentioned previously are excluded from sales from the Merino breeding replacements group of properties, the sales were made up of roughly equal numbers of ewes and wethers ; of the ewes sold the majority were cast for age while the wethers comprised equal numbers of young and old sheep.

Sales from the fat lamb producing properties were predominantly of fat lambs, although a considerable number of cast-for-age ewes was also sold. The young sheep (both ewes and wethers) sold were largely hoggets carried over from the previous season's lamb drop. The average number of sheep

sold per property by this group was slightly over 650.

It is not possible to give the prices obtained for the different classes of sheep because on some properties full details were not available. Details of prices obtained for fat lambs, however, were available in all cases and the average price received was £3 7s. 6d. As a result of the favourable season properties running dry Merino sheep were able to get rid of their aged wethers as fats and averaged slightly more per head (£2 14s. 0d.) than they had to pay for younger wethers to replace them (£2 13s. 6d. on the average).

From this data on purchases and sales and the earlier section on breeding it is possible to reconstruct the movement in sheep numbers for each type of sheep enterprise. This is shown in Table No. 20 on p. 13.

TABLE No. 19
SALES OF SHEEP : BY SHEEP ENTERPRISES : HIGH RAINFALL ZONE

Type of sheep	Merino dry sheep	Merino breeding replacements	Crossbred wool and fat lambs	Other sheep enterprises	Total
Ewes					
Young culls	—	255	237	—	492
C.f.a.	—	631	1,330	777	2,378
Wethers					
Young	—	528	452	—	980
Old	1,886	1,721	—	426	4,033
Fat lambs	—	—	3,288	300	3,588
Total	1,886	3,135	5,307	1,503	11,831
Average price received	£2 14s. 0d.	£2 6s. 0d.	£3 2s. 0d.	£2 3s. 0d.	£2 15s. 0d.

TABLE No. 20
CHANGES IN SHEEP NUMBERS : BY SHEEP ENTERPRISES : HIGH RAINFALL ZONE

	Merino dry sheep	Merino breeding replacements	Crossbred wool and fat lambs	Other sheep enterprises	Total
Properties	4	14	8	4	30
On hand, 1.7.1952	3,628	14,901	8,116	4,261	30,906
Purchases	1,110	1,414	1,770	730	5,024
Natural increase	—	4,034	4,399	1,361	9,794
Total	4,738	20,349	14,285	6,352	45,724
Sales	1,886	3,135	5,307	1,503	11,831
Deaths and rations	135	900	591	199	1,825
On hand, 30.6.1953	2,717	16,314	8,387	4,650	32,068

Over the whole sample there was a small increase in sheep numbers during the year, with natural increase and purchases exceeding sales, deaths and rations. Merino breeding replacements properties had the greatest increase (10 per cent) while the properties running dry Merino sheep showed quite a large proportional decrease in numbers on hand.

Shearing

Shearing on the sample properties took place between July and November, the distribution being

July	1 property
August	1 „
September	8 properties
October	14 „
November	6 „

It was carried out by the owner with hired shearers and family labour on 27 properties, and by contract on the other three. The numbers of stands used ranged from one to five, but 21 properties used

two-stand shearing plants. On one property shearing was done with blades.

Wool from 70 per cent of the sheep and lambs shorn passed through the hands of a qualified classer, i.e. a person holding a recognized diploma in wool-classing. This was because 13 properties employed qualified classers and six properties had the clip bulk-classed by brokers before sale.

Wool Production

The average cut per head of sheep and lambs shorn on the sample properties was 8.9 lb. The distribution on individual properties, by sheep enterprise, is shown in Table No. 21.

There was an extremely wide range on individual properties. This was not due solely to the number of lambs included in the shearings of some properties, for the range in cuts per head of grown sheep was almost as great : from less than 7 lb. to more than 13 lb.

TABLE No. 21
FREQUENCY DISTRIBUTION OF CUT PER HEAD OF SHEEP AND LAMBS SHORN : BY SHEEP ENTERPRISES : HIGH RAINFALL ZONE

Cut per head	Merino dry sheep	Merino breeding replacements	Crossbred woolgrowing and breeding	Crossbred wool and fat lambs	Other sheep enterprises	Total
5 lb. and less than 6 lb.	—	—	—	1	—	1
6 lb. „ „ „ 7 lb.	—	1	1	2	—	4
7 lb. „ „ „ 8 lb.	—	—	1	3	—	4
8 lb. „ „ „ 9 lb.	—	3	—	—	1	4
9 lb. „ „ „ 10 lb.	1	3	—	2	1	7
10 lb. „ „ „ 11 lb.	1	5	—	—	—	6
11 lb. „ „ „ 12 lb.	1	2	—	—	—	3
12 lb. „ „ „ 13 lb.	1	—	—	—	—	1
Total	4	14	2	8	2	30
Average	11.0 lb.	10.1 lb.	6.8 lb.	6.9 lb.	8.7 lb.	8.9 lb.

Properties running Merinos generally obtained considerably higher cuts per head than those running crossbred sheep. Even excluding dry Merino properties, where no lambs were shorn, properties running Merino sheep averaged over 3 lb. per head more.

Diseases and Pests

While an investigation of the technical problems involved in the incidence of diseases and pests is beyond the scope of an economic survey, certain information was obtained from property owners on the prevalence of diseases and pests of economic significance.

Fly-strike

Control measures used against fly-strike on the sample properties were crutching, mulesing and jetting.

All properties crutched sheep—the frequency varying from once to four times a year, with the majority crutching twice a year. In four instances sheep were mulesed and in another they were jetted twice a year.

External Parasites

All properties dipped sheep; 21 used an arsenical material while seven used benzene hexachloride and two used an arsenic plus vegetable extract material. Plunge dips were used on 25 properties and spray dips on the other five.

Internal Parasites

Worm infestation was widespread in the zone and most properties had to drench sheep. Other diseases of economic importance were entero-toxaemia, foot abscess and footrot, the latter being reported on five properties.

Rabbits

Owners of two-thirds of the properties reported that myxomatosis had given effective control of rabbits. These were principally in the flatter parts of the region. Most of the properties where myxomatosis had not given effective control were situated to the south and south-west of Adelaide and contained hilly country with scrub, rocky outcrops and gullies. Although the disease had had some effect in this area, the nature of the country made control difficult, and it had been necessary to continue such control measures as ripping burrows, fumigating, trapping and dogging.

Sheep Feeding Practices

With the pronounced winter rainfall and hot summers which are characteristic of the area, there is a recurrent shortage of feed in the late summer and autumn. Measures taken to combat this on the sample farms consisted chiefly of supplementary hand-feeding. Nineteen properties hand-fed sheep, five of these feeding cattle also. In addition four other properties fed cattle but not sheep.

The principal fodder for sheep was hay; 13 of the 19 properties fed either cereal, lucerne or meadow hay, two properties fed grain and the remaining four fed both hay and grain. The amount of fodder fed out during the year ranged widely from as little as 20 lb. of hay to almost 2 cwt. of hay and half a bushel of grain per sheep fed; in general, however, it was of the order of 75 lb. of hay per head.

All except four of the properties which hand-fed stock had conserved sufficient fodder to supply all needs. Two of these had to purchase some fodder to augment their supplies and the other two purchased all their requirements. Stocks of fodder conserved were not very large, representing little more than a normal season's requirements.

Seven properties also grew forage crops such as lucerne, oats, peas and sudan grass as supplementary fodder. Sudan grass was grown on a sheep-dairying property and kept for the dairy cows; sheep were fed on the crops in the other cases. On one of the seven properties the growing crop—lucerne—was the only supplementary feed but on the other six properties sheep were also hand-fed with conserved fodder.

In general the period when sheep were hand-fed was from March to May, although on some properties feeding commenced before March and on others it continued into June and even July. The sheep fed were mainly ewes, which were due to lamb about May. On some properties weaners—lambs from the previous year—were also fed. Where cattle were hand-fed the feeding period was generally later, and covered the winter months until pasture growth started by the winter rains was adequate.

There were six properties in the sample, all in the south-east, which neither conserved fodder, grew forage crops nor hand-fed stock. Each had at least 200 acres under improved pastures, but nevertheless, in comparison with the other sample properties in the south-east, the lower stocking rate on these six properties was quite marked. Their

total area was 6,600 acres, on which 6,700 sheep were carried—just over one sheep per acre. The total area of the other nine sample properties in the south-east was 8,400 acres and the number of sheep carried was 12,500, or almost $1\frac{1}{2}$ to the acre.

It is also worth noting that, of the four properties which had no country under improved pasture, one grew forage crops and also hand-fed sheep, while the other three hand-fed sheep heavily with conserved fodder.

If the sample properties are classified by the way in which feed is provided for stock the following groups can be identified:—

- (a) five properties with areas of improved pasture, growing forage crops and hand-feeding stock,
- (b) fourteen properties with areas of improved pasture, hand-feeding stock,

- (c) one property with improved pasture, growing forage crops but not hand-feeding stock,
- (d) four properties without any improved pasture, hand-feeding stock (and in one case growing a forage crop also),
- (e) six properties with improved pasture, neither growing forage crops nor hand-feeding stock.

As a matter of interest, the stocking rates¹ of the main groups² were

- (a) 1.9 sheep equivalent per acre
- (b) 1.5 " " " "
- (d) 0.8 " " " "
- (e) 1.0 " " " "

1. Disregarding areas cropped for grain or hay, and converting cattle to sheep equivalent at 1 beast = 6 sheep.
2. (c) has been omitted as there was only one property in the group.

FINANCIAL ANALYSIS

Capitalization

The methods used in computing the total capital investment are set out on pp. 4-5. Table No. 22 shows the average capital structure for the 30 sample properties.

TABLE No. 22
CAPITAL STRUCTURE: HIGH RAINFALL ZONE

Item	£	%
Land	22,006	70.0
Water supply	714	2.3
Fencing	1,550	4.9
Buildings	1,989	6.3
Land and improvements	26,259	83.5
Plant	2,234	7.1
Sheep	2,678	8.5
Cattle	239	0.8
Other stock	33	0.1
Total stock	2,950	9.4
Total	31,443	100.0

An examination of capital structure by enterprise showed no great differences for the various groups. As could be expected, the value of plant represented a higher proportion of total capital on sheep-cereal properties. On sheep-dairying properties the proportion represented by cattle was only a little higher than for properties in the other groups—an indication of the relative unimportance of dairying as an enterprise on the sample properties.

Total capital ranged from about £8,000 to more than £80,000. The distribution of total capital by enterprises is shown in Table No. 23.

Capitalization of land and improvements (i.e. the value of the property less stock and plant) averaged £26 per acre. This figure, however, has little meaning as the land ranges from country close to Adelaide, fully improved and carrying over four sheep to the acre in addition to a herd of dairy cattle, and valued at over £100 per acre, to other country verging on the Murray Mallee area, containing a large proportion of uncleared mallee scrub and valued at less than £4 per acre.

TABLE No. 23
FREQUENCY DISTRIBUTION OF CAPITAL: BY ENTERPRISES: HIGH RAINFALL ZONE

Capital	Sheep only	Sheep-cereal	Sheep-dairying	Sheep-other crops	Total
£5,000 and under £10,000	—	1	—	—	1
£10,000 " " £20,000	4	—	3	1	8
£20,000 " " £50,000	5	4	5	2	16
£50,000 " " £100,000	2	3	—	—	5
Total	11	8	8	3	30

TABLE No. 24
AVERAGE GROSS RETURNS PER PROPERTY : BY ENTERPRISES : HIGH RAINFALL ZONE

Item	Returns									
	Sheep only		Sheep-cereal		Sheep-dairying		Sheep-other crops		Total	
	£	%	£	%	£	%	£	%	£	%
Wool	4,865	84.0	5,033	51.9	2,486	76.7	2,093	42.2	3,998	65.9
Sheep trading	780	13.5	1,506	15.6	242	7.4	200	4.1	772	12.7
Sheep enterprise	5,645	97.5	6,539	67.5	2,728	84.1	2,293	46.3	4,770	78.6
Cereals	2	—	2,703	27.9	30	0.9	37	0.7	733	12.0
Beef cattle	129	2.3	15	0.2	—	—	13	0.3	52	0.9
Dairying	13	0.2	120	1.1	444	13.7	—	—	155	2.6
Other returns	—	—	319	3.3	41	1.3	2,614	52.7	357	5.9
Total	5,787	100.0	9,694	100.0	3,243	100.0	4,957	100.0	6,067	100.0

Perhaps a better idea of land values in the area can be obtained from the figure of capitalization of land and improvements on sheep only properties. This averaged £22 13s. 0d. per sheep carried and, on the basis of those properties which the owners considered to be reasonably stocked, the range in sheep area values was from £17 10s. 0d. to £30.

Returns

The average gross returns per property according to farm enterprise are shown in Table No. 24.

Over the whole sample the sheep enterprise was by far the most important source of returns. Even in the sheep-other crops group, where returns from "other crops" exceeded returns from the sheep enterprise, the majority of returns on two of the three properties came from the sheep enterprise.

The low proportion of returns from dairying shown by the sheep-dairying group is another indication of the relative unimportance of this enterprise on these properties.

The distribution of gross returns, which ranged from £1,233 to just over £19,000, is shown in Table No. 25.

TABLE No. 25
FREQUENCY DISTRIBUTION OF GROSS RETURNS : HIGH RAINFALL ZONE

Gross returns	Properties
Less than £2,000	4
£2,000 and less than £5,000	13
£5,000 " " " £10,000	8
£10,000 " " " £20,000	5
Total	30

Returns from Wool

The gross return from wool is a function of the cut per head and price per pound. The average cut per head of all sheep shorn on the sample properties was 8.9 lb. and the average price per lb. received

TABLE No. 26
FREQUENCY DISTRIBUTION OF WOOL PRICES : BY SHEEP ENTERPRISES : HIGH RAINFALL ZONE

Price per lb.	Merino dry sheep	Merino breeding replacements	Crossbred wool and fat lambs	Other sheep enterprises	Total
60d. and less than 70d.	—	1	1	—	2
70d. " " " 80d.	—	7	3	—	10
80d. " " " 90d.	1	1	4	2	8
90d. " " " 100d.	2	3	—	1	6
100d. " " " 110d.	1	1	—	1	3
110d. " " " 120d.	—	1	—	—	1
Average	94.06d.	89.80d.	80.05d.	92.83d.	88.31d.

for wool was 88·31d. This is considerably higher than the State average of 74·89d. quoted by the National Council of Wool Selling Brokers, and it can be taken as an indication of the better quality of the wool grown in this part of South Australia.

The distribution of average prices, by sheep enterprises, is shown in Table No. 26.

Eighteen of the thirty properties received 80d. per lb. or more, and four of these received more than 100d.

The distribution of gross returns from wool per sheep shorn, by sheep enterprise, was as shown in Table No. 27.

trading profit averages £772 per property or 14s. 7d. per head of sheep carried.

For the groups of properties classified by sheep enterprise, sheep trading returns differed both in amount per head and in composition. For the Merino dry sheep group sales exceeded purchases by £2,300, but, as sheep numbers were run down by 900, the inventory loss almost offset the cash gain; on balance the return from sheep trading represented 8d. per head.

For the Merino breeding replacement group sales exceeded purchases by £2,600, and there was as well a build-up of 1,400 in the number of sheep; the resultant profit represented 10s. 4d. per head.

TABLE No. 27
FREQUENCY DISTRIBUTION OF RETURNS FROM WOOL PER SHEEP SHORN: BY SHEEP ENTERPRISES: HIGH RAINFALL ZONE

Returns from wool	Merino dry sheep	Merino breeding replacements	Crossbred wool and fat lambs	Other sheep enterprises	Total
£1 10s. 0d. and less than £2	—	—	1	—	1
£2 " " " £2 10s. 0d.	—	—	3	1	4
£2 10s. 0d. " " " £3	—	4	3	1	8
£3 " " " £3 10s. 0d.	—	4	1	1	6
£3 10s. 0d. " " " £4	1	1	—	1	3
£4 " " " £4 10s. 0d.	3	4	—	—	7
£4 10s. 0d. " " " £5	—	1	—	—	1
Average	£4 6s. 8d.	£3 15s. 7d.	£2 6s. 0d.	£3 1s. 7d.	£3 5s. 10d.

The average return for the 30 properties was £3 5s. 10d. per head. The highest average return was obtained by Merino dry sheep properties, which received 11s. 0d. per head more than the Merino breeding properties which, in turn, received almost £1 10s. 0d. per head more than the crossbred fat lamb properties. This latter difference was due more to the difference in cut per head than to that in the price per lb. of wool.

Returns from Sheep Trading

From Table No. 20 on p. 13 it can be seen that sales of sheep from the sample properties numbered 11,831; these realized £32,341. Purchases numbered 5,024, at a cost of £15,577, and there was thus a cash return of some £17,000 from sheep trading. At the same time, the number of sheep on hand increased by 1,162 which, at the average value of sheep for that year, represents a gain of a further £3,000³. When allowance is made for sheep consumed as rations on the properties, the sheep

For the fat lamb producers, the excess of sales over purchases was much larger (almost £11,000) even though there were only half as many properties in the group. There was also a small increase (250) in the number of sheep carried and the return from sheep trading was £1 10s. 4d. per head.

The results of the Merino breeding replacements and the fat lamb producing groups are typical of such properties. The former group, with 33 per cent ewes and a lambing percentage of 80, bred sufficient lambs to offset losses by death and to allow older sheep to be cast for age before they had lost all value. Fat lamb producers, with 67 per cent ewes and a lambing percentage of 80, had a large proportion of lambs for sale, and even though proceeds from these had to counterbalance the cost of replacing old ewes with young ones, the return from stock trading was three times as great as on the Merino breeding replacements properties.

3. This £3,000, although an inventory gain, is very real because it represents an increased capacity to earn in future years.

TABLE No. 28
FREQUENCY DISTRIBUTION OF RETURNS PER SHEEP FROM THE SHEEP ENTERPRISE : HIGH RAINFALL ZONE

Returns per sheep carried	Merino dry sheep	Merino breeding replacements	Crossbred wool and fat lambs	Other sheep enterprises	Total
£1 and less than £2	1	—	—	—	1
£2 " " " £3	—	—	1	—	1
£3 " " " £4	1	6	1	3	11
£4 " " " £5	2	3	2	—	7
£5 " " " £6	—	4	4	1	9
£6 " " " £7	—	1	—	—	1
Average	£4 0s. 10d.	£4 15s. 0d.	£4 12s. 2d.	£3 16s. 7d.	£4 10s. 2d.

The results obtained by the Merino dry sheep group, which were based on the results of only four properties, is hardly typical. In the first place, there is no reason why properties of this type should have reduced numbers to any extent in the survey year. In the second, sales of aged wethers—even if fat—at prices greater than had to be paid for young wethers to replace them was not usual in 1952-53.

Returns from the Sheep Enterprise

To obtain the total return from the sheep enterprise, the profit or loss from sheep trading must be added to, or subtracted from, gross wool returns. Table No. 28 shows the average return from the

sheep enterprise per sheep carried for the different sheep enterprise groups, together with frequency distribution of individual property results.

The number of sheep carried differs from that of sheep shorn, and therefore Table No. 28 cannot be directly compared with Table No. 27. This is apparent from Table No. 29, which summarizes the performance of the different types of sheep enterprise up to this stage.

Differences between shearing figures and the average number of sheep carried arise from the shearing of lambs and the purchase of full-woolled sheep prior to shearing, followed by the sale of sheep off shears.

TABLE No. 29
SUMMARY OF RETURNS PER SHEEP : BY SHEEP ENTERPRISES : HIGH RAINFALL ZONE

Item	Unit	Merino dry sheep	Merino breeding replacements	Crossbred wool and fat lambs	Other sheep enterprises	Total
Properties	no.	4	14	8	4	30
Average sheep carried	no.	848	1,116	1,031	1,115	1,057
Average sheep shorn	no.	783	1,251	1,388	1,188	1,217
Breeding ewes	no.	—	366	696	437	415
Ewes to total flock	%	—	33	67	39	39
Lambs marked	no.	—	291	550	340	328
Lambs marked to ewes mated	%	—	79.3	79.0	77.4	79.0
Cut per head	lb.	11.0	10.1	6.9	7.9	8.9
Price per lb. for wool	d.	94.06	89.80	80.05	92.83	88.31
Gross return from wool per sheep shorn	£ s. d.	4 6 8	3 15 7	2 6 0	3 1 7	3 5 10
Sheep trading returns per sheep carried	£ s. d.	8	10 4	1 10 4	11 0	14 7
Sheep enterprise return per sheep carried	£ s. d.	4 0 10	4 15 0	4 12 2	3 16 7	4 10 2

The ratio of lambs shorn to sheep shorn was much higher on the fat lamb properties than on the others, and this is reflected in the difference between figures for sheep carried and sheep shorn.

While there were large differences between the groups in wool returns per head shorn, total sheep enterprise returns per head carried were much closer. The greatest return was shown by the Merino breeding replacements group—£4 15s. 0d. per head—but this was only 2s. 10d. more than the £4 12s. 2d. of the fat lamb producing properties. Undue weight should not be given to the differences between the groups as the number of properties in each group is small and the range of individual property results great (see Table No. 28).

Returns from Cereal Cropping

On the eight sheep-cereal properties, income from cereals represented 27·9 per cent of the total returns. The range for individual properties was from 5 per cent to more than 50 per cent. Four properties sold barley, one sold wheat, two sold both wheat and oats and the other property sold chaff and a small amount of wheat and barley. Wheat yields ranged from 28 to 45 bushels per acre and barley yields from 26 to 42 bushels. These indicate just how good the season was.

Beef Returns

Very few beef cattle were run on the sample properties and the returns from this source were small. However, several properties had commenced to build up a beef herd.

Dairying Returns

The eight sheep-dairying properties received 13·7 per cent of total returns from dairying, with a range from 7 per cent to 31 per cent on individual properties. The average return from dairying was £444, the lowest for any property being £210 and the highest £599.

Other Returns

The three sheep-other crops properties received income from the sale of fruit, peas and wood. The sheep enterprise was the main source of returns except on the fruit-growing property, where 76 per cent of returns came from the sale of fruit.

Costs

The costs shown in Table No. 31 on p. 20 include all cash costs and depreciation, and also allowances for unpaid family labour. Interest actually paid is shown at the foot of the table but is not included as a cost. Allowances for the operator's labour and for total interest on capital are introduced at a later stage of the analysis.

The distribution of costs by enterprises is shown in Table No. 30. The range was from £498 to £9,651 but costs on more than one-third of the properties were less than £2,000.

The cost structure shown in Table No. 31 indicates that 23 per cent of total costs were for labour, about 43 per cent for materials and over 18 per cent for services. The largest single items were wages and fertilizer, which each accounted for over 15 per cent of the total.

Examination of the cost structure on an enterprise basis showed that the sheep-cereal and sheep-other crops groups had the highest average labour costs. In the latter group, high labour costs on a fruit-growing property considerably influenced the result for the group.

The properties with a sheep-cereal enterprise showed the highest average costs for materials. This was due to greater expenditure on fuel, fertilizer, bags, twine and maintenance of plant and improvements.

Some differences existed between the groups in the structure of service costs. Freight and cartage costs were much higher on the sheep-cereal and sheep-other crops properties.

TABLE No. 30
FREQUENCY DISTRIBUTION OF COSTS: BY ENTERPRISES: HIGH RAINFALL ZONE

Total costs		Sheep only	Sheep-cereal	Sheep-dairying	Sheep-other crops	Total
£500 and less than	£1,000	2	—	1	1	4
£1,000	£2,000	2	1	4	—	7
£2,000	£5,000	6	5	3	2	16
£5,000	£10,000	1	2	—	—	3
Average		£2,633	£4,159	£1,969	£2,513	£2,851

Labour

Total labour costs amounted to less than one-quarter of all costs. Wages was the main item, and it included wages paid to employees, other than members of the family, and allowances at award rates for all family labour. Such allowances represented almost 55 per cent of the total wages cost for the 30 properties and 85 per cent of the total for the 11 which used family labour.

The permanent labour force was made up as follows:

Owners	30
Family	13
Hired labour	8

The distribution of the work force over the 11 sheep only properties was as follows:

- (i) Five properties were run by the owner, handling an average of 789 sheep;
- (ii) Three properties were run by the owner with one member of the family, averaging 825 sheep per labour unit;
- (iii) Two properties were run by the owner with one hired hand, averaging 606 sheep per labour unit;
- (iv) One property was run by the owner with two hired hands, and an average of 860 sheep per labour unit were handled.

TABLE No. 31
COST STRUCTURE: HIGH RAINFALL ZONE

Item	Cost			
	£	£	%	%
Labour				
Wages	440		15.5	
Contracts	61		2.1	
Shearing and crutching	168		5.9	
Stores and rations	4		0.2	
Total		673		23.7
Materials				
Fuel	168		5.9	
Fertilizer	434		15.2	
Seed	47		1.7	
Fodder	26		0.9	
Packs, bags and twine	121		4.3	
Drenches, dips etc.	41		1.4	
Shearing supplies	7		0.2	
Vermin destruction	12		0.4	
Maintenance: plant	217		7.6	
improvements	142		5.0	
Total		1,215		42.6
Services				
Freight and cartage	80		2.8	
Marketing: wool	141		5.0	
stock	63		2.2	
cereals	27		0.9	
Rates and taxes	75		2.6	
Insurance	52		1.8	
Droving and agistment	2		0.1	
Miscellaneous	85		3.0	
Total		525		18.4
Rent		24		0.8
Depreciation		414		14.5
Total Costs		2,851		100.0
Interest paid		102		3.6
Land improvement costs		150		5.25

The average number of sheep handled per labour unit over the sheep only properties was 778, and the range was from 375 to 1,350 sheep.

Materials

Fertilizer costs were the largest item in this group, representing over one-third of the total cost of materials on the 30 sample properties. On 22 properties more than 10 per cent of the total expenditure for the year was for the purchase of fertilizer.

Other items of importance were fuel, maintenance of plant and improvements, and "bags, packs and twine." The average cost figure for this last item was much higher than in other States because of the practice of handling both wheat and barley in bags rather than in bulk.

Services

The cost of marketing wool was the main item under this heading, and represented 5 per cent of total costs for all properties. Miscellaneous expenses included telephone, stationery, accountancy, bank fees, legal expenses and subscriptions to organizations.

Rent

Rent was a minor item of cost as most of the area on the sample properties was freehold.

Depreciation

Standard rates have been used in calculating depreciation. On this basis the depreciation charge averaged £414 per property, or 14.5 per cent of total costs.

Interest

The average amount of interest actually paid per property is shown at the foot of Table No. 31, but is not included in total costs. It is allowed for later in the analysis, when interest on total capital investment is charged. The average interest payment was low, being 3½ per cent of total costs. If it is assumed that the bank rate of interest was paid, the average debt was about £1,600 on an asset with a market value of over £31,000.

Land Improvement

Land improvement costs—principally to establish new areas of improved pasture—although included under various heads (contracts, fertilizers, seed etc.) are shown separately at the foot of the table as a matter of interest. They represent only a small proportion of costs for the whole sample, but on a few properties which were establishing large areas of pasture or were undertaking other land development they represented up to 20 per cent of total costs.

Costs Per Sheep

A discussion of costs per sheep must for obvious reasons be confined to sheep only properties. These 11 received over 97 per cent of their gross returns from sheep and wool, and therefore all costs incurred can legitimately be charged to the sheep enterprise.

On these properties an average of 1,205 sheep per property were run at a cost of £2,641, or £2 3s. 10d. per head. The average cost structure per head is shown in Table No. 32.

TABLE No. 32
COSTS PER SHEEP CARRIED: SHEEP ONLY
PROPERTIES: HIGH RAINFALL ZONE

Item	Cost	
	£ s. d.	£ s. d.
Labour		
Wages	5 6	
Contracts	1 2	
Shearing	3 2	
Total		9 10
Materials		
Fuel	2 2	
Fertilizer	7 0	
Maintenance: plant improvements	3 0	
Other materials	2 0	
	3 0	
Total		17 2
Services		
Freight and cartage	10	
Marketing: wool	3 0	
stock	1 2	
Rates and taxes	1 5	
Miscellaneous	2 7	
Total		9 0
Rent		10
Depreciation		6 10
Total		£2 3s. 10d.

The range in costs per head was from £1 6s. 5d. to £3 4s. 2d. The distribution is shown in Table No. 33.

TABLE No. 33
FREQUENCY DISTRIBUTION OF COSTS PER
HEAD: SHEEP ONLY PROPERTIES: HIGH
RAINFALL ZONE

Costs per head	Properties
£1 and less than £2	5
£2 " " " £3	5
£3 " " " £4	1
Total	11

Income

Three different measures of income are used in the analysis : farm income, labour and management income and return to capital and management.

Farm Income

This is the difference between the gross returns as shown in Table No. 24 and costs as shown in Table No. 31. It is the sum available to the operator to meet capital charges, to recompense himself for his own labour and management and to build up reserves. An analysis of farm income by enterprise and sheep enterprise is shown in Table No. 34.

The average farm income for the 30 properties was £3,216. Differences for the various groups of properties are largely a reflection of size. More valid as a measure of comparison between the groups is the relationship between costs and returns. By enterprise, sheep-cereal properties (costs 42.9 per cent of returns) and sheep only properties (45.5 per cent) had results better than average. By sheep enterprise, the two Merino groups had the better results. Too much weight should not be given to these differences for, as has been mentioned previously, the numbers of properties in the groups

TABLE No. 34

AVERAGE FARM INCOME : BY ENTERPRISES AND SHEEP ENTERPRISES : HIGH RAINFALL ZONE

Item	Enterprise				Total	Sheep enterprise			
	Sheep only	Sheep-cereal	Sheep-dairying	Sheep-other crops		Merino dry sheep	Merino breeding replacements	Crossbred wool and fat lambs	Other sheep enterprises
Gross returns	£ 5,787	£ 9,694	£ 3,243	£ 4,957	£ 6,067	£ 6,450	£ 6,478	£ 5,800	£ 4,725
Total costs	2,634	4,159	1,969	2,513	2,851	2,700	2,957	2,913	2,500
Farm income	3,153	5,535	1,274	2,444	3,216	3,750	3,521	2,887	2,225
Costs as % of returns	45.5%	42.9%	60.7%	50.7%	47.0%	41.8%	45.6%	50.2%	52.9%

TABLE No. 35

FREQUENCY DISTRIBUTION OF FARM INCOME : BY ENTERPRISES AND SHEEP ENTERPRISES : HIGH RAINFALL ZONE

Farm income	Enterprise				Total	Sheep Enterprise			
	Sheep only	Sheep-cereal	Sheep-dairying	Sheep-other crops		Merino dry Sheep	Merino breeding replacements	Cross-bred wool and fat lambs	Other sheep enterprises
Loss	—	—	1	—	1	—	1	—	—
Less than £500	1	—	1	—	2	1	—	1	—
£500 and less than £1,000	2	1	3	—	6	—	3	1	1
£1,000 " " " £2,000	2	—	2	2	6	—	2	2	2
£2,000 " " " £3,000	—	1	—	—	1	—	1	1	—
£3,000 " " " £5,000	2	2	—	1	5	2	2	1	—
£5,000 and more	4	4	1	—	9	1	5	2	1
Total	11	8	8	3	30	4	14	8	4
Average	£3,153	£5,535	£1,274	£2,444	£3,216	£3,750	£3,521	£2,887	£2,225

are small and there was a wide range of individual property results. Perhaps the essential point is that for all properties costs averaged slightly less than 50 per cent of returns.

The distribution of farm incomes by both enterprise and sheep enterprise is shown in Table No. 35.

One property showed a loss for the year and two had incomes of less than £500. It may be noted that, although the average income was £3,216, half the sample properties had incomes below £2,000.

Farm Income Per Sheep

The average farm income on the 11 sheep only properties was £2 12s. 5d. per sheep carried.

The distribution was as shown in Table No. 36.

TABLE No. 36

FREQUENCY DISTRIBUTION OF FARM INCOME PER SHEEP: SHEEP ONLY PROPERTIES: HIGH RAINFALL ZONE

Farm income per sheep	Properties
Less than £1	2
£1 and less than £2	1
£2 " " " £3	4
£3 " " " £4	2
£4 and more	2
Total	11

Labour and Management Income

The labour and management income is obtained by deducting from farm income a standard charge of 5 per cent on the total capital investment. The average labour and management income for the

sample properties classified by enterprise and by sheep enterprise is shown in Table No. 38.

The average labour and management income for the 30 sample properties was £1,644.

When examined by enterprise, sheep-cereal properties with an average of £3,519 showed the highest labour and management income; sheep-dairying properties, with an average of £139, earned considerably less in that year than the award for pastoral workers.

On a sheep enterprise basis, the average labour and management income for each of the three main groups exceeded £1,000.

However, these group averages hide the fact that, for seven of the 30 properties, a charge of 5 per cent interest on capital would mean that there was no income for labour and management, while for another six a labour and management income of

TABLE No. 37

FREQUENCY DISTRIBUTION OF LABOUR AND MANAGEMENT INCOME: HIGH RAINFALL ZONE

Labour and management income	Properties
Loss	7
Less than £500	6
£500 and less than £1,000	1
£1,000 " " " £2,000	4
£2,000 " " " £5,000	9
£5,000 " " " £10,000	3
Total	30

TABLE No. 38

AVERAGE LABOUR AND MANAGEMENT INCOME: BY ENTERPRISES AND SHEEP ENTERPRISES: HIGH RAINFALL ZONE

Item	Enterprise				Total	Sheep enterprise			
	Sheep only	Sheep-cereal	Sheep-dairying	Sheep-other crops		Merino dry sheep	Merino breeding replacements	Crossbred wool and fat lambs	Other sheep enterprises
Returns	£ 5,787	£ 9,694	£ 3,243	£ 4,957	£ 6,067	£ 6,450	£ 6,478	£ 5,800	£ 4,725
Costs	2,634	4,159	1,969	2,513	2,851	2,700	2,957	2,912	2,500
Farm income	3,153	5,535	1,274	2,444	3,216	3,750	3,521	2,888	2,225
Less 5% charge on capital	1,633	2,016	1,135	1,332	1,572	1,504	1,564	1,555	1,704
Labour and management income	1,520	3,519	139	1,112	1,644	2,246	1,957	1,333	521

less than £500 would result. These details are shown in Table No. 37 on the previous page.

Return to Capital and Management

A third measure of income may be obtained by deducting from farm income an allowance of £658 for the operator's labour, which gives a return to capital and management. No attempt has been made to put a cash value on the management function of the operator. When the return to capital and management is expressed as a percentage of capital, the *rate* of return to capital and management is obtained. These steps are shown in Table No. 39.

TABLE No. 39
AVERAGE RATE OF RETURN TO CAPITAL AND
MANAGEMENT : HIGH RAINFALL ZONE

Item	
Returns	£ 6,067
Costs	2,851
Farm income	3,216
Allowance for operator's labour	658
Return to capital and management	2,558
Rate of return to capital and management	
$\frac{2,558 \times 100}{31,443}$	8.1%

There was a wide range in individual property results. The lowest rate of return recorded was a loss of almost 5 per cent, while the highest was a profit of almost 18 per cent.

An examination of the factors which might influence the rate of return to capital on individual properties revealed a very strong relationship between profitability and scale of operations. This is shown in Table No. 40. The 30 sample properties have been divided into two groups, which are referred to as "large" and "small." All properties in the large group had a total capitalization of more than £28,000, while for those in the small group it was less than this. The line of division was taken at £28,000 because that figure divided the properties into two equal groups.

Of the 13 properties which showed a loss or made less than 5 per cent on capital, 11 were small, while of the 11 which made at least 10 per cent on capital 10 were large.

Looking further to see if there were any clear reasons why the larger properties should do so much better, one point was outstanding : the relative use

TABLE No. 40
FREQUENCY DISTRIBUTION OF RATE OF
RETURN TO CAPITAL : "LARGE" AND "SMALL"
PROPERTIES : HIGH RAINFALL ZONE

Rate of return	"Large" properties	"Small" properties	Total
Loss	1	6	7
Less than 5%	1	5	6
5% and less than 10%	3	3	6
10% " " " 15%	7	—	7
15% and more	3	1	4
Total	15	15	30
Average	10.2%	2.9%	8.1%

of labour and capital on the two groups of properties differed greatly. This can be seen from the following tabulation :

	Average capitalization per property	Average labour units per property	Capital per labour unit
"Large" properties	£44,840	1.88	£23,850
"Small" properties	£17,980	1.47	£12,250

The large properties, with a capitalization $2\frac{1}{2}$ times as great as the small ones, used little more labour, with the result that the ratio of capital to labour was twice as high on the large properties.

With this (apparently) better relationship between labour and capital, the larger properties showed both greater returns per £1,000 capital (£201 against £172) and lower costs (£84 per £1,000 against £106 per £1,000).

The effect of size on profitability is also illustrated in the analysis, by enterprises, of rate of return to capital, as set out in Table No. 41.

Sheep-cereal properties, with the highest average capital, have the highest rate of return and sheep-dairying are lowest in both respects. Since the sample is too small to give any significant results from an analysis by both size and enterprise, it is not possible to say to what extent the level of profitability of the different groups of properties depended merely on size.

To sum up the results of the financial analysis, it can be said they were generally satisfactory ; particularly so where the scale of operations was large enough to permit the economic use of labour.

TABLE No. 41

AVERAGE RATE OF RETURN TO CAPITAL AND MANAGEMENT : BY ENTERPRISES : HIGH RAINFALL ZONE

Item	Enterprise				Total
	Sheep only	Sheep-cereal	Sheep-dairying	Sheep-other crops	
Farm income	3,153	5,535	1,274	2,444	3,216
Allowance for operator's labour	658	658	658	658	658
Return to capital and management	2,495	4,877	616	1,786	2,555
Total capital	32,655	40,325	22,700	26,633	31,443
Rate of return to capital and management	7.6%	12.1%	2.7%	6.7%	8.1%

Part III: The Wheat—Sheep Zone

The number of properties included in the sample for the wheat-sheep zone of South Australia was 80. Previously the B.A.E. had defined the wheat-sheep zone as the area included in the counties of Eyre, Ferguson, Gawler, Light and Sturt in the Central Division; Daly, Stanley and Victoria in the Lower North Division; Frome and Dalhousie in the Upper North Division; Dufferin, Flinders, Jervois, Le Hunte, Robinson, Musgrave, Way and Buxton in the Western Division; and Albert, Alfred, Buccleuch and Chandos in the Murray Mallee Division. It was found during the course of the survey that in the case of some counties, and Dalhousie is a particular example, the inland boundary represented a line well beyond the normal limits of wheatgrowing. In such instances sample properties situated within the counties listed above but outside the limits of wheatgrowing have been classified as, and analysed with, pastoral properties.

The area as defined covers some 25 million acres and carries roughly half the State's sheep. The number in the area has been increasing markedly over the past 25 years. Figures of sheep and lambs shorn and of wool produced since 1931-32, at five-year intervals, are shown in Table No. 42. Figures for the latest five years are also shown.

Over the 25-year period sheep and lambs shorn have increased from less than 2½ million to more than seven million. At the same time, however, the area sown to wheat has declined from three million

TABLE No. 42
SHEEP AND LAMBS SHORN AND WOOL PRODUCED: WHEAT-SHEEP ZONE: SOUTH AUSTRALIA: 1931-32 to 1954-55

Year	Sheep and lambs shorn	Shorn wool produced
	'000	'000 lb.
1931-32	2,490	21,981
1936-37	3,680	31,140
1941-42	4,813	42,620
1946-47	3,933	38,603
1950-51	5,573	60,370
1951-52	6,237	66,572
1952-53	6,984	76,872
1953-54	6,834	66,126
1954-55	7,114	73,297

to 1¼ million acres. This has been largely offset by increases in the areas sown to oats and barley, but taking all crops together the area planted declined from 3½ million acres in 1931-32 to 2½ million acres in 1952-53, the year of the survey. As a result sheep numbers have increased somewhat, but another major factor has been the extension to all cereal farms of the practice of running sheep in conjunction with cereal cropping.

Seasonal conditions in 1952-53 were extremely good, with rainfall for 1952 some two inches above average. Both the cut per head of sheep and lambs and the wheat yield were all-time records.

LAND USE

The majority of properties covered by the survey (43 out of 80) were entirely freehold; a further 18 were part freehold and part leasehold; and the remaining 19 properties were leasehold. Leasehold tenure was encountered most frequently on the larger, more remote properties, so that slightly more than half the total area of the sample properties was leasehold.

The total area of the sample properties was 190,930 acres. A summary of the land use on the sample properties in 1952-53 is given in Table No. 43.

TABLE No. 43
LAND USE DURING 1952-53: WHEAT-SHEEP ZONE

Land use	Area	Percentage of total
	acres	%
Crop	27,365	14.3
Improved pasture	17,556	9.2
Natural pasture	124,794	65.4
Not used	21,215	11.1
Total	190,930	100.0

Of the 80 sample properties, 77 had areas under crop. In the aggregate these covered more than 27,000 acres, or almost 15 per cent of the total area of the properties. Approximately half the area under crop was sown to wheat, about a quarter to oats and the remainder to barley. Forty-three properties grew both wheat and barley, another twenty grew wheat only and nine grew barley only. More than one-third of the area of oats sown was used solely as a forage crop for sheep.

There were areas of improved pasture on 42 of the sample properties; the area improved, however, represented less than 10 per cent of the total extent of the properties, and included a considerable proportion of wimmera rye grass which had been undersown with crops and not subsequently top-dressed. Only 30 per cent of the improved pasture was fertilized in 1952-53; the area contained legumes such as subterranean clover, barrel medic and lucerne. Rates of topdressing were generally either 93 lb. or 112 lb. per acre.

There are indications that the practice of sowing legume pastures is becoming more widespread. Ten of the 80 sample properties made such sowings in 1952-53, adding 1,350 acres to the area under improved pasture. During the following year, 1953-54, almost 2,500 acres of legume pastures were sown on 18 properties.

Potential Land Use

Each landholder was asked to give an estimate of the more intensive use to which his land could be

put; a summary of these estimates is shown in Table No. 44.

TABLE No. 44
OWNERS' ESTIMATES OF POTENTIAL LAND USE : WHEAT-SHEEP ZONE

Type of land	Area	Percentage of total
Arable	124,727	65.3
Suitable for improved pasture	6,278	3.3
" " topdressing	13,687	7.2
" " natural pasture	44,908	23.5
Unimprovable	1,330	0.7
Total	190,930	100.0

In comparing these figures with those in Table No. 43, which set out land use in the survey year, certain points should be kept in mind. In the first place, although only 27,000 acres were under crop in 1952-53, almost four times that area was already cleared for the plough. The additional area which could be made arable is, therefore, only 20,000 acres.

In the second place, there may be some doubt whether all the land potentially arable is suitable for improved pastures. Certainly land on the inland fringe of the zone is in a region of rather low rainfall; it seems probable, however, that by selection of the right species legume pastures could be established over most of it. It is therefore in this direction that there is the greatest potential for more intensive land use in the region.

FEATURES OF THE SHEEP INDUSTRY

Property Size

The size of the properties covered by the survey ranged from 375 acres to 18,000 acres. Table No. 45 shows the distribution of the sample properties by area.

The range is to some extent a reflection of the difference in the carrying capacity of the land in different parts of the zone. Most of the properties in the Western and the Murray Mallee Divisions carried less than one sheep to three acres—in two cases less than one sheep to ten acres—while nine properties in better rainfall areas of the zone carried more than a sheep to the acre.

TABLE No. 45
FREQUENCY DISTRIBUTION OF PROPERTY SIZE:
WHEAT-SHEEP ZONE

Area	Properties
200 and less than 500 acres	4
500 " " " 1,000	20
1,000 " " " 2,000	27
2,000 " " " 5,000	23
5,000 " " " 10,000	4
10,000 " " " 20,000	2
Total	80
Average	2,387 acres

The distribution of sheep carried per acre is shown in Table No. 46⁴.

TABLE No. 46
FREQUENCY DISTRIBUTION OF STOCKING RATES : WHEAT-SHEEP ZONE

Stocking rate	Properties
acres per sheep	
Less than 1	9
1 and less than 2	32
2 " " " 3	13
3 " " " 4	12
4 " " " 5	6
5 " " " 10	6
10 and more	2

Enterprise Classification

For the purposes of analysis, sample properties were classified according to enterprise, as set out on p. 4. Table No. 47 shows the number in each category and also the total and average number of sheep carried.

TABLE No. 47
ENTERPRISE CLASSIFICATION : WHEAT-SHEEP ZONE

Enterprise	Properties	Sheep carried	Average flock size
Sheep only	5	6,260	1,252
Sheep-cereal	67	65,050	971
Sheep-dairying	3	1,330	443
Mixed enterprise	5	3,010	602
Total	80	75,650	946

In addition to the 67 sheep-cereal properties, all five mixed enterprise properties and one sheep-dairying property grew cereal crops, i.e. 73 out of 80. An analysis of results by enterprise would thus serve no purpose ; in the first place any enterprise other than sheep-cereal is obviously atypical of the area, and, in the second place, the properties in the other groups are so few that results based on them could not be taken as representative.

4. A carrying capacity expressed in terms of sheep per acre on wheat-sheep properties is not an altogether satisfactory measure. However, the decline in carrying capacity which results from a proportion of the property being under crop is probably not very great ; extra feed is available both in the form of stubble and through the residual effect of the superphosphate which has been applied to crops.

Sheep Enterprises

The properties were also classified by sheep enterprise as set out in Table No. 48. The types of sheep enterprise recognized are set out on p. 4.

TABLE No. 48
SHEEP ENTERPRISE CLASSIFICATION : WHEAT-SHEEP ZONE

Sheep enterprise	Properties	Sheep carried	Average flock size
Merino woolgrowing-dry sheep	3	2,420	807
breeding replacements	39	36,947	947
breeding surplus with crossbred	25	25,840	1,034
lamb production	10	5,260	526
Crossbred woolgrowing with fat lamb production	1	600	600
Merino/crossbred	2	4,583	2,291
Total	80	75,650	946

All but three of the sample were breeding properties, and all but three of these were breeding from Merino ewes. These 74 properties fell into three distinct categories, with sufficient in each to permit comparisons of their performances.

Flock Size

The distribution of the survey properties by flock size is shown in Table No. 49.

TABLE No. 49
FREQUENCY DISTRIBUTION OF FLOCK SIZE : WHEAT-SHEEP ZONE

Flock size	Properties	Sheep
200 and less than 500	20	7,790
500 " " " 1,000	35	24,560
1,000 " " " 2,000	18	23,490
2,000 " " " 5,000	7	19,810
Total	80	75,650

The average flock size was 946, with a range from just over 200 to more than 4,000.

Breeds of Sheep

Of the 80 sample properties, 67 ran all Merino sheep, ten had all Merinos with the exception of rams which were mated for fat lamb production, two others had some Merinos and some crossbreds, and the remaining one ran Corriedales. Altogether 97 per cent of the sheep were Merinos.

Breeding**Ewes**

All except three of the sample properties joined ewes in 1952-53. Table No. 50 shows the distribution of sample properties, classified by sheep enterprise, according to the proportion of breeding ewes in the flock.

Maiden ewes were joined at 1½ years on 57 properties and at 2½ years on 15 properties. The remainder included the three dry sheep properties and five properties which did not join maiden ewes in 1952-53.

Culling of maiden ewes was carried out on 32 of the sample properties; the rate of culling varied from 5 per cent to 30 per cent.

TABLE No. 50
FREQUENCY DISTRIBUTION OF BREEDING EWES AS A PERCENTAGE OF TOTAL FLOCK: BY SHEEP ENTERPRISES: WHEAT-SHEEP ZONE

Proportion of breeding ewes in the flock	Merino breeding replacements	Merino breeding surplus	Merino breeding fat lambs	Other sheep enterprises	Total
20% and less than 30%	9	—	1	—	10
30% " " " 40%	13	4	—	1	18
40% " " " 50%	8	6	3	1	18
50% " " " 60%	7	7	2	—	16
60% " " " 70%	2	4	—	1	7
70% " " " 80%	—	2	1	—	3
80% and more	—	2	3	—	5
Total	39	25	10	3	77
Average	38.2%	51.1%	58.9%	42.0%	44.9%

A comparison of the Merino breeding replacements and breeding surplus groups illustrates the point made in the introductory chapter concerning the fineness of the line dividing these two groups. However, the bulk of the breeding replacements group had less than 50 per cent ewes, while well over half the breeding surplus group had more than 50 per cent.

Even though some of the Merino fat lamb properties run a few wethers and breed their own ewe replacements—these are the properties in the group with low percentages of ewes—the group average of 59 per cent ewes is considerably higher than that of either of the other main groups.

Ewes were cast for age as follows:

At 5 years	15 properties
" 6 "	28 "
" 7 "	21 "
More than 7 years	11 "
Allowed to die on property	2 "

In general there was a tendency for ewes to be cast at a slightly younger age on Merino breeding replacements properties than on those which were producing fat lambs.

Rams

The number of rams used on the sample properties for the 1952-53 lambing represented slightly more than 2 per cent of the ewes to which they were joined.

TABLE No. 51
FREQUENCY DISTRIBUTION OF LAMBING PERCENTAGE: BY SHEEP ENTERPRISES: WHEAT-SHEEP ZONE

Lambing percentage	Merino breeding replacements	Merino breeding surplus	Merino breeding fat lambs	Other sheep enterprises	Total
10% and less than 40%	5	1	—	—	6
40% " " " 60%	7	4	—	—	11
60% " " " 80%	18	14	3	1	36
80% " " " 100%	9	5	6	2	22
100% and more	—	1	1	—	2
Average	63.8%	69.1%	80.6%	83.3%	68.3%

All ewes on Merino breeding replacement properties were joined to Merino rams. On Merino fat lamb properties, 66 per cent of ewes were mated to Dorset Horn rams, 26 per cent to Suffolk and Southdown rams, while the remaining 8 per cent were joined to Merino rams to breed ewe replacements. Other rams used on sample properties were Corriedale and Romney Marsh. Altogether 85 per cent of ewes were mated to Merino rams.

Lambing

Seventy-seven properties bred lambs in 1952-53. Lambing occurred during autumn (March to May) on 64 properties and during winter (June to August) on 11 properties.

The distribution of lambing percentages by sheep enterprise was as shown in Table No. 51 on page 29.

Lambing percentages ranged from 10 per cent to over 100 per cent. Merino fat lamb properties had a

considerably higher average percentage than Merino breeding replacement properties. If these lambing percentages are related to the percentage of breeding ewes in the flock, a figure of lambs marked to total flock can be obtained. For the three major sheep enterprise groups the figures are :

Merino breeding replacements	24.4 per cent.
Merino breeding surplus	35.3 per cent.
Merino breeding crossbred lambs	47.5 per cent.

After making allowance for losses by death and for rations, the net gain from natural increase for the three groups are 18 per cent, 28 per cent and 40 per cent respectively.

These figures demonstrate clearly the relative availability of surplus sheep in the three groups.

Purchases and Sales

The numbers and types of sheep purchased by the various sheep enterprise groups are shown in Table No. 52.

TABLE No. 52
PURCHASES OF SHEEP : BY SHEEP ENTERPRISES : WHEAT-SHEEP ZONE

Type of sheep	Merino breeding replacements	Merino breeding surplus	Merino breeding fat lambs	Others	Average price paid
Wethers	1,258	151	254	1,935	£1 5s. 7d.
Ewes	765	1,611	902	1,188	£2 3s. 5d.
Rams	75	67	16	12	£25 15s. 0d.
Lambs	—	—	1,169(a)	—	—

(a) These were lambs purchased by one property for fattening and resale.

TABLE No. 53
SALES OF SHEEP : BY SHEEP ENTERPRISES : WHEAT-SHEEP ZONE

Type of sheep	Merino breeding replacements	Merino breeding surplus	Merino breeding fat lambs	Others	Total
Ewes					
Young culls	87	617	—	—	704
C.f.a.	2,829	2,629	643	351	6,352
Wethers					
Young	2,036(a)	2,000	80	—	4,116
C.f.a.	2,076	35	348	2,504	4,963
Lambs					
Fat	96	2,310	3,326	1,372	5,934
Store	236	485	—	—	721
Unknown	1,794	1,729	497	—	5,290
Total	9,154	9,805	4,894	4,227	28,080

(a) Including 1,700 sold by a property which was over-stocked.

Dealing in small lots of sheep was a common practice on the sample properties and therefore not all the purchases made were related to the nature of the sheep enterprise. Otherwise the purchases were fairly well in line with the general practice for properties in the different enterprise groups. Some breeding replacements properties were not able to breed all the replacements needed and had to purchase ewes or wethers. Fat lamb properties purchased ewe replacements and in one case lambs for fattening. However, the quite large purchase of ewes by the breeding surplus group is rather unusual for such properties. Normally they have no difficulty in breeding all replacements needed and are even able to cast ewes for age earlier than other properties. In the survey year some properties in this group sold mixed sex lambs—frequently as fats for slaughter, even though they were Merinos—and thus lost their ewe replacements for the year; in their place older ewes were purchased.

The numbers and types of sheep sold by each group of properties are shown in Table No. 53.

With the exception of lambs sold by both the Merino breeding replacements and Merino breeding surplus groups of properties of which mention has just been made, the types and numbers of sheep sold are in line with the different sheep enterprises. Breeding replacements properties sold principally aged ewes and wethers; breeding surplus properties sold aged ewes and young wethers and fat lamb properties sold fat lambs and cast-for-age ewes.

It was not possible to establish the prices received for all sheep sold. From the information available, however, the following points can be made.

Crossbred fat lambs from properties mating Merino ewes with non-Merino rams averaged £3 per head—well above the price realized for pure Merino lambs, which realized only slightly more than £2 per head.

Cast-for-age wethers, most of which were sold as fats, made more than £2 per head, while the young wethers sold made little more (they averaged £2 12s. 6d. per head). Cast-for-age ewes were not in general demand and averaged less than £1 10s. 0d.

From these data on purchases and sales and the earlier section on breeding the movement in sheep numbers for each type of sheep enterprise can be followed. See Table No. 54.

There was a small over-all reduction in sheep numbers on the sample properties during the year. Such an occurrence in a good season is an indication that the properties were fully stocked at the beginning of the survey period.

Shearing

Shearing took place in the spring on most of the sample properties. Thirty-three shored during August, 26 during September and 14 during October. The others shored in winter and early summer.

Shearing was carried out by the owner with hired labour on 72 properties, and by a contractor on the remainder. In most cases wool was classed by owners, few of whom had received training in wool-classing other than that gained from experience. As a result, wool from only about 20 per cent of the sheep shorn was prepared for sale by a qualified classer, i.e. one holding a recognized diploma.

Wool Production

The average cut per head for all sheep and lambs shorn was 9·7 lb., but there was a wide range from 6·7 to 13·4 lb. The distribution of cut per head by sheep enterprise is shown in Table No. 55.

The comparison does not show any conclusive differences; Merino dry sheep properties naturally did not shear any lambs, while the properties in the "other" group had a preponderance of wethers and few lambs. The averages for the three main groups are very close and the differences are certainly not significant.

TABLE No. 54
CHANGES IN SHEEP NUMBERS: BY SHEEP ENTERPRISES: WHEAT-SHEEP ZONE

	Merino breeding replacements	Merino breeding surplus	Merino breeding fat lambs	Other sheep enterprises	Total
Properties	39	25	10	6	80
On hand, 1. 7. 1952	38,272	26,268	5,388	7,505	77,433
Purchases	2,118	1,829	2,336	3,135	9,418
Natural increase	9,140	8,875	2,587	1,692	22,294
Total	49,530	36,972	10,311	12,332	109,145
Sales	9,154	9,805	4,894	4,227	28,080
Deaths and rations	3,563	1,779	416	398	6,156
On hand, 30. 6. 1953	36,813	25,388	5,001	7,707	74,909

TABLE No. 55
FREQUENCY DISTRIBUTION OF CUT PER HEAD OF SHEEP AND LAMBS SHORN : BY SHEEP ENTERPRISES : WHEAT—SHEEP ZONE

Cut per head	Merino wool-growing	Merino breeding replacements	Merino breeding surplus	Merino breeding fat lambs	Other	Total
6 lb. and less than 7 lb.	—	—	1	—	—	1
7 " " " " 8 "	—	4	2	—	—	6
8 " " " " 9 "	—	9	7	4	—	20
9 " " " " 10 "	—	12	4	1	2	19
10 " " " " 11 "	1	11	4	1	1	18
11 " " " " 12 "	1	1	6	3	—	11
12 lb. and more	1	2	1	1	—	5
Average	11.6 lb.	9.5 lb.	9.8 lb.	9.8 lb.	10.6 lb.	9.7 lb.

Diseases and Pests

Diseases of economic importance reported by property owners were entero-toxaemia and pregnancy toxaemia. Inoculation was carried out as a control measure. Many properties also reported the prevalence of worms in sheep; drenching was the control used.

Fly-strike

Fly-strike was a major problem throughout the zone and control measures were undertaken on all sample properties. Crutching was practised on all properties (85 per cent of the sheep were crutched more than once a year) and in addition 17 properties had all or portion of their flocks mulesed. Sheep were crutched once a year on eight properties, twice a year on 56 properties and three times a year on 15 properties. One property crutched wethers once and ewes twice a year. Four properties mulesed all sheep, another four mulesed ewes only and nine properties mulesed the more wrinkly sheep in their flocks.

External Parasites

All properties dipped sheep, 50 using a plunge dip and 30 a spray dip. Almost 75 per cent of the sheep were dipped with an arsenical material, the remainder being treated with a dip based on benzene hexachloride.

Rabbits

Only four owners reported that their properties were free from rabbits. Half the remainder reported light infestation and half reported fairly heavy infestation. Myxomatosis had been very effective on about half the properties which were lightly infested, but all had undertaken supplementary

methods of control. Owners of properties on which rabbits were numerous reported that myxomatosis was effective periodically but that the pest multiplied rapidly between periods.

On all except four of these properties supplementary control measures such as ripping, fumigating, poisoning and trapping were undertaken. Where myxomatosis had not been very effective, control was made difficult by the presence of rough country or areas of virgin scrub where rabbits could breed unchecked.

Other Animal Pests

Many property owners claimed that foxes and crows killed enough lambs to be considered pests of economic importance.

Sheep Feeding Practices

With the pronounced summer drought which is characteristic of the wheat-sheep zone of South Australia, supplementary hand-feeding of sheep is standard practice on most properties. To this end all but five of the sample properties had conserved fodder, generally cereal hay or grain. Three had conserved meadow hay in addition to cereal hay and grain, while six had only meadow hay. Stocks of fodder on hand were from $\frac{1}{2}$ to 1 bushel of grain and about 1 cwt. of hay per sheep carried.

Hand-feeding of sheep was carried out on 64 of the sample properties, mainly during late summer and early autumn when paddock feed is normally scarce. Forty-seven properties hand-fed all sheep, 13 fed ewes only, and four fed ewes and weaners.

Sixty-two properties fed from reserves while two purchased fodder. The average amount fed out over the feeding period was equivalent to about 80 lb.

of hay and 20 lb. of grain per sheep. The majority of the 16 properties which did not hand-feed sheep were in marginal areas of the wheat-sheep zone. Methods of husbandry were more akin to those in the pastoral zone, where the rate of stocking is governed by the available feed in the dry part of the

year. Others which did not hand-feed stated that it was their normal practice to do so, but that it had not been necessary due to the favourable season.

In addition to hand-feeding, 14 properties grew oats solely for forage; others grazed sheep on crops of oats which were later harvested.

FINANCIAL ANALYSIS

Capitalization

The methods of computing the total capital investment are set out on pp. 4-5 of the introduction.

Table No. 56 shows the average capital structure for the 80 sample properties.

TABLE No. 56

CAPITAL STRUCTURE : WHEAT-SHEEP ZONE

Item	£	%
Land	16,776	61.5
Water supply	924	3.4
Fencing	2,073	7.6
Buildings	1,641	6.0
Land and improvements	21,414	78.5
Plant	3,126	11.5
Sheep	2,476	9.1
Cattle	175	0.7
Other stock	66	0.2
Total stock	2,717	10.0
Total	27,257	100.0

An analysis of capital structure by enterprise showed that the pattern revealed in the above table differed little from the one for the sheep-cereal group, which contained 67 of the 80 sample properties.

Although the number in the other enterprise groups was too small to allow valid comparison between the different types, some differences in structure can be attributed to the nature of the enterprise, e.g. water supplies and cattle represented a much larger proportion of capital for the sheep-dairying group, and the sheep only group showed a lower than average proportion of capital invested in plant and buildings.

The lowest capitalization per property was slightly more than £6,000, and the highest was over £100,000. The distribution was as shown in Table No. 57.

TABLE No. 57

FREQUENCY DISTRIBUTION OF CAPITAL : WHEAT-SHEEP ZONE

Capital	Properties
£5,000 and less than £10,000	4
£10,000 " " " £20,000	31
£20,000 " " " £50,000	39
£50,000 " " " £100,000	5
£100,000 " " " £200,000	1
Total	80

Returns

The average gross returns per property and the structure of returns are shown in Table No. 58.

TABLE No. 58

AVERAGE GROSS RETURNS PER PROPERTY : WHEAT-SHEEP ZONE

Item	Returns	
	£	%
Wool	3,036	37.9
Skins and sheep trading	507	6.3
Sheep enterprise	3,543	44.2
Cereals	4,113	51.3
Beef cattle	11	0.1
Dairying	239	3.0
Other returns	109	1.4
Total	8,014	100.0

Cereal cropping was the major source of returns, with returns from sheep in the nature of a sideline. This, of course, was not true of all properties, although there were more "cereal-sheep" than "sheep-cereal" properties.

The distribution of gross returns, which ranged from £1,900 to £48,400, is shown in Table No. 59.

TABLE No. 59
FREQUENCY DISTRIBUTION OF GROSS RETURNS : WHEAT-SHEEP ZONE

Gross returns	Properties
Less than £2,000	2
£2,000 and less than £5,000	25
£5,000 " " " £10,000	34
£10,000 " " " £20,000	17
£20,000 and over	2
Total	80

Returns from Wool

The gross return from wool per sheep shorn is a function of cut per head and price per lb. The average cut per head was 9.5 lb., and the average price per lb. for wool over the 80 properties was 72.7d. For comparison, the average price for the State in 1952-53 quoted by the National Council of Wool Selling Brokers was 74.9d.

Average prices received by individual properties ranged from 49.2d. to 94.9d. per lb. The distribution of average prices, by sheep enterprises, was as shown in Table No. 60.

The differences in average price between the three major groups are quite substantial. On the Merino fat lamb properties, few wethers are run and the ewes tend to be somewhat older than on properties in the other groups. The only apparent explanation for the difference between the prices for the other two major groups is the different proportions of ewes and wethers in the flocks.

The distribution of gross returns from wool per sheep shorn, by sheep enterprise, was as shown in Table No. 61.

The average for all properties was £2 19s. 0d. per head, the return ranging from £1 17s. 9d. to £4 8s. 7d. Average returns per head for the three major groups are in accordance with the prices per lb. shown in Table No. 60.

TABLE No. 60
FREQUENCY DISTRIBUTION OF WOOL PRICES : BY SHEEP ENTERPRISES : WHEAT-SHEEP ZONE

Price per lb.	Merino dry sheep	Merino breeding replacements	Merino breeding surplus	Merino breeding fat lambs	Other sheep enterprises	Total
40d. and less than 50d.	—	—	—	—	1	1
50d. " " " 60d.	—	1	3	2	—	6
60d. " " " 70d.	—	11	10	7	—	28
70d. " " " 80d.	2	19	8	1	1	31
80d. " " " 90d.	1	7	3	—	1	12
90d. and more	—	1	1	—	—	2
Average	78.5d.	75.2d.	70.6d.	64.7d.	67.1d.	72.7d.

TABLE No. 61
FREQUENCY DISTRIBUTION OF RETURNS FROM WOOL PER SHEEP SHORN : BY SHEEP ENTERPRISES : WHEAT-SHEEP ZONE

Returns from wool	Merino dry sheep	Merino breeding replacements	Merino breeding surplus	Merino breeding fat lambs	Other sheep enterprises	Total
Less than £2	—	—	—	—	1	1
£2 and less than £2 10s. 0d.	—	5	8	4	—	17
£2 10s. 0d. " " " £3	—	21	7	4	—	32
£3 " " " £3 10s. 0d.	1	10	7	—	1	19
£3 10s. 0d. " " " £4	1	2	3	2	1	9
£4 " " " £4 10s. 0d.	1	1	—	—	—	2
Total	3	39	25	10	3	80
Average	£3 15s. 2d.	£2 19s. 9d.	£2 17s. 5d.	£2 13s. 10d.	£3 2s. 0d.	£2 19s. 0d.

Returns from Sheep Trading

From Table No. 54 on p. 31 it can be seen that the sample properties sold 28,080 sheep and purchased 9,418 during the year.

These sales realized £62,725 and purchases cost £26,294, giving a cash return of £36,431 from sheep trading.

During the year the number of sheep carried on the sample properties declined by 2,524 which, at the average value of sheep for that year, represents a loss of £6,562. When allowance is made for ration sheep consumed on the properties, the sheep trading profit averaged £489 per property or 10s. 4d. per sheep carried.

Sheep trading returns for the various sheep enterprise groups differed in amount and composition, each reflecting the nature of the enterprise. The Merino dry sheep properties showed a loss on sales over purchases because the price paid for replacement wethers was considerably higher than the price received for cast-for-age sheep. This group also showed an inventory loss which was mainly due to a substantial reduction in numbers on one property. The total loss on sheep trading for the group was equal to 9s. 8d. per head.

Merino breeding replacements properties sold 9,000 sheep against 2,100 purchased; the cash return from stock trading was £13,651. Against this must be offset the inventory loss from the reduction of sheep numbers from 38,272 to 36,813. For this group the sheep trading profit averaged £393 per property or 8s. 3d. per sheep carried. Merino breeding surplus properties, although carrying only

two-thirds as many sheep as the previous group, sold more sheep and purchased slightly less. The cash return from sheep trading was £14,915. There was again a small inventory loss and the sheep trading profit averaged £589 per property or 11s. 5d. per sheep carried.

The Merino wool and fat lamb group of properties earned a cash profit of £6,655 and showed an inventory loss of £1,006. On the whole the profit for the year was equal to £1 6s. 4d. per sheep carried.

Returns from the Sheep Enterprise

Total sheep enterprise returns consist of the profit or loss on sheep trading and gross returns from wool.

The frequency distribution of returns per sheep carried from the total sheep enterprise is shown in Table No. 62.

The performance of the different types of sheep enterprise may be summarized up to this stage as in Table No. 63.

The Merino dry sheep group showed the highest wool returns per sheep shorn, but losses on sheep trading gave it the lowest average sheep enterprise returns per sheep carried of the sheep enterprise groups. The Merino wool and fat lamb group, on the other hand, had the lowest average wool return of the sheep enterprise groups, but profit from sheep trading was sufficient to give the group the highest average sheep enterprise return per sheep carried: 6s. 6d. more than that of the Merino breeding surplus group, which was in turn 6s. 6d. ahead of the breeding replacements group.

TABLE No. 62

FREQUENCY DISTRIBUTION OF RETURNS PER SHEEP (a) FROM THE SHEEP ENTERPRISE: WHEAT-SHEEP ZONE

Returns per sheep carried	Merino dry sheep	Merino breeding replacements	Merino breeding surplus	Merino breeding fat lambs	Other sheep enterprises	Total
£1 and less than £2	1	—	—	—	—	1
£2 " " " £3	1	8	2	2	1	14
£3 " " " £4	—	22	13	2	1	38
£4 " " " £5	—	8	8	2	1	19
£5 " " " £6	1	—	1	3	—	5
£6 " " " £7	—	1	1	1	—	3
Average	£2 18s. 0d.	£3 12s. 8d.	£3 19s. 1d.	£4 5s. 7d.	£3 6s. 10d.	£3 14s. 10d.

(a) Numbers of sheep carried are somewhat different from those of sheep and lambs shorn: thus Tables Nos. 61 and 62 are not strictly comparable.

TABLE No. 63
SUMMARY OF RETURNS PER SHEEP: BY SHEEP ENTERPRISES: WHEAT-SHEEP ZONE

Item	Unit	Merino dry sheep	Merino breeding replacements	Merino breeding surplus	Merino breeding fat lambs	Other sheep enterprises	Total
Properties	no.	3	39	25	10	3	80
Average sheep carried	no.	807	947	1,034	526	1,728	946
Average sheep shorn	no.	727	1,042	1,212	575	1,481	1,028
Breeding ewes	no.	—	362	528	310	753	425
Ewes to total flock	%	—	38.2	51.1	58.9	43.6	44.9
Lambs marked	no.	—	232	365	250	563	290
Lambs marked to ewes mated	%	—	64.1	69.1	80.6	74.8	68.2
Cut per head	lb.	11.5	9.5	9.8	9.8	10.5	9.7
Price per lb. for wool	d.	78.0	75.2	70.6	65.9	70.5	72.6
Gross return per sheep shorn from wool	£ s. d.	3 15 2	2 19 9	2 17 5	2 13 0	3 2 0	2 19 0
Sheep enterprise return per sheep carried	£ s. d.	2 18 0	3 12 8	3 19 1	4 5 7	3 6 10	3 14 10

Returns from Cereal Cropping

Cereal cropping was a source of returns on 73 properties, including the 67 sheep-cereal properties. Of the total cereal returns, 65 per cent was from wheat, 32 per cent from barley and the remainder from oats, hay and other cereals. The proportion received from the sale of oats and hay is very small in relation to the area sown to oats, the reason being that more than one-third of the area under oats was used entirely for sheep forage and a large part of the grain and hay harvested was retained on the properties as a reserve for hand-feeding. Wheat and barley yields were at a record level in South Australia in 1952-53. They are shown for the sample properties in Table No. 64.

TABLE No. 64
WHEAT AND BARLEY YIELDS: WHEAT-SHEEP ZONE

Yield	Properties	
	Wheat	Barley
Bushels per acre		
Less than 10	3	4
10 and less than 15	16	6
15 " " " 20	13	11
20 " " " 25	8	9
25 " " " 30	8	5
30 " " " 35	5	7
35 " " " 40	7	6
40 " " " 45	3	2
Over 45		2
Total	63	52

To see these yields in correct perspective it should be remembered that the average wheat yield for South Australia for the past 25 years has been about 12 bushels per acre, and only in 1952-53 did the average yield exceed 20 bushels. Similarly, barley yields were a record of more than 27 bushels per acre. Many of the sample properties had yields even greater than the State averages.

Returns from cereal cropping represented 55 per cent of the total returns of the 67 sheep-cereal properties and 51.3 per cent of returns for all the sample properties.

The distribution of sample properties according to the percentage of total returns received from cereal cropping is shown in Table No. 65.

TABLE No. 65
RETURNS FROM CEREAL CROPPING AS A PERCENTAGE OF TOTAL RETURNS: WHEAT-SHEEP ZONE

Returns from cereals as a percentage of total returns	Properties
Nil	7
Less than 10%	5
10% and less than 20%	6
20% " " " 30%	10
30% " " " 40%	6
40% " " " 50%	7
50% " " " 60%	10
60% " " " 70%	15
70% " " " 80%	10
80% " " " 90%	4
Total	80
Average	51.3%

In 1952-53 the sample properties received greater returns from cereals than they did from sheep. This is to some extent a reflection of high yields and satisfactory prices, but at the same time it appears that cereal cropping is the major enterprise on a greater proportion of properties in the wheat-sheep zone of South Australia than in any other area in Australia.

Returns from Beef

Beef cattle were sold by 14 properties but the returns were a very small part of the total, representing less than 10 per cent in each case. Altogether the beef enterprise was of little moment on the sample properties.

Returns from Dairying

There were three sheep-dairying properties and three mixed enterprise properties on which dairying was the most important undertaking. On these six, dairying returns ranged from 20 per cent to nearly 80 per cent of total returns. The average return was £1,654; almost half from the sale of butterfat, one-third from the sale of whole milk, and the balance from cattle trading and pigs. As it provided only 3 per cent of all returns, dairying was comparatively unimportant in terms of the whole sample.

Other Returns

These included returns from the sale of eggs, peas, timber and limestone, forming a very small part of the total returns except on two mixed enterprise properties, which received 16 per cent and 26 per cent respectively from poultry and peas.

Costs

The cost structure and average costs of the sample properties are shown in Table No. 67. The allowances for operator's labour and interest on capital are introduced at a later stage of the analysis.

TABLE No. 66
FREQUENCY DISTRIBUTION OF COSTS :
WHEAT-SHEEP ZONE

Total costs	Properties
Less than £2,000	15
£2,000 and less than £4,000	38
£4,000 " " " £6,000	20
£6,000 " " " £8,000	5
£8,000 " " " £10,000	1
£10,000 and over	1
Average	£3,636

As with returns, the pattern of costs reflects the fact that the majority of the sample properties are predominantly cereal producers.

The frequency distribution of costs is shown in Table No. 66. Total costs ranged from £1,127 to over £18,000.

Labour

The cost of labour represented one-fifth of total costs. The main item was wages, which included payments to permanent and casual employees and allowances for family labour (apart from that of the operator himself). The allowance for family labour made up more than 60 per cent of wages. The total permanent labour force on the 80 sample properties consisted of:

Owner	80
Family	38
Hired labour	22
	140
Total	140

In addition, casual labour was employed on 47 properties and almost 10 per cent of the area cropped was farmed by outside share-farmers.

Materials

Expenditure on materials represented nearly 47 per cent of the total costs of the sample properties. Fuel, fertilizer, packs, bags and twine, and plant maintenance were the main items in the group. The absence of bulk-handling facilities for wheat in South Australia is reflected in the large proportion of expenditure on packs, bags and twine—9.9 per cent of total costs compared with 2.5 per cent and 2.8 per cent for the wheat-sheep zones of Victoria and New South Wales respectively.

The comparatively low proportion of costs represented by fertilizers (7.3 per cent) is rather surprising for a group of properties so dependent on cereal cropping. On individual properties, however, it represented as much as 30 per cent of the total.

Services

Marketing expenses for wool and wheat were the main items under this heading. Miscellaneous expenses cover such things as postage, telephone, accountancy fees and travelling expenses.

Rent

Rent paid was equal to about 3d. per acre of leasehold land, but altogether represented less than 1 per cent of total costs.

Depreciation

Standard rates have been used in calculating depreciation. On this basis the charge averaged £539 per property, or 14.8 per cent of total costs.

TABLE No. 67
COST STRUCTURE : WHEAT-SHEEP ZONE

Item	Cost			
	£	£	%	%
Labour				
Wages	500		13.7	
Contracts	91		2.5	
Shearing and crutching	120		3.3	
Stores and rations	10		0.3	
Total		721		19.8
Materials				
Fuel	312		8.6	
Fertilizer	265		7.3	
Seed	52		1.4	
Fodder	61		1.7	
Packs, bags and twine	360		9.9	
Drenches, dips etc.	28		0.8	
Shearing supplies	1		—	
Vermin destruction	21		0.5	
Maintenance : plant	374		10.3	
improvements	225		6.2	
Total		1,699		46.7
Services				
Freight and cartage	94		2.6	
Marketing : wool	121		3.3	
stock	47		1.3	
cereals	148		4.1	
Rates and taxes	72		2.0	
Insurance	70		1.9	
Droving and agistment	7		0.2	
Miscellaneous	87		2.4	
Total		646		17.8
Rent		31		0.9
Depreciation		539		14.8
Total costs		3,636		100.0
Interest paid		50		1.5
Land improvement costs		72		2.0

Interest

Interest paid averaged £50 per property, which, capitalized at 5 per cent, represents an average debt of £1,000 on an average capital investment of over £27,000. Only 41 properties paid interest and 25 of these paid less than £100.

Income

Income can be measured at various levels. The first measure used in this analysis is that of farm income, which is the difference between gross returns and costs as defined in the preceding sections.

Farm Income

The average farm income for the 80 sample properties was £4,378.

For the whole sample costs represented 45 per cent of returns. The distribution of farm income is shown in Table No. 68.

Farm incomes ranged from less than £500 to almost £30,000, with two-thirds of the properties receiving £2,000 or more.

TABLE No. 68

FREQUENCY DISTRIBUTION OF FARM INCOME :
WHEAT-SHEEP ZONE

Farm income	Properties
Less than £500	2
£500 and less than £1,000	7
£1,000 " " " £2,000	17
£2,000 " " " £5,000	25
£5,000 " " " £10,000	25
£10,000 " " " £20,000	3
£20,000 and more	1
Total	80

Labour and Management Income

If a standard charge of 5 per cent interest on total capital investment is deducted from farm income, the labour and management income is obtained.

TABLE No. 69

AVERAGE LABOUR AND MANAGEMENT
INCOME : WHEAT-SHEEP ZONE

Item	£
Returns	8,014
Costs	3,636
Farm income	4,378
Less 5% charge on capital	1,363
Labour and management income	3,015

TABLE No. 70

FREQUENCY DISTRIBUTION OF LABOUR AND
MANAGEMENT INCOME : WHEAT-SHEEP ZONE

Labour and management income	Properties
Loss	9
Less than £1,000	14
£1,000 and less than £2,000	14
£2,000 " " " £5,000	26
£5,000 " " " £10,000	16
£10,000 " " " £20,000	—
£20,000 and more	1

Although the average was £3,015, there were nine properties for which a 5 per cent charge on capital would leave no income for labour and management. More than 25 per cent of the sample properties, these nine included, had a labour and management income of less than £1,000.

Return to Capital and Management

A third measure of income may be obtained by deducting from farm income an allowance of £658 for the operator's labour, which gives a return to capital and management. No attempt has been made to put a cash value on the management function of the operator.

TABLE No. 71

AVERAGE RETURN TO CAPITAL AND
MANAGEMENT : WHEAT-SHEEP ZONE

Item	£
Returns	8,014
Costs	3,636
Farm income	4,378
Allowance for operator's labour	658
Return to capital and management	3,720

When the return to capital and management is expressed as a percentage of capital, the rate of return to capital and management is obtained, e.g.

$$\frac{£3,720 \times 100}{£27,257} = 13.64 \text{ per cent.}$$

While the average rate of return to capital was 13.64 per cent, results on individual properties ranged from losses to a profit of 49.2 per cent. The frequency distribution is shown in Table No. 72.

TABLE No. 72

FREQUENCY DISTRIBUTION OF RATE OF
RETURN TO CAPITAL AND MANAGEMENT :
WHEAT-SHEEP ZONE

Rate of return	Properties
Loss	5
Less than 5%	14
5% and less than 10%	17
10% " " " 20%	25
20% " " " 30%	14
30% " " " 40%	3
40% and more	2

The high rates of return on most properties reflect the fact that 1952-53 was a record year for wool and wheat production in South Australia and that prices for both commodities were high. There were, nevertheless, 19 properties which earned less than

5 per cent on capital after allowing an amount for the owner's labour equal to only the award wage for a farm worker.

An investigation of the profitability of the properties showed that the greater the proportion of returns obtained from the cereals the higher was the rate of return to capital. Properties which received more than 70 per cent of their returns from the sheep enterprise had an average rate of return of 7 per cent, whereas those which received less than 30 per cent from the sheep enterprise had an average return of 21 per cent. The average value of gross returns per acre was £1 10s. 0d. for the group with the emphasis on sheep, as against an average of more than £6 0s. 0d. for the group with the emphasis on cereal cropping; at the same time costs represented 49 per cent of returns for the former group, as against only 40 per cent for the latter.

It was also found that, after eliminating the effect of the proportion of returns from cereal cropping, there was a positive relationship between scale of operations (as measured either by total value of land

or total capital) and profitability. However, the difference in the rate of return to capital between large and small properties was much less pronounced than the difference associated with the degree of cereal cropping.

To sum up, it can be said that the majority of the sample properties showed very satisfactory results in 1952-53. More than half of them showed a rate of return on the market value of their investment of more than 10 per cent.

In the light of the favourable price levels and the seasonal conditions which prevailed, it is rather disturbing that almost 25 per cent of the sample properties failed to make 5 per cent interest on the market value of the properties after allowing only a station hand's wages for the operator's labour and nothing for his management. Definite conclusions should not be drawn from one year's results, however, and when these properties are again visited in the course of the follow-up surveys it will be most interesting to see how they have fared in subsequent years.

Part IV: The Pastoral Zone

The pastoral area of South Australia, as defined by the Government Statist and as used in this survey, includes the following divisions and counties :

1. *Western Division* : The counties of Hopetoun, Kintore, Bosanquet, Hore-Ruthven, Manchester and York.
2. *Upper North Division* : The counties of Taunton, Blachford, Hanson, Derby, Newcastle, Granville, Herbert and Lytton.
3. *Lower North Division* : The Counties of Kimberley and Burra.
4. *Murray Mallee Division* : The counties of Young and Hamley.
5. State area outside county boundaries.

Thirty properties were visited, located as shown on the map. Twenty-four were in the Upper

and Lower North Divisions, one in Murray Mallee, and five outside the county boundaries.

Parts of the Upper North Division were once used for agricultural purposes but are now used entirely for grazing. Although there has been some consolidation of holdings, there was a higher proportion of smaller properties in the pastoral zone of South Australia than in the similar zone of other States. The average size of properties in the outside areas, in terms of both area and sheep numbers, was very large.

Seasonal conditions in 1952-53, and for some years previously, were generally favourable over the pastoral areas. Over the last 25 years there has been no marked trend in sheep numbers in the zone ; they have fluctuated between 1.3 m. (at the end of the 1944-45 drought) and 2.5 m. At the time of the survey they were at about 2.3 m.

LAND USE

The total area of the 30 properties covered by the survey is 1,835,000 acres, or about 0.8 per cent of the occupied pastoral area. Properties running sheep are concentrated chiefly in the lower third of the zone.

Property size varied from 1,650 to 588,000 acres, with an average of 61,000. It was distributed as shown in Table No. 73.

One property grew 50 acres of wheat, which was grazed off and no income from it received. Four had areas of grazing lucerne, averaging 446 acres per property. For the whole sample the area under wheat and lucerne represented about 0.2 per cent of the total.

Property owners considered that, at best, only about 1 per cent of the total area was suitable for cropping or improved pasture (mainly lucerne). Thus the basis of the sheep industry in pastoral South Australia is the grazing of natural pasture.

The majority of properties visited had experienced a good season in 1952-53 and sheep numbers tended to be above average on most properties. Most properties were, in the owner's opinion, carrying more sheep than the "safe" carrying capacity.

TABLE No. 73
FREQUENCY DISTRIBUTION OF PROPERTY
SIZE : PASTORAL ZONE

Area	Properties
Less than 5,000 acres	8
5,000 and less than 10,000	8
10,000 " " " 50,000	9
50,000 " " " 100,000	1
100,000 " " " 500,000	3
500,000 and more	1
Total	30

FEATURES OF THE SHEEP INDUSTRY

Enterprise Classification

On 29 of the 30 properties visited the sheep enterprise was virtually the only source of income. Sixteen had no beef cattle at all, while the other 13

had small herds ranging up to 50 head. The remaining property, situated west of Marree, was largely a cattle property, receiving over 60 per cent of its income from beef. Thus 29 properties were classified as sheep only, and one as sheep-cattle.

All ran Merino sheep, chiefly South Australian types, although Peppin and Tasmanian blood was represented. The sheep enterprises on the sample properties were :—

(i) Merino woolgrowing—dry sheep	2
(ii) Merino woolgrowing—breeding replacements	7
(iii) Merino woolgrowing—breeding surplus young sheep	20
(iv) Merino woolgrowing — joining Border Leicester ram, and selling fat lambs	1

Total 30

The two dry sheep properties were normally breeders, but did not join any ewes in the survey year. Thus there were no true dry sheep properties in the sample.

In terms of sheep numbers the surplus groups (iii and iv) carried about 43,000 sheep, with an average flock size of about 2,100 ; while the breeding replacement groups (i and ii) carried about 47,000 sheep, with an average flock of 5,200. In general the surplus groups were the smaller properties, located close to the agricultural areas where they found markets for their surplus sheep, while the breeding replacements groups were larger properties in the more remote pastoral areas.

Flock Size

The average number of sheep carried on sample properties during 1952-53 ranged from 500 to more than 20,000 with an average of 3,023.

TABLE No. 74
FREQUENCY DISTRIBUTION OF FLOCK SIZE :
PASTORAL ZONE

Flock size	Properties
Less than 1,000	5
1,000 and less than 2,000	14
2,000 " " " 5,000	6
5,000 " " " 10,000	3
10,000 " " " 20,000	1
20,000 and more	1
Average	3,023

A feature of this table is that 19 of the 30 properties had flocks of less than 2,000 sheep. This demonstrates the point made earlier that flock size in pastoral South Australia tended to be smaller than in other pastoral areas.

Breeding

Twenty-eight of the 30 properties joined ewes in 1952-53. On these properties breeding ewes averaged 41 per cent of sheep carried. Most fell within the range from 30 per cent to 70 per cent.

TABLE No. 75
FREQUENCY DISTRIBUTION OF BREEDING
EWES AS A PERCENTAGE OF TOTAL FLOCK :
PASTORAL ZONE

Proportion of breeding ewes in the flock	Properties
Less than 30%	1
30% and less than 40%	10
40% " " 50%	7
50% " " 60%	6
60% " " 70%	3
70% and more	1
Total	28

The simple average for the breeding replacements group, which contained most of the large "outside county area" properties, was 37 per cent, and for the breeding surplus group about 50 per cent.

Twenty of the breeding properties joined maiden ewes at about 18 months, the remaining eight at 30 months. Culling of maiden ewes was practised on 20 properties, the percentage culled out ranging from 5 per cent to 50 per cent. A few properties also culled older ewes, generally for infertility.

On all properties except one ewes were cast for age when from four to seven years old, usually at five or six years. The remaining property allowed aged sheep to die from natural causes owing to its isolation from a market.

On all but the fat lamb raising property, Merino rams were used. The number used as a percentage of ewes mated averaged 3.7 per cent with a range from 1.5 per cent to 7.9 per cent.

Lambing

Lambing occurred chiefly in the autumn months of March, April, and May. Nineteen properties lambled in this period, representing 64 per cent of the total drop. The remainder lambled through winter and spring, December and January being the only months in which no lambing occurred.

The percentage of lambs marked to ewes mated ranged from about 20 per cent to more than 100 per cent, the average on all breeding properties being 67 per cent.

TABLE No. 76
FREQUENCY DISTRIBUTION OF LAMBING
PERCENTAGE : PASTORAL ZONE

Lambing percentage	Properties
Less than 30%	1
30% and less than 40%	1
40% " " " 50%	2
50% " " " 60%	2
60% " " " 70%	9
70% " " " 80%	2
80% " " " 90%	8
90% and more	3
Total	28

A significant feature of the table is the low number of properties with lamb markings of less than 50 per cent, while 13 are above 70 per cent.

Taking the figures of the proportion of ewes mated to total flock, and lambs marked to ewes mated in conjunction, it can be calculated that lambs marked represented about 27 per cent of the total flock. In the breeding surplus group (including the fat lamb property) the proportion of lambs marked to total flock was about 35 per cent.

Purchases and Sales

Only three of the 30 properties purchased sheep other than rams in 1952-53, and the highest number purchased was about 250.

Only two properties did not sell any sheep. Total sales during the year were about 20 per cent of total sheep carried, and about 30 per cent of sheep carried in the surplus groups. Most sheep were sold through local saleyards, so that details of their final destination, e.g. as woolcutters or for slaughter, are not known.

TABLE No. 77
CHANGES IN SHEEP NUMBERS : BY SHEEP
ENTERPRISES : PASTORAL ZONE

	Merino breeding replacements	Merino breeding surplus	Total
On hand, 1. 7. 1952	47,809	42,501	90,310
Purchases	315	533	848
Natural increase	8,575	15,461	24,036
Total	56,699	58,495	115,194
Sales	5,764	12,932	18,696
Deaths and rations	3,553	1,872	5,425
On hand, 30. 6. 1953	47,382	43,691	91,073

The sheep trading operations in total numbers for the two broad groups may be summarized as shown in Table No. 77.

The difference between the two groups in natural increase and sales is clearly apparent. A point worthy of comment is the low figure for deaths in the surplus group. This, apart from the good season, probably resulted from the early age at which ewes are cast.

Shearing

Shearing was carried out on 20 of the properties during the months of July, August and September. Five others shored during the autumn months, March to May. The owners of 25 properties employed their own shearers while five had their sheep shorn by contract, four at fixed rates and one on the basis of cost-plus. With the exception of two which used neighbours', all properties had their own shearing sheds. The number of stands used ranged from one to eight, with 17 properties using two stands; on one property shearing was done with blades.

On 16 properties wool-classing was done by qualified men, two of them being owners. On 13 properties the classers were not qualified; of these seven were owners. The remaining clip was bulk-classed by the wool selling brokers.

Wool Production

The average cut per head for all sheep and lambs shorn was 11.4 lb., with a range from 8 lb. to more than 14 lb.

TABLE No. 78
FREQUENCY DISTRIBUTION OF CUT PER
HEAD OF SHEEP AND LAMBS SHORN : PASTORAL
ZONE

Cut per head	Properties
8 lb. and less than 9 lb.	4
9 lb. " " " 10 lb.	7
10 lb. " " " 11 lb.	7
11 lb. " " " 12 lb.	5
12 lb. " " " 13 lb.	2
13 lb. " " " 14 lb.	3
14 lb. and more	2

The pastoral areas of South Australia are noted for heavy cutting sheep, and this table, when compared with similar figures for other zones shows that cuts in the pastoral zone are 20 to 30 per cent heavier.

Most of the properties with low cuts per head were those where a considerable number of lambs were shorn. Only two had cuts per head of grown sheep less than 10 lb., and 13 of the 30 properties exceeded 13 lb.

The number of bales of wool sold per property ranged from 20 to 683.

Diseases and Pests

The properties visited were virtually free from diseases of economic significance, but most of them suffered from animal pests and noxious weeds to some extent. The survey was concerned principally with the control measures used.

Fly-strike

Fly-strike is a major problem, and a source of considerable economic loss. All properties used crutching as a control, 17 crutching all sheep twice. In addition to crutching, 11 properties used the mules operation. Only one used jetting.

External Parasites

Dipping was carried out on 27 of the 30 properties, 12 using plunge dips and 15 using spray dips. Of these 27 properties, 20 used arsenical dips while seven used dips based on benzene hexachloride.

Rabbits

Myxomatosis was reported to have been generally successful in the area covered by the survey and in only one case was there a report of increased infestation. Control measures were carried out on 26

properties; 20 ripped and ploughed-in burrows and 13 fumigated burrows. Other methods used were trapping and poisoning.

Other Pests

Seventeen properties reported other animal pests (kangaroos, foxes, eagle-hawks and crows) as being of economic significance. Shooting and poisoning were the most common means of control.

Noxious Weeds

Noxious weeds (Bathurst burr, wild onion, horehound and boxthorn) were reported to be of economic importance on 16 properties. The usual control was hoeing, although two properties used hormone sprays.

Sheep Feeding Practices

The basis of the sheep industry in the pastoral zone is the grazing of natural pastures and supplementary feeding of sheep was therefore not commonly practised. Three of the thirty properties regularly hand-fed sheep; two fed breeding ewes while the third, with a large area of lucerne, fed lucerne hay to all sheep.

Eight properties, all of which were located on the inner fringe of the pastoral zone, held stocks of conserved fodder.

FINANCIAL ANALYSIS

Capitalization

Capital values have been calculated using the methods described on pp. 4-5.

TABLE No. 79

CAPITAL STRUCTURE : PASTORAL ZONE

Item	£	%
Land	19,546	44.3
Water supply	3,878	8.8
Fencing	6,538	14.8
Buildings	2,546	5.8
Land and improvements	32,508	73.7
Plant	2,767	6.3
Sheep	7,827	17.7
Cattle	834	1.9
Other stock	201	0.4
Total stock	8,862	20.0
Total	44,137	100.0

The value of land and improvements represented nearly three-quarters of the total investment, while stock accounted for a further one-fifth. On the sheep

only properties cattle represented less than 1 per cent of capital.

The frequency distribution of capital is shown in Table No. 80.

The average capital per sheep carried was about £14 10s. 0d., including the value of stock and plant.

The value of land and improvements per sheep carried was about £10 15s. 0d.

TABLE No. 80

FREQUENCY DISTRIBUTION OF CAPITAL : PASTORAL ZONE

Capital	Properties
£10,000 and less than £20,000	7
£20,000 " " " £50,000	16
£50,000 " " " £100,000	5
£100,000 and more	2
Average	£44,137

Returns

The sheep enterprise, i.e. returns from wool and sheep trading, was almost the sole source of returns.

TABLE No. 81

AVERAGE GROSS RETURNS PER PROPERTY :
PASTORAL ZONE

Item	Sheep only		Total	
	29 properties £ %		30 properties £ %	
Wool	12,879	86.8	12,626	85.1
Sheep trading	1,716	11.6	1,665	11.2
Sheep enterprise	14,595	98.4	14,291	96.3
Beef cattle	224	1.5	528	3.6
Other returns	11	0.1	10	0.1
Total	14,830	100.0	14,829	100.0

The breeding surplus group was even more heavily dependent than other properties on sheep and wool as a source of returns, obtaining 82.3 per cent from wool and 17 per cent from sheep trading—a total of 99.3 per cent from the sheep enterprise.

Returns from Wool

The average price received for wool was 79.25d. per lb. This, when multiplied by the average cut per head of 11.4 lb., gives an average return from wool per sheep (and lamb) shorn of £3 16s. 0d. The lowest price received was 63d. and the highest 95d. per lb.

TABLE No. 82

FREQUENCY DISTRIBUTION OF WOOL PRICES :
PASTORAL ZONE

Price per lb.	Properties
60d. and less than 70d.	8
70d. " " " 80d.	14
80d. " " " 90d.	5
90d. and more	3

It will be seen that wool prices on 22 properties were below the average. The top eight properties included those with the largest flocks.

The range of gross returns from wool per sheep and lamb shorn is wider because it introduces the second factor of cut per head.

Though the average return was £3 16s. 0d. per sheep, the majority of properties fell within the range £2 10s. 0d. to £3 10s. 0d. The return refers to sheep and lambs shorn and is, of course, influenced by the proportion of lambs included in shearings. A total of 19 properties, none of which received more than £4 per head from wool, shorn lambs.

TABLE No. 83

FREQUENCY DISTRIBUTION OF RETURNS
FROM WOOL PER SHEEP SHORN : PASTORAL
ZONE

Returns from wool		Properties
£2 10s. 0d. and less than £3	£3	10
£3 " " " £3 10s. 0d.	£3 10s. 0d.	9
£3 10s. 0d. " " " £4	£4	5
£4 " " " £4 10s. 0d.	£4 10s. 0d.	1
£4 10s. 0d. " " " £5	£5	3
£5 and more		2

The average is raised by the fact that several of the largest flocks were in the groups with returns above £4 10s. 0d. per sheep.

Returns from the Sheep Enterprise

Returns per sheep carried from the whole sheep enterprise take into account sheep trading results, in addition to returns from wool. Three properties made losses on their sheep trading accounts. This was the case on both the dry sheep properties and on one other whose losses exceeded the natural increase.

The average return per sheep carried was £4 14s. 0d., ranging from £2 8s. 0d. up to £7 0s. 0d.

TABLE No. 84

FREQUENCY DISTRIBUTION OF RETURNS PER
SHEEP FROM THE SHEEP ENTERPRISE :
PASTORAL ZONE

Returns per sheep carried	Properties
£2 and less than £3	3
£3 " " " £4	8
£4 " " " £5	11
£5 " " " £6	6
£6 " " " £7	1
£7 and more	1

Allowing for the difference in number between sheep shorn and carried, the average return from sheep trading per sheep carried was about 15s. However, only two properties exceeded £1 per head.

Returns from Beef

Returns from beef cattle were a very small proportion of gross returns on the sheep only properties, being less than 1.5 per cent. About half the properties received no return at all from this source.

The exceptional case was the sheep-cattle property located near Marree, whose income from beef comprised 60 per cent of total returns.

Other Returns

Returns from all other sources were negligible. Such small amounts as were received were from the sale of eggs and pigs and some agistment.

Costs

The costs shown in Table No. 85 include all cash costs and depreciation. The allowances for operator's labour and interest on capital are introduced into the analysis at a later stage.

Costs ranged from £700 to just over £47,000, with an average of £6,574. However, nine properties had costs of less than £2,000 and 22 had costs of less than £5,000. Again the average is raised by the few very large properties.

TABLE No. 85
COST STRUCTURE : PASTORAL ZONE

Item	Cost			
	£	£	%	%
Labour				
Wages	1,382		21.0	
Contracts	53		0.8	
Shearing and crutching	567		8.6	
Stores and rations	174		2.7	
Total		2,176		33.1
Materials				
Fuel	392		6.0	
Fertilizer and seed	13		0.2	
Fodder	97		1.5	
Packs, bags and twine	150		2.3	
Drenches, dips etc.	15		0.2	
Shearing supplies	3		0.0	
Vermin destruction	20		0.3	
Maintenance : plant improvements	456		6.9	
	1,174		17.9	
Total		2,320		35.3
Services				
Freight and cartage	168		2.6	
Marketing : wool	555		8.4	
stock	130		2.0	
Rates and taxes	75		1.2	
Insurance	82		1.2	
Droving and agistment	1		0.0	
Miscellaneous	197		3.0	
Total		1,208		18.4
Rent		84		1.3
Depreciation		786		11.9
Total costs		6,574		100.0

TABLE No. 86
FREQUENCY DISTRIBUTION OF COSTS :
PASTORAL ZONE

Total costs	Properties
Less than £1,000	2
£1,000 and less than £2,000	7
£2,000 " " " £5,000	13
£5,000 " " " £10,000	3
£10,000 " " " £20,000	3
£20,000 " " " £50,000	2

Labour

Labour accounted for about one-third of all costs, and wages paid to hired labour was the biggest component. The permanent labour force was made up as follows :

Owner	30
Family	18
Hired labour	45

The distribution of the work force over the 29 sheep only properties was as follows :

- (i) Eight properties were run by the owner, handling an average of 1,136 sheep,
- (ii) Six properties were run by the owner with one hired hand, averaging 1,068 sheep per labour unit,
- (iii) Five properties were run by the owner with one member of the family, handling an average of 784 sheep per labour unit,
- (iv) Four properties were run by the owner with two or more hired hands, averaging 1,004 sheep per labour unit,
- (v) Two properties were run by the owner with two or more members of the family, averaging 857 sheep per labour unit,
- (vi) Four properties were run by the owner with hired and family labour, totalling three labour units or more, handling 1,060 sheep per labour unit.

The average number of sheep handled per labour unit over the sheep only properties was 1,005. The majority, however, handled fewer than 1,000 sheep per labour unit.

TABLE No. 87

FREQUENCY DISTRIBUTION OF SHEEP PER LABOUR UNIT : PASTORAL ZONE

Sheep handled	Properties
Less than 1,000	17
1,000 and less than 1,500	8
1,500 " " " 2,000	4
2,000 " " " 2,500	1

Materials

Materials used in the repair of improvements and plant formed the greater part of all material costs, and were almost 25 per cent of total costs. The only other items of real importance were fuel and woolpacks.

Services

Nearly half the costs under this heading were for wool marketing, and of this almost 75 per cent represented brokers' charges and 25 per cent freight. Freight and cartage on other items amounted to about 3 per cent of total costs.

The miscellaneous items refer to such things as travelling expenses, telephone, accountancy and subscriptions to organizations.

Rent

Only two properties were entirely freehold. The remainder held at least some portion of their holding on lease from the Crown. However, the average rent paid was only £84 per annum, or about 1.3 per cent of total costs.

Interest

The average interest payment was £57 per property, which, capitalized at 5 per cent, represents an average debt of £1,140. However 16, or a little more than half the properties, did not pay any interest.

Costs Per Sheep

Excluding the sheep-cattle property, the total costs per head of sheep carried averaged £2 2s. 0d. and were within the range from £1 to £3 2s. 0d., distributed as shown in Table No. 88.

TABLE No. 88

FREQUENCY DISTRIBUTION OF COSTS PER HEAD : SHEEP ONLY PROPERTIES : PASTORAL ZONE

Costs per head	Properties
£1 and less than £1 10s. 0d.	9
£1 10s. 0d. and less than £2	7
£2 " " " £2 10s. 0d.	8
£2 10s. 0d. " " " £3	4
£3 and over	1
Total	29

Income

Income can be measured at various levels. The first measure is farm income, which is the difference between total returns and total costs.

Farm Income

The average farm income for all properties is shown in Table No. 89.

The range varied from nearly £1,000 to just under £40,000, with an average of £8,255. On 17 properties income was less than £5,000, but on none was it less than £1,000.

TABLE No. 89

AVERAGE FARM INCOME : PASTORAL ZONE

Gross returns	£ 14,829
Total costs	6,574
Farm income	8,255
Costs as % of returns	44.33%

Distribution of farm income is shown in Table No. 90.

TABLE No. 90
FREQUENCY DISTRIBUTION OF FARM INCOME : PASTORAL ZONE

Farm income		Properties
£1,000 and less than	£2,000	4
£2,000	£5,000	13
£5,000	£10,000	7
£10,000	£20,000	2
£20,000	£40,000	4

Farm Income Per Sheep

The average farm income per sheep carried on the 29 sheep only properties was £2 14s. 0d.

Distribution of returns, costs and farm income per sheep on the 29 properties was as shown in Table No. 91.

TABLE No. 91
FREQUENCY DISTRIBUTION OF RETURNS, COSTS, AND FARM INCOME PER SHEEP : SHEEP ONLY PROPERTIES : PASTORAL ZONE

Range	Returns	Costs	Income
£1 and less than	£2	16	10
£2 " " "	£3	12	8
£3 " " "	£4	1	10
£4 " " "	£5	—	1
£5 " " "	£6	—	—
£6 and more	—	—	—
Average	£4 16s. 0d.	£2 2s. 0d.	£2 14s. 0d.

Labour and Management Income

Deducting a standard charge of 5 per cent on capital from farm income gives labour and management income. Table No. 92 shows the average labour and management income for the 30 properties.

TABLE No. 92
AVERAGE LABOUR AND MANAGEMENT INCOME : PASTORAL ZONE

Item	£
Returns	14,829
Costs	6,574
Farm income	8,255
Less 5% charge on capital	2,206
Labour and management income	6,049

TABLE No. 93

FREQUENCY DISTRIBUTION OF LABOUR AND MANAGEMENT INCOME : PASTORAL ZONE

Labour and management income		Properties
Less than	£658	5
£658 and less than	£1,000	2
£1,000 " " "	£2,000	4
£2,000 " " "	£5,000	10
£5,000 " " "	£10,000	5
£10,000 " " "	£20,000	1
£20,000 " " "	£50,000	3

Return to Capital and Management

Return to capital and management is obtained by deducting from farm income an allowance of £658 per annum for the operator's labour. When this return is expressed as a percentage of the total capital the rate of return on capital is obtained.

TABLE No. 94
AVERAGE RATE OF RETURN TO CAPITAL AND MANAGEMENT : PASTORAL ZONE

Item	£
Returns	14,829
Costs	6,574
Farm income	8,255
Allowance for operator's labour	658
Return to capital and management	7,597
Rate of return to capital and management	17.21%

The average rate of return for the 30 properties was 17.21 per cent ranging from 3.37 per cent to 43.10 per cent.

TABLE No. 95
FREQUENCY DISTRIBUTION OF RATE OF RETURN TO CAPITAL AND MANAGEMENT : PASTORAL ZONE

Rate of return	Properties
Less than 5%	5
5% and less than 10%	4
10% " " "	13
20% " " "	6
30% " " "	1
40% and more	1

There were five properties which did not show a rate of return of 5 per cent on the capital value of the investment. These were, of course, the same five properties which, after allowing a charge of 5 per cent against capital, could not provide a labour and management income of £658.

There were various reasons for the low rate of return on these properties. Two were very small units and, although their productivity was above average, they could not carry the labour charge of £658 (in both cases more than 30s. per sheep) and still show a return of 5 per cent on capital.

One notable feature was that all five averaged less than 70d. for their wool, although all were on Merinos. With one exception their wool return per sheep was under £3.

In general the financial results of the whole 30 properties could not be regarded as other than

satisfactory. Perhaps the point most worthy of notice is the relatively low price received for Merino-type wool on a number of properties—eight averaged less than 70d. In South Australia the lower prices were offset by high cuts, but the three properties with an average of more than 90d. also had high cuts, as follows :

Property 1. Cut per head 14·3 lb., average price 90·4d.

Property 2. Cut per head 13·4 lb., average price 92·0d.

Property 3. Cut per head 11·7 lb., average price 95·1d.

This is not advanced as conclusive evidence, but it does indicate that the high cuts need not necessarily be associated with low average prices.

Part V: Comparison of Zone Results

The structure of the sheep industry in South Australia has undergone a considerable change in the past 20 years. In the early 'thirties the distribution of the State's sheep in the three zones was :

Pastoral	31 per cent.
Wheat-sheep	42 per cent.
High Rainfall	27 per cent.

With the development of the high rainfall zone and the widespread establishment of improved pastures there, its sheep numbers have almost doubled. Even more spectacular has been the increase in the wheat-sheep zone, following the closer integration of the cropping and livestock phases of farming in the area. In the pastoral zone, however, the general level of sheep numbers has not changed, so that by 1954-55 the structure was :

Pastoral	16 per cent.
Wheat-sheep	52 per cent.
High Rainfall	32 per cent.

It is in the light of this that the results presented in the previous section of the report should be viewed.

In this part of the report the various physical and financial aspects of the industry in the three zones are compared. The discussion is in terms of averages—frequency distributions for every measure used will be found in the preceding chapters. Any conclusion must be somewhat tentative since they are based on one year's figures only.

The land use in the three zones was of course markedly different. In view of what has just been said about the changing structure of the industry in South Australia, property-owners' estimates of the potential for development are of considerable interest. In the pastoral zone the opinion was that there is little scope for development with present technical knowledge, and sheep numbers in that zone are therefore likely to remain close to their present figure. In the wheat-sheep zone most of the suitable land is already cleared and in use for crops. Here the main prospect appears to lie in the

extension of ley farming, which could bring about quite a substantial increase in sheep numbers.

In the high rainfall zone the sample properties were already well improved and rapid progress was being made towards full development. It is apparent that the great potential in this zone lies in the hitherto waste land which is only now being brought into production through the application of trace elements. What this will mean in terms of sheep is yet to be determined, but it is already evident that the shift in emphasis from the pastoral to the high rainfall zone will continue, though most sheep will still be run in the wheat-sheep zone.

The size of the properties again reflects the differences between the zones. They were smallest in the high rainfall zone (average 1,010 acres) larger in the wheat-sheep zone (2,491 acres) and greatest in the pastoral zone (61,000 acres). The difference in flock size was much less marked, reflecting the levels of carrying capacity of the land. In the high rainfall zone the average flock was 1,057 (more than one sheep per acre) in the wheat-sheep zone it was 946 (slightly better than one sheep to three acres, although with considerable cereal production as well) while in the pastoral zone the average flock size was 3,023 (about one sheep to 20 acres).

Enterprises

In the pastoral zone all were sheep only properties with one exception which ran cattle and sheep. The situation was as clear-cut in the wheat-sheep zone, where the vast majority were sheep-cereal properties with a few sheep only and sheep-dairying properties. In the high rainfall zone, however, there was no one predominant type; sheep only, sheep-cereal, sheep-dairying and sheep-other crops properties were all encountered.

The nature of the sheep enterprises within the different zones show broad similarities.

TABLE No. 96
SHEEP ENTERPRISES : BY ZONES

Sheep enterprise	High rainfall	Wheat-sheep	Pastoral
Merino—			
Dry sheep	4	3	2
Breeding replacements	14	39	7
Breeding surplus	—	25	20
Breeding crossbred lambs	1	10	1
Crossbred—			
Woolgrowing	2	—	—
Fat lamb production	8	1	—
Merino/crossbred	1	2	—
Total	30	80	30

First, all properties in the pastoral zone and all but three in the wheat-sheep zone ran Merino sheep ; even in the high rainfall zone, where improved pastures and most reliable seasons could be expected to encourage the production of fat lambs from crossbred ewes, 19 of the 30 properties ran Merinos. In the second place, a big proportion of properties in each zone produced surplus young sheep. There was, however, a difference in the type of surplus sheep produced ; in the pastoral zone they were young Merinos suitable chiefly for woolgrowing ; in the wheat-sheep zone some properties had surplus young Merinos while others had bred crossbred lambs for sale as fats ; and in the high rainfall zone all surplus producers were selling crossbred lambs.

Breeding and Lambing

The general production of surplus sheep is shown even more clearly in Table No. 97.

TABLE No. 97
BREEDING, LAMBING AND FLOCK REPLACEMENT : BY ZONES

	High rainfall	Wheat-sheep	Pastoral
	%	%	%
Ewes mated as a proportion of total flock	39	45	41
Lambs marked as a proportion of ewes mated	79	68	67
Lambs marked as a proportion of total flock	34	33	27
Deaths and rations as a proportion of total flock	6	8	6
Net natural increase	28	25	21

The significance of the figures can be appreciated if it is realized that a proportion of lambs to total flock of 20 per cent is ample for replacements. The actual figures were 34 per cent for the high rainfall zone, 33 per cent for the wheat-sheep zone and 27 per cent for the pastoral zone. With each zone producing surplus young sheep at a time when properties were regarded as fully stocked, there was no particular demand for young wethers as woolcutters and in 1952-53 many were sold as fats at prices well below those prevailing for young store sheep in the eastern States. At the same time the high net natural increase figures meant that there was a large turn-off of sheep and, even at the prices obtained, a substantial profit from sheep trading.

Returns from Wool and Sheep

There were quite marked differences between the zones in cut per head of sheep and lambs shorn and in the price received for wool. The analysis is in terms of sheep and lambs shorn as it was not always possible to separate shearings of adult sheep and lambs in the survey data ; and it was even more difficult to separate lambs' wool on account sales when it was not described as such. The influence of lamb shearings on wool returns, however, is very much the same in the three zones.

The analysis of returns per sheep from the whole sheep enterprise (*see* Table No. 98) includes the profit or loss from sheep trading as well as returns from wool. It will be noted that the number of sheep shorn was in each case higher than the average number carried, but as the ratio was similar for the three zones it does not invalidate the comparison. It does mean, however, that the return from sheep trading cannot be obtained by deducting wool returns from the total.

The pastoral zone had by far the highest cut per head, more than 1½ lb. above the wheat-sheep zone and 2½ lb. above the high rainfall zone.

In price the high rainfall zone was 9d. per lb. better than the pastoral zone and 16d. better than the wheat-sheep zone. When the two factors of cut per head and price per lb. are combined to give wool return per head, the higher cut of the pastoral zone more than offset the better price of the high rainfall zone so that the pastoral zone was 10s. per sheep better off than the high rainfall zone and 16s. better off than the wheat-sheep zone.

TABLE No. 98
RETURNS PER SHEEP FROM THE SHEEP ENTERPRISE : BY ZONES

Item	Unit	High rainfall	Wheat-sheep	Pastoral
Sheep carried	no.	1,057	946	3,023
Sheep and lambs shorn	no.	1,217	1,028	3,364
Wool produced	lb.	10,865	10,023	38,240
Cut per head	lb.	8.9	9.7	11.4
Price per lb.	d.	88.3	72.6	79.3
Return per sheep from wool	£ s. d.	3 5 10	2 19 0	3 15 3
Return per sheep from the sheep enterprise	£ s. d.	4 10 2	3 14 0	4 14 0

Finally, on the basis of returns from the sheep enterprise, the pastoral zone still had the best result (£4 14s. 0d. per head). The difference between pastoral and high rainfall zones, however, was less than in the case of wool returns as a result of the better sheep trading return achieved in the high rainfall zone. On the other hand the wheat-sheep zone earned £1 per head less than the pastoral zone.

Returns from Associated Enterprises

Since the boundaries of the zones were originally defined in accordance with cropping activities, it follows that in the wheat-sheep zone a substantial part of returns is derived from cropping. The structure of returns in the three zones is compared in Table No. 99.

TABLE No. 99
STRUCTURE OF RETURNS : BY ZONES

Source of returns	High rainfall	Wheat-sheep	Pastoral
	%	%	%
Sheep	78.6	44.2	96.3
Cereal cropping	12.0	51.3	—
Beef cattle	0.9	0.1	3.6
Dairying	2.6	3.0	—
Other	5.9	1.4	0.1

In the pastoral zone virtually all returns came from the sheep enterprise ; in the high rainfall zone more than three-quarters came from sheep with the balance from cereals, fruit and vegetable growing, and dairying in that order ; in the wheat-sheep zone cereal cropping contributed more than the sheep enterprise and other enterprises were of minor importance.

The relationship between costs and returns was similar in the three zones. Costs were 47 per cent of returns in the high rainfall zone, 45 per cent in the wheat-sheep zone and 44 per cent in the pastoral zone.

Returns, Costs and Income Per Sheep

The discussion of costs and income per sheep must be confined to sheep only properties and thus it does not provide any basis for comparing the wheat-sheep zone with the other two. In that zone the few sheep only properties can only be regarded as atypical.

TABLE No. 100

RETURNS, COSTS AND INCOME PER SHEEP :
HIGH RAINFALL AND PASTORAL ZONES

Item	High rainfall	Pastoral
	£ s. d.	£ s. d.
Gross returns per sheep	4 16 0	4 14 0
Costs per sheep	2 4 0	2 2 0
Farm income per sheep	2 12 0	2 12 0

It will be noted that in the high rainfall zone returns per sheep on the sheep only properties are 6s. per head (£4 16s. 0d. against £4 10s. 0d.) higher than the average for all properties in the zone (see Table No. 98).

The difference arises partly through chance, as sometimes occurs when dealing with small samples—there were only 11 sheep only properties in the group 30—and partly because even on sheep only properties some returns are derived from minor sidelines.

On the figures shown there is no difference in returns, costs or income per sheep between sheep only properties in the high rainfall and in the pastoral zones of South Australia.

Return on Capital

The most satisfactory measure for comparing the financial results of the three zones is the rate of return shown on the capital investment. This is set out in Table No. 101.

TABLE No. 101
RATE OF RETURN ON CAPITAL: BY ZONES

Item	High rainfall	Wheat-sheep	Pastoral
Returns	£ 6,067	£ 8,014	£ 14,829
Costs	2,851	3,636	6,574
Farm income	3,216	4,378	8,255
Allowance for operator's labour	658	658	658
Return to capital and management	2,558	3,720	7,597
Total capitalization	31,443	27,257	44,137
Rate of return on capital	% 8.1	% 13.6	% 17.2

With 17.2 per cent, the pastoral zone had the highest rate of return; then the wheat-sheep zone with 13.6 per cent and finally the high rainfall zone with 8.1 per cent—less than half the rate in the pastoral zone.

In the pastoral zone land values tend to be low—a reflection of the risks involved in woolgrowing in

semi-arid areas. In a season such as 1952-53, when fleece weights were a record and wool prices were high, big profits on pastoral properties are to be expected. It is in such years that reserves must be built up against future droughts.

It has already been pointed out in Part III that properties whose major enterprise was cereal cropping were more profitable than those concentrating on woolgrowing under the conditions of yield and price prevailing in South Australia in 1952-53. It is largely for this reason that the rate of return was higher in the wheat-sheep zone than in the high rainfall zone.

Conclusion

The report shows the extremely healthy state of the sheep industry in South Australia in 1952-53. Production was at a high level, substantial development was taking place and the financial position of property-owners was sound. It must remain for follow-up surveys being undertaken by the Bureau to study the influence of less favourable seasonal conditions or price situations on sheep properties in the State.

Reports Published Previously :-

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Pastoral Zone

