COSTS AND RETURNS FOR APPLES AND PEARS AT BATLOW—1944/45 AND 1945/46.

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In an attempt to determine the cost of production of apples and pears in the Batlow district, several orchardists in the district kept detailed records of time, labour and materials used in the production of their fruit during the seasons 1944-45 and 1945-46. Results for the first year for nine farms have already been published[*] and results for the following season, together with a comparison of costs for two years, are set out in this article. For the 1945-46 season seven of the original nine farmers continued to participate in the scheme.

It is not proposed to describe the method used in recording and analysing the production costs. A description and discussion of the method used appears in detail in the article referred to above. Results for the 1945-46 season have been calculated on a similar basis with one exception. Cost of cases used in harvesting and transporting the fruit to the Packing House has been calculated on a different basis, which is described later. For comparison of the two years, cost figures for 1944-45 have been adjusted.

Yield.

It was observed from a study of the 1944-45 results that yield was the most important factor affecting the level of costs per case on the nine farms studied. Moreover, production figures for several farms over a number of years showed that yield tended to fluctuate on each farm from year to year, quite markedly in the case of apples, and somewhat less in the case of pears. These fluctuations in production do not necessarily correspond to seasonal conditions as all farms were not in phase. However, for most of the farms studied, 1944-45 was a low-yield season and 1945-46 a high-yield season for apples. The one exception to this was farm No. 4, which obtained a fairly satisfactory yield in both years.

Difference in yield of pears for the two seasons was not so marked as was yield of apples. On most of the farms studied yield of pears either remained at the low 1944-45 level or fell off from the higher 1944-45 to the low 1945-46 level. Farm No. 1 alone obtained a higher yield per tree in 1945-46.

Yields of apples and pears for the two seasons are set out in Table I.

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[*] "Review of Marketing and Agricultural Economics," June. 1947. Vol 15., No. 6.

TABLE I.

Yield of Apples and Pears on Seven Orchards at Batlow, 1944-45 and 1945-46.

| Farm No. | Apples. | | Pears. | |
| | No. packed cases per bearing tree. | | No. packed cases per bearing tree. | |
	1944-45.	1945-46.	1944-45.	1945-46.
1	0.2	5.0	1.6	2.5
2	0.9	6.7	5.4	1.1
3	0.2	3.8	1.2	1.2
4	2.4	2.5	4.3	1.1
5	0.9	0.4	2.7	2.1
6	......	3.1	0.9	0.5
7	0.6	5.9	0.8	0.9

Labour Costs.

Cost of labour used in growing and harvesting the fruit in 1945-46 was calculated in the same way as for the previous year. That is, the total number of hours spent on each farm operation by each unit of labour for the year was multiplied by the hourly wage rate to obtain the cost of that operation. The value of the operator's actual labour has been included, based on an arbitrary rate of £312 per annum.

Costs have been summarised as preharvesting, harvesting and general costs. As the 1945-46 crop was, in general, a heavy one, harvesting costs comprised a large proportion of the total labour costs. Cost of labour used in the making of cases has not been included in the labour harvesting estimate. Since cases used for harvesting and for transporting the fruit to the Packing House may be made on the farm or obtained from the Packing House for a hire charge, it has been impossible to keep track of how many farm-made cases and how many made-up cases have been used on each farm. Therefore, any labour used in making cases on the farm has been excluded and the hire charge of 1d. per case in 1944-45 and 1½d per case in 1945-46 has been charged as the net cost of the use of the cases.

For the 1945-46 season, the cost of labour per bearing apple tree for the seven orchards studied ranged from 3.0 shillings to 10.2 shillings (Table IIA). For pears, the range was from 2.8 shillings to 7.0 shillings per bearing tree. Labour cost per packed case ranged from 1.3 to 8.3 shillings for apples, 2.2 to 8.9 shillings for pears. (Table IIA).

TABLE II.

Labour Cost of Growing and Harvesting Apples on 7 Farms at Batlow, 1945-46.
(Shillings.)

	1.		2.		3.		4.		5.		6.		7.	
	Cost/ bearing tree.	Cost/ packed case.	Cost/ bearing tree.	Cost/ packed case.	Cost/ bearing tree.	Cost/ packed case.	Cost/ bearing tree.	Cost/ packed case.	Cost/ bearing tree.	Cost/ packed case.	Cost/ bearing tree.	Cost/ packed case.	Cost/ bearing tree.	Cost/ packed case.
Preharvesting	2·88	0·57	1·39	0·20	2·28	0·60	3·46	1·37	0·55	1·52	2·44	0·79	2·28	0·38
Harvesting	4·63	0·92	4·71	0·71	2·04	0·53	2·55	1·01	1·35	3·72	2·15	0·70	3·48	0·59
General—Total maintenance, machinery and improvements.	0·22	0·04	0·09	0·01	0·25	0·07	0·12	0·05	0·27	0·74	0·20	0·06	0·29	0·05
General Orchard } Miscellaneous General }	2·47	0·49	2·68	0·40	0·68	0·18	2·89	1·15	0·90	2·47	2·62	0·85	1·63	0·27
Total	10·2	2·0	8·9	1·3	5·3	1·4	9·0	3·6	3·1	8·5	7·4	2·4	7·7	1·3

TABLE IIA.

Labour Cost of Growing and Harvesting Pears on 7 Farms at Batlow, 1945-46.
(Shillings.)

	1.		2.		3.		4.		5.		6.		7.	
	Cost/ bearing tree.	Cost/ packed case.	Cost/ bearing tree.	Cost/ packed case.	Cost/ bearing tree.	Cost/ packed case.	Cost/ bearing tree.	Cost/ packed case.	Cost/ bearing tree.	Cost/ packed case.	Cost/ bearing tree.	Cost/ packed case.	Cost/ bearing tree.	Cost/ packed case.
Preharvesting	1·17	0·57	1·63	1·46	2·57	2·13	2·45	2·29	2·71	1·27	2·22	4·37	1·51	1·67
Harvesting	2·21	0·87	0·97	0·87	1·07	0·88	1·42	1·28	2·46	1·16	0·48	0·95	0·48	0·53
General—Total maintenance, machinery and improvements.	0·22	0·08	0·09	0·07	0·23	0·20	0·11	0·10	0·28	0·13	0·19	0·37	0·29	0·32
General Orchard } Miscellaneous General }	1·64	0·64	1·66	1·49	0·51	0·43	1·95	1·79	1·58	0·74	1·64	3·22	0·52	0·58
Total	5·5	2·2	4·4	3·9	4·4	3·6	5·9	5·3	7·0	3·3	4·5	8·9	2·8	3·1

Apples.

From a comparison of the results for the two years, it may be observed that labour costs per bearing apple tree on farms, 1, 2, 3, and 6 were substantially higher for 1945-46 than for the previous year (Table V). The increase in total labour cost per bearing tree was in every case due to larger harvesting labour cost. The extent of the increase in harvesting cost depended on the extent of increase in yield. For farm No. 4 the yield was only, slightly higher and harvesting labour cost was correspondingly slightly higher. Although yield of apples, and hence harvesting cost on farm No. 7 was considerably higher during 1945-46, total labour cost per bearing tree remained at the level of the previous year. This was due to the fact that, being a small property, the greater part of the labour used was supplied by the farm operator himself. Although some extra labour was required to cope with the larger crop, the extra labour for harvesting was supplied mainly by the operator who, therefore, spent less time on other jobs such as maintenance and general farm work.

Comparison of labour costs for apples on each farm on a packed case basis for the two years shows a considerable drop in 1945-46 costs on all except farm No. 5. In spite of the increased labour cost per tree, the higher yields obtained resulted in greatly reduced costs per case. The relative decrease in cost on each farm corresponded to the extent of increase in yield. Smallest decrease in labour cost per case was for farm No. 4 where the 1945-46 yield was only slightly higher than for the previous season. The lower yield of apples obtained on farm No. 5 was reflected in the higher cost per packed case.

The largest decrease in labour cost per packed case of apples was on farm No. 1, the increase in yield amounting to 4.8 bushels per tree over the previous season's yield, when the crop was practically a failure, and the decrease in cost per packed case amounting to 28.9 shillings.

This relationship between yield and labour cost per packed case is illustrated in Fig. I. As yield increases labour cost per packed case decreases, rapidly at first and then at a gradually decreasing rate.

Pears.

Pear crops for the 1944-45 season yielded far more satisfactorily than did the apple crops. During the following season, however, yields were generally low. On one farm only was production per tree appreciably higher for the 1945-46 season.

Levels of labour cost for pears, as for apples, depended on the yield. In general, higher yields meant higher costs per bearing tree due, mainly, to more labour required for harvesting. This did not apply to farm No. 1 where labour costs per tree were higher in spite of lower yield during 1944-45 compared with 1945-46 (Table Va). This was due to the fact that in 1944-45 considerably more labour was used for pruning and spraying. It should be realised that during these years labour shortage on the farms

TABLE III.—APPLES.

Field Power Cost of Growing and Harvesting Apples on 7 Farms at Batlow—1945-46.

(Shillings.)

	1.		2.		3.		4.		5.		6.		7.	
	Cost/bearing tree.	Cost/packed case.	Cost/bearing tree.	Cost/packed case.	Cost/bearing tree.	Cost/packed case.	Cost/bearing tree.	Cost/packed case.	Cost/bearing tree.	Cost/packed case.	Cost/bearing tree.	Cost/packed case.	Cost/bearing tree.	Cost/packed case.
Preharvesting	0·64	0·12	0·82	0·12	0·69	0·18	0·81	0·32	0·47	1·30	1·48	0·48	0·40	0·06
Harvesting	0·21	0·04	0·26	0·03	0·41	0·11	0·22	0·08	0·40	1·10	0·62	0·20	...	...
General	0·84	0·16	0·71	0·01	0·10	0·03	...	...	0·21	0·57	0·47	0·15	0·04	0·04
Total	1·7	0·3	1·8	0·2	1·2	0·3	1·0	0·4	1·1	3·0	2·6	0·8	0·4	0·1

TABLE IIIA.—PEARS.

Field Power Cost of Growing and Harvesting Pears on 7 Farms at Batlow—1945-46.

(Shillings.)

	1.		2.		3.		4.		5.		6.		7.	
	Cost/bearing tree.	Cost/packed case.	Cost/bearing tree.	Cost/packed case.	Cost/bearing tree.	Cost/packed case.	Cost/bearing tree.	Cost/packed case.	Cost/bearing tree.	Cost/packed case.	Cost/bearing tree.	Cost/packed case.	Cost/bearing tree.	Cost/packed case.
Preharvesting	0·33	0·13	0·65	0·57	0·56	0·47	0·74	0·67	0·34	0·16	0·26	0·13	0·33	0·37
Harvesting	0·14	0·05	0·04	0·03	0·30	0·26	0·23	0·13	1·57	0·74	0·11	0·26	0·27	0·30
General	0·84	0·33	0·71	0·63	0·10	0·09	...	...	0·21	0·10	0·46	0·92	0·04	0·04
Total	1·3	0·5	1·4	1·2	1·0	0·8	1·0	0·8	2·1	1·0	0·8	1·3	0·6	0·7

TABLE IV.—APPLES.

Cost of Materials and Miscellaneous Charges for Growing and Harvesting Apples on 7 Farms at Batlow, 1945-46.

(Shillings.)

	1.		2.		3.		4.		5.		6.		7.	
	Cost/ bearing tree.	Cost/ packed case.	Cost/ bearing tree.	Cost/ packed case.	Cost/ bearing tree.	Cost/ packed case.	Cost/ bearing tree.	Cost/ packed case.	Cost/ bearing tree.	Cost/ packed case.	Cost/ bearing tree.	Cost/ packed case.	Cost/ bearing tree.	Cost/ packed case.
Preharvesting	2·55	0·50	1·43	0·21	1·26	0·33	1·57	0·62	1·44	3·97	1·43	0·47	3·46	0·59
Harvesting	0·96	0·19	2·38	0·36	1·15	0·30	2·56	1·01	0·82	2·24	0·94	0·30	1·86	0·32
*General—Current	1·42	0·28	1·71	0·26	1·52	0·40	0·98	0·39	1·54	4·24	0·26	0·09	1·01	0·17
Overhead	2·61	0·52	1·67	0·25	1·62	0·42	2·60	1·03	2·30	6·33	2·45	0·80	2·22	0·38
Total	7·5	1·5	7·2	1·1	5·6	1·5	7·7	3·1	6·1	16·8	5·1	1·7	8·6	1·5

TABLE IVA.—PEARS.

Cost of Materials and Miscellaneous Charges for Growing and Harvesting Pears on 7 Farms at Batlow, 1945-46.

(Shillings.)

	1.		2.		3.		4.		5.		6.		7.	
	Cost/ bearing tree.	Cost/ packed case.	Cost/ bearing tree.	Cost/ packed case.	Cost/ bearing tree.	Cost/ packed case.	Cost/ bearing tree.	Cost/ packed case.	Cost/ bearing tree.	Cost/ packed case.	Cost/ bearing tree.	Cost/ packed case.	Cost/ bearing tree.	Cost/ packed case.
Preharvesting	2·03	0·80	1·43	1·28	0·92	0·76	1·39	1·25	0·48	0·23	0·54	1·06	2·84	3·15
Harvesting	0·44	0·17	1·40	1·25	0·39	0·33	4·04	3·64	3·28	1·54	0·54	1·05	0·15	0·16
*General—Current	1·42	0·56	1·61	1·44	1·52	1·26	0·99	0·89	1·54	0·72	0·26	0·51	1·01	1·12
Overhead	1·17	0·46	1·67	1·50	1·62	1·34	2·62	2·36	2·30	1·08	2·45	4·80	2·22	2·47
Total	5·1	2·0	6·1	5·5	4·5	3·7	9·0	8·1	7·6	3·6	3·8	7·4	6·2	6·9

* Excluding Feld Power Unit Costs.

TABLE V.—APPLES.

Total Cost of Growing and Harvesting Apples on 7 Orchards at Batlow, 1944-45, 1945-46.

Farm No.	Labour				Field Power				Materials and Miscellaneous Costs.				Total.			
	Cost per bearing tree.		Cost per packed case.		Cost per bearing tree.		Cost per packed case.		Cost per bearing tree.		Cost per packed case.		Cost per bearing tree.		Cost per packed case.	
	1944-45.	1945-46.	1944-45.	1945-46.	1944-45.	1945-46.	1944-45.	1945-46.	1944-45.	1945-46.	1944-45.	1945-46.	1944-45.	1945-46.	1944-45.	1945-46.
1	5·1	10·2	30·9	2·0	1·8	1·7	10·9	0·3	6·4	7·1	38·4	1·4	13·3	19·5	80·2	3·8
2	3·7	8·9	4·2	1·3	0·9	1·8	1·1	0·2	5·7	7·2	6·5	1·1	10·2	17·9	11·8	2·6
3	2·1	5·1	13·2	1·4	0·9	1·2	5·7	0·3	3·0	5·6	18·7	1·5	5·9	11·9	37·7	3·2
4	9·6	9·0	4·0	3·6	1·4	1·0	0·6	0·4	8·5	7·6	3·5	3·0	19·5	17·7	8·1	7·1
5	3·0	3·0	3·3	8·3	1·0	1·1	1·1	3·0	5·2	6·1	5·8	16·8	9·2	10·2	10·2	28·1
6	5·2	7·4	...	2·4	2·9	2·6	...	0·8	5·8	5·1	...	1·7	13·8	15·1	...	4·9
7	7·5	7·6	13·1	1·3	1·9	0·4	3·4	0·6	4·1	8·6	7·1	1·5	13·5	16·6	23·6	2·9

TABLE VA.—PEARS.

Total Cost of Growing and Harvesting Pears on 7 Orchards at Batlow, 1944-45, 1945-46.

Farm No.	Labour				Field Power				Materials and Miscellaneous Costs.				Total.			
	Cost per bearing tree.		Cost per packed case.		Cost per bearing tree.		Cost per packed case.		Cost per bearing tree.		Cost per packed case.		Cost per bearing tree.		Cost per packed case.	
	1944-45.	1945-46.	1944-45.	1945-46.	1944-45.	1945-46.	1944-45.	1945-46.	1944-45.	1945-46.	1944-45.	1945-46.	1944-45.	1945-46.	1944-45.	1945-46.
1	9·8	5·5	6·1	2·2	1·8	1·3	1·2	0·5	6·9	4·9	4·3	1·9	18·5	11·5	11·6	4·7
2	7·7	4·3	1·4	3·9	2·2	1·4	0·4	1·2	15·8	6·1	3·0	5·5	25·7	11·8	4·8	10·6
3	4·4	4·3	3·6	3·5	1·1	1·0	0·9	0·8	4·6	4·5	3·8	3·7	10·1	9·8	8·3	8·0
4	13·6	5·9	3·2	5·3	1·6	1·0	0·4	0·8	9·1	8·8	2·1	8·0	24·3	15·9	6·1	14·2
5	5·5	7·0	2·1	3·3	2·3	2·1	0·9	1·0	6·8	7·6	2·6	3·6	14·6	16·7	5·4	7·9
6	6·9	4·5	8·1	8·9	4·3	0·8	5·0	1·3	6·5	3·8	7·5	7·4	17·7	9·1	20·6	17·6
7	6·4	2·8	7·9	3·1	1·5	0·6	1·9	0·7	4·4	6·2	5·4	6·9	12·2	9·6	15·2	10·7

has been in many cases extremely acute. As a result, such opera-
tions as pruning and spraying have often not been carried out to the
extent desired. In the case of farm No. 1 labour for pruning,
spraying, etc., was evidently available, and full use made of it.

Labour costs per packed case of pears were higher in 1945-46
on those farms where yield had declined, and lower where yield
was higher. However, since fluctuations in yield for the two years
were generally not wide, differences in costs were correspondingly
not great. The relationship between yield and cost per packed case
for pears was similar to that for apples, except that the distribu-
tion tended to fall within narrow limits.

FIG. I.
THE RELATIONSHIP OF
LABOUR COST OF GROWING AND
HARVESTING APPLES
TO
YIELD, PER TREE, AT BATLOW, N.S.W.
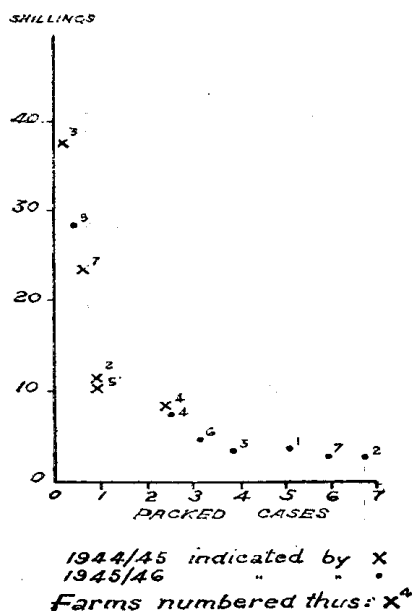
FIG. II.
THE RELATIONSHIP OF
FIELD POWER COST OF GROWING AND
HARVESTING APPLES
TO
YIELD, PER TREE, AT BATLOW, N.S.W.
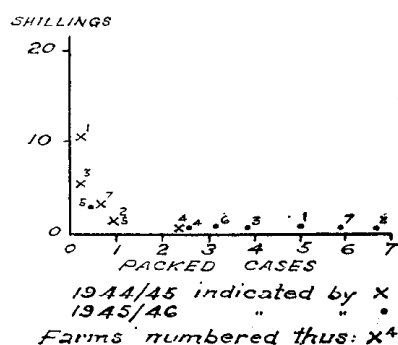

Field Power Cost.

Field power costs for apples ranged from 0.4 shillings to 2.6
shillings per bearing tree for the 1945-46 season (Table III). For
pears the range was from 0.6 shillings to 2.1 shillings per bearing
tree (Table IIIA). Cost of field power units, tractor, truck, spray,
horses, showed small change generally from one year to the next.
Most of the work performed by these units is fairly constant in
spite of the size of the crop, as they are used mainly for pre-
harvesting cultural operations. Comparing costs on each farm for
the two years, field power cost per case was reduced or increased
in proportion to rise or fall in yield (Table VA). Actual field
power costs ranged from 0.2 to 3.0 shillings per packed case of
apples, and from 0.5 to 1.3 shillings per packed case of pears for
the 1945-46 season. The general relation between field power
cost and yield per case is illustrated for apples in Fig. II. Field
power cost per case tended to decrease in proportion to increase in
yield. A similar relationship existed for pears.

Materials and Miscellaneous Costs.

Under this heading were included such items as sprays, fertilizers, cartage of supplies to the farm, interest, depreciation and maintenance charges on machinery and buildings.

For 1945-46 cost of these items per bearing tree ranged from 5.1 to 8.6 shillings for apples, and from 3.8 to 8.8 shillings for pears (Tables IV to IVA). The level of cost per tree did not appear to be affected by yield when comparing the farms for each year or when comparing costs on any one farm for the two years. Expenditure on these items was made on a per tree basis and hence did not vary much with changes in yield. Therefore, the level of these costs per case was directly affected by the level of yield per tree. This relationship is illustrated in Fig. III. In 1945-46 materials and miscellaneous costs per packed case ranged from 1.1 to 16.8 shillings for apples and from 1.9 to 8.0 shillings for pears.

FIG. III.
THE RELATIONSHIP OF
MATERIALS AND MISCELLANEOUS
COSTS FOR GROWING AND
HARVESTING APPLES
TO
YIELD, PER TREE, AT BATLOW, N.S.W.

1944/45 indicated by x
1945/46 " " •
Farms numbered thus: x⁴
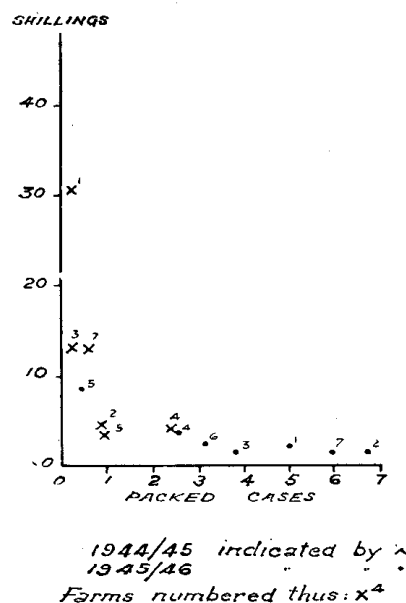
Total Costs.

Apples.

Total cost of growing and harvesting apples in 1945-46 on the seven farms ranged from 10.2 to 19.5 shillings per tree. Total cost per case ranged from 2.6 to 28.1 shillings for apples (Table V). For all farms where yield was higher than the previous year, total costs per bearing tree were higher. However, the increased cost per tree was more than balanced by the effect of increased yield with the result that cost per packed case was considerably reduced, the reduction depending on the extent of the increase in yield.

The relationship between yield of apples and cost per packed case which existed for the farms over the two seasons is illustrated in Fig. IV. With increasing yield cost per case tended to decrease rapidly at first and then at a considerably reduced rate at about the 23 cases yield level.

FIG. IV.

THE RELATIONSHIP OF
TOTAL COST OF GROWING AND
HARVESTING APPLES
TO
YIELD, PER TREE, AT BATLOW, N.S.W.

1944/45 indicated by X
1945/46 - - •
Farms numbered thus : x⁴
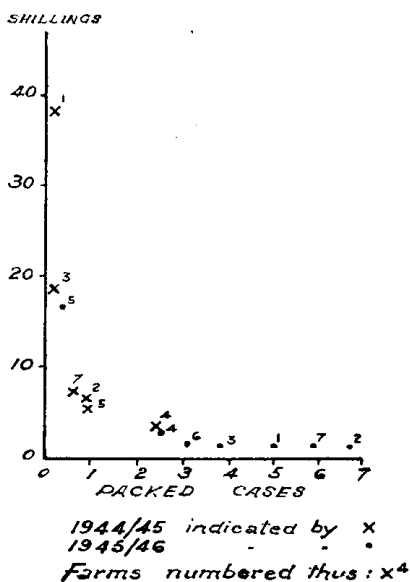
Pears.

Total cost per bearing pear tree ranged from 9.1 to 16.7 shillings in 1945-46 (Table VA). The level of costs was generally lower on each farm due to lower yield. Cost per packed case in 1945-46 ranged from 4.7 to 17.6 shillings. Total cost per packed case varied from one year to the next according to yield. Most of the farms obtained a lower or not substantially different yield of pears in 1945-46 with the result that for these farms cost per case was higher than for the previous season. This did not apply to farms 6 and 7 where, although yields did not differ greatly for the two seasons, cost per case was lower in the latter season. This was due to a considerable reduction that year in total expenditure per tree.

The general relationship between yield and cost per packed case as observed for all farms over the two seasons is illustrated in Fig. V. The relationship was similar to that shown for apples. although the rate at which costs decreased with increased yield was more gradual and consistent.

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* Excluding Field Power Unit Costs.

FIG. V.
THE RELATIONSHIP OF
TOTAL COST OF GROWING AND
HARVESTING PEARS
TO
YIELD, PER TREE, AT BATLOW, N.S.W.

1944/45 indicated by X
1945/46 · : ·
Farms numbered thus: X⁴
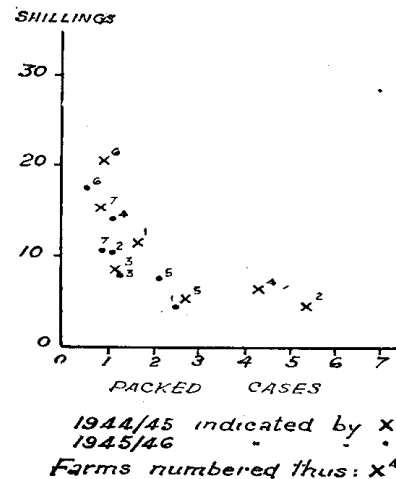
Returns for Fruit.

Receipts for apples and pears, for both years, after marketing expenses have been deducted, are set out in Table VI.

In obtaining estimates of net returns, receipts for fruit used for processing have been included. Rebates from the Co-operative Packing House have not been included, but neither has any interest charge on capital invested in shares in the Packing House.

TABLE VI.
Receipts per Packed Case for Apples and Pears for Seven Orchards at Batlow, 1944-45 and 1945-46.

Farm.	Apples.		Pears.	
	1944–45.	1945–46.	1944–45.	1945–46.
	Shillings.	Shillings.	Shillings.	Shillings.
1	20.8	9.0	14.9	6.2
2	22.0	9.5	13.7	11.0
3	19.8	7.5	17.3	5.0
4	21.4	9.8	14.2	8.9
5	20.6	12.6	9.7	11.5
6	......	11.3	15.3	15.1
7	†	12.0	†	13.8

* Receipts after marketing costs have been deducted.

† Figures not reliable.

Apples.

Comparison of receipts per case for the two years indicates that the market price level for apples was higher in 1944-45 than in 1945-46. The apple crop for the whole of the State was comparatively small in the former year with the result that prices received were generally high. Although receipts per case for the

1944-45 apple crop were comparatively high on all farms, net returns per packed case varied according to yield and ranged from a loss of 59.4 shillings per case to a profit of 17.2 shillings per case. Receipts per case of apples for all farms were considerably lower for the 1945-46 season. However, costs per case were much lower owing to higher yields for every farm except No. 5. Although this did not mean that higher net returns per packed case were received by all farms in 1945-46, nevertheless total net returns to each of these growers were considerably higher than for 1944-45. In spite of higher costs per packed case in 1944-45, farm No. 4 obtained a higher total net return that year. A fairly good yield of apples was obtained on this farm both years. The combination of relatively good yield and high price in 1944-45 returned this farmer a considerably greater total net income than was obtained in the 1945-46 season when price was lower and yield at a similar level.

TABLE VII.

Net Returns for Apples for Seven Orchards at Batlow, 1944-45 and 1945-46.

Farm.	Return per packed case. (Shillings.)		Returns per bearing tree. (Shillings.)	
	1944–45.	1945–46.	1944–45.	1945–46.
1	—59.4	5.2	—9.9	26.2
2	10.5	6.9	9.1	45.9
3	—17.9	4.3	—2.8	16.5
4	13.3	2.7	32.1	6.8
5	10.4	—15.5	9.4	—5.6
6	......	6.4	......	19.7
7	*	9.1	*	53.4

* Figure unreliable.

Comparison of net returns per tree which reflect both yield and price received, shows that in 1944-45 a profitable return of approximately 9 shillings was obtained from orchards yielding as low as 0.9 packed cases per tree. In 1945-46 much higher yield was required to return a similar profit. A yield of 2.5 packed cases per tree in 1945-46 returned a profit of only 6.8 shillings per tree. For both years net returns per tree as well as net returns per case were related to yield per tree.

Pears.

Receipts per case for pears were, for all except one farm, considerably smaller for the 1945-46 than for the 1944-45 crop. Lower market price together with low yields in 1945-46 resulted in considerably lower net returns per case and hence total net returns. In 1944-45 a yield of at least 1.0 packed case per tree was required to return a profit per tree. In the following year yields of just over two cases did not return as large a profit. For both seasons net returns per tree were directly related to yield.

TABLE VIII.

Net Returns for Pears for Seven Orchards at Batlow, 1944-45 and 1945-46.

Farm.	Returns per packed case. (Shillings.)		Returns per bearing tree. (Shillings.)	
	1944-45.	1945-46.	1944-45.	1945-46.
1	3.3	1.5	5.3	3.8
2	8.9	0.4	47.9	0.4
3	9.0	—3.0	11.0	—3.6
4	8.1	—5.2	34.6	—5.8
5	4.3	3.6	11.4	7.7
6	—5.3	—2.5	—4.6	—1.3
7	*	3.1	*	2.8

* Figure unreliable.

the alternate cropping rhythm of apples and pears on almost every farm, an indication of costs and returns to each grower over the years may be obtained from the average values for the two years. Average yield for apples ranged from 0.7 cases to 3.8 cases and average returns from 1.9 shillnigs to 27.5 shillings per tree, the average returns being closely related to average yield.

Average yield of pears ranged from 0.7 to 3.3 cases per tree. Average returns ranged from —3.0 to 24.2 shillings per tree and were directly related to average yield.

TABLE IX.

Average Yields and Average Net Returns for Apples and Pears on Six Orchards at Batlow, 1944-45 and 1945-46.

Farm.	Apples.		Pears.	
	Average yield.	Average returns.	Average yield.	Average returns.
	Cases.	Shillings.	Cases.	Shillings.
1	2.4	8.2	2.1	4.6
2	3.8	27.5	3.3	24.2
3	2.0	6.9	1.2	3.7
4	2.5	19.5	2.7	14.2
5	0.7	1.9	2.4	9.6
6	1.6	9.9	0.7	—3.0

.Summary.

Observation of seven farms at Batlow over a period of two seasons has shown the tendency toward alternate cropping on most orchards, for apples more so than pears. Costs per packed case and net returns fluctuated correspondingly depending on yield. Comparison of results for the seven farms for the two seasons showed definite relationships between cost and yield, and between net returns and yield. As yield increased cost per packed case decreased rapidly at first and then at a decreasing rate. With increased yield net returns were observed to increase. Average values for yield costs and net returns afforded a better idea of these values in the long run. As yield increased average costs decreased, and average net returns increased.