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FACTORS INFLUENCING RECENT FARM IMPROVEMENTS

Report on a Victorian Survey

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1. SUMMARY

During the first quarter of 1958 a survey of sheep farms was made along the Dividing Range in Victoria in the main water-erosion hazard areas of the State. The aim was (i) to compare the extent of the improvements made, and machinery purchased by farmers during 1954-55 to 1956-57 with the corresponding plans for the period 1957-58 to 1958-59, and (ii) to discover what factors (*e.g.* credit) had influenced the farmers' developmental plans.

The area chosen for the survey was about 2,050 sq. miles along the Great Dividing Range situated approximately between the towns of Ararat in the west and Benalla in the east. A large part of this area is steep and the survey has shown that one quarter or more of the farm acreage cannot be improved except by aerial topdressing. About a third of the farms have such inaccessible country. These farms are invariably seriously eroded. Furthermore, on two-thirds of all the holdings less than a third of the farm acreage is under improved pastures.

Farmers' plans for improvements and machinery purchases in the immediate future (*i.e.* for 1957-58 and 1958-59) were obtained six to nine months after the commencement of this period. These plans, obtained while wool

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prices were on the decline, were based on the assumption that there would be little or no further change in wool prices during the remainder of the period. Comparisons with the past period (1954-55 to 1956-57) indicated a marked decline in the planned spending on permanent improvements and machinery, but farmers intended to increase pasture improvements somewhat more rapidly than in the past, particularly on farms between 200-2,000 acres. However, the further decline in wool priecs since the interviews has no doubt affected these plans.

Substantial superphosphate usage during both past and coming years was found to be associated with relatively high gross incomes during the year ended June 30, 1957. More farmers planned to use substantial quantities of superphosphate (*i.e.* over 30 tons) during the coming year than used this quantity in the past. Farmers who planned to increase their usage of superphosphate beyond 30 tons were, without exception, those whose gross income was relatively high in 1956-57. High incomes were also associated with the extent of improved pastures on the holdings, the absence of a retarding family relationship (see page 61) and the education of the farmer.

During past years relatively high expenditure on permanent improvements and machinery was associated with knowledge of tax concessions, the absence of a retarding family relationship and also with contact with the Soil Conservation Authority (SCA). Planned high expenditure during future years was associated with the level of education of the farmers.

The farmers who planned to spend substantial amounts on improvements and machinery in the future were those who had done so during past years and/or whose holdings were already substantially improved. Farmers with indebtedness or with purchased (as distinct from inherited) holdings also intended to spend more on improvements than other farmers.

The existence of soil erosion was still not recognised by about 15 per cent of those farmers whose holdings were seriously eroded ; about one-third of such farmers had not been in contact with the Soil Conservation Authority and a little less than half had not attended any of the field days held by the SCA. Farmers who had attended the field days could not be regarded, however, as significantly different, with regard to major factors used in the analysis, from those who did not attend and whose holdings were eroded also.

At 30th June, 1957, only relatively few farmers had debts of over £1,000 outstanding. These debts were generally small compared with the value of farm output. There was a general lack of interest in borrowing for improvements.

As one would expect, farmers with relatively high gross income or relatively high spending on improvements and machinery were more influenced by the available tax concessions than the other farmers. Tax concessions seemed to have a more direct effect on planned pasture improvement programmes also.

In these vulnerable areas of Victoria it may become necessary to subsidise conservation and allied works beyond the existing limits if wool prices continue to fall. Without such subsidies further erosion can be anticipated.

2. INTRODUCTION

Towards the middle of 1957 it was decided (i) to compare the level of spending by farmers on improvements and machinery during recent relatively prosperous years, with the corresponding planned spending in the immediate future and (ii) to ascertain the factors, including credit, which influenced the farmers' developmental plans.[1]

In the choice of the survey area three considerations were taken into account. First, it was desired to confine the study to those areas of water erosion hazard which depend almost entirely on sheep production, *i.e.*, the industry which was regarded early in 1957 as having the brightest future. Second, to exclude areas which were more than mildly affected by the drought of 1957. Last, to cover those areas of water erosion hazard where considerable soil conservation work has been done.

Farmers were interviewed in the field during the first quarter of 1958 to ascertain the level of improvements made and machinery purchased by them in the recent past (1954-55 to 1956-57) and their plans for the immediate future (1957-58 and 1958-59).

The area covered by the survey was about 2,050 sq. miles, comprised of 45 parishes (and parts of adjoining parishes) lying between Ararat in the west and Benalla in the east.[2] All the 45 parishes have considerable seriously water-eroded areas, and in most of them the Soil Conservation Authority has been active for some years through local Conservation Officers.

The Sample

The farmers in the survey area were stratified into three groups according to size of farm: within two (Group I: 200-1,000 acres and Group II: 1,001-2,000 acres) a random sample was selected whilst in the third group (Group III: 2,001-3,000 acres) all available farmers were interviewed. Full details of the sampling methods used are given in Appendix I.

Table I shows the number of farmers in each group, the number rejected and the number finally interviewed.

Interviewing was done on the farms during January-March, 1958. All those members of the farmer's family were present who played any part in the management of the farm. Personal data was confined, however, to the person who had the final say in the financial side of the farming operations. When estimating the amount they intended to spend during 1957-58 and 1958-59, the farmers were asked to assume that during these years wool prices would be at about the same level as at the time of the interview and that there would be no serious drought.

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[1] Soil Conservation Authority, *Eighth Annual Report,* for year ended 30th June, 1957 (Melbourne: Government Printer), p. 24.

[2] The parishes were: Alexandria, Ararat, Avenel, Baynton, Billian, Brankeet, Broadford, Bylands, Caralulup, Colvinsby, Crowlands, Doolam, Eildon, Emberton, Eurambeen, Euroa, Eversley, Glenburnie, Glendhu, Glenhope, Glenpatrick, Gobur, Goldie, Goomalibee, Gowangardie, Lexington, Longwood, Lowry, Lurg, Monea South, Moranding, Navarre, Ravenswood, Shelbourne, Taggerty, Tottington, Upotipotpon, Wallan Wallan, Walmer, Warrenbayne, Warrenmang, Winjallock, Windham, Yarck, Yea.

Of the 60 farmers successfully interviewed 54 gave access to the gross income section of their taxation returns lodged for the year ended 30th June, 1957. The distribution of these 54 farmers was as follows: 22 in Group I (200-1,000 acres), 18 in Group II (1,001-2,000 acres) and 14 in Group III (2,001-3,000 acres). The corresponding average cleared farm areas were 507 acres, 1,485 acres and 2,295 acres.

The survey farms were generally fully cleared; areas under timber constituted a small proportion of the total farm area. Of the 60 farmers interviewed 17 produced fat lambs as well as wool. As shown in Table II the fat lamb producers were more prominent in the smallest size group (*i.e.* 200-1,000 acres). Cattle production could be regarded as a sideline enterprise on all farms.

TABLE I

Numbers of Farmers in Survey Area and in the Sample

(By Size Groups)

Item	Total Farm Area					
	Group I 200–1,000 Acres		Group II 1,001–2,000 Acres		Group III 2,001–3,000 Acres	
	Farmers		Farmers		Farmers	
	No.	Per cent	No.	Per cent	No.	Per cent
Listed for Sampling	639	100	160	100	33	100
Interviewed Successfully ..	25	4	20	12½	15	47
Rejected for Interview* ..	45	7	12	7½	14	41
Refused Interview or Unreliable	2	..	..	..	4	12

* For full details see Appendix I.

TABLE II

Number of Farmers in the Sample by Farming Enterprise

Cleared Farm Area	Number of Farmers Producing		Total
	Wool and Fat Lambs	Wool	
Acres			
200—1,000 (Group I)	13	12	25
1,001—2,000 (Group II) ..	4	16	20
Total (Groups I and II)..	17	28	45
2,001—3,000 (Group III) ..	..	15	15

Aims and Method of Analysis

One of the aims of the analysis was to determine whether a decline in the number of farmers with "high" spending on improvements and machinery in the future could be expected as a result of the decline in wool prices since early 1957. Another aim of the analysis was to determine what factors significantly influence farmers' spending.[3]

A comparison between Group I and Group II was made by the 2 x 2 contingency table method separately for fat lamb producers, wool producers and both types combined, with regard to all the factors used in the analysis. It was found that farmers in the two Groups did not differ at the 1 per cent level of significance except in the comparison of gross incomes of £6,000 or more. Farmers with such incomes were more frequent in Group II than in Group I ($p<0.01$). Consequently, with the exception of this factor farmers in Groups I and II were treated jointly for further analysis.

For the purpose of further analysis by the same statistical method farmers in Groups I and II were put into two categories, *e.g.* those farmers who had certain qualities (*e.g.* "high" spending) were put into one category and the remainder (*e.g.* those with "low" spending) into a second category. The particular amount chosen for differentiating between "high" and "low" spending farmers varied with the type of expenditure and although the amounts were arbitrarily chosen the aim was to create two groups of farmers with a marked difference in their spending.

Since a considerable decrease in spending on machinery as well as in total expenditure could be anticipated in the future, farmers were put into more than two categories for these factors and also for gross income. (The various categories are set out in Appendix IV). All the different categories of farmers were determined *before* the commencement of computations. It should be noted that the importance of the relations shown in the contingency tables at the 1 per cent level of statistical significance can be regarded as well established, while those at the 5 per cent level are less definite.

3. COMPARISON OF PAST IMPROVEMENTS AND FUTURE PLANS

An attempt is made below to ascertain whether the survey farmers intended to reduce improvement expenditures from levels attained in the past. This comparison is made for expenditure on superphosphate, permanent improvements, machinery and "total" expenditure.[4]

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[3] The 45 farmers with 200-2,000 acres represented a sample only of the farmers listed for interview within this group. The remaining 15 farmers were, however, all the available farmers who satisfied the requirements of the survey within the 2,0001-3,000 acre group. It was decided therefore to treat these two groups of farmers separately for analysis. Thus statistical tests were confined to farmers in the 200-1,000 acre group (Group I) and to farmers in the 1,001-2,000 acre group (Group II).

[4] *Total expenditure* here includes expenditure on superphosphate, "permanent improvements" and machinery. Expenditure on superphosphate was based on landed costs on the farm. Transport costs, other than rail freight, were excluded except when carting was done by contractor.

Permanent improvements include dwellings, farm buildings and sheds, water supply, newly-erected fences (whether replacements or for new subdivision) and miscellaneous items. The part played by the farmer's own labour was not assessed in computing the cost value of these improvements.

Machinery expenditure was arrived at by deducting from the purchase price the value of "trade-ins".

These comparisons are set out in Tables III-VI. The comparisons show that there was a significantly greater number of survey farmers intending to reduce expenditure than farmers who intended to increase expenditure on most items. This is true of machinery, permanent improvements and "total expenditure". The only exception is provided by superphosphate—whilst six out of twenty-five survey farmers intended to increase superphosphate purchases above 30 tons; no farmer who used more than 30 tons intended to reduce consumption below that level. (cf. Table III.)

If this classification is compared with Tables IV, V and VI, where past and intended future expenditure on permanent improvements, machinery and total expenditure is given, the contrast is marked.

The levels of statistical significance indicated under each Table applies to Groups I and II only. These levels refer to one-way tests made by using the figures in the last column of each Table.

TABLE III

Superphosphate Usage—Past and Intended

Usage in the Past (Total for 1955–56 and 1956–57)	Group I and II (N = 45)	
	Intended Usage in the Future (Total for 1957–58 and 1958–59)	
	Same as in Past	Different to Past
	Number of Farmers	
Over 30 Tons..	20	..
30 Tons and under	19	6

$p < 0{\cdot}025$

	Group III (N = 15)	
	Number of Farmers	
Over 30 Tons..	13	..
30 Tons and under	..	2

Table III indicates a moderately significant increase in the number of farmers who intended to use greater quantities of superphosphate during 1957-58 and 1958-59. The increase in Group I and II was about the same as in Group III. Since 30 tons of superphosphate means relatively less application on large farms than on small ones, it is reasonable to assume a greater degree of pasture improvement by farmers in Groups I and II. This

TABLE IV

Expenditure on "Permanent Improvements"—Past and Intended

Expenditure in the Past (Average for 1954–55 to 1956–57)	Group I and II (N = 45)	
	Intended Expenditure in the Future (Average for 1957–58 and 1958–59)	
	Same as in Past	Different to Past
	Number of Farmers	
Over £300	8	13
£300 and under	19	5
$p = 0{\cdot}05$		
	Group III (N = 15)	
	Number of Farmers	
Over £300	8	3
£300 and under	4	..

TABLE V

Expenditure on Machinery per Acre—Past and Intended

Expenditure in the Past (Average for 1954–55 to 1956–57)	Group I and II (N = 45)	
	Intended Expenditure in the Future (Average for 1957–58 and 1958–59)	
	Same as in Past	Different to Past
	Number of Farmers	
Over 2s. 0d.	8	18
2s. 0d. and under	19	..
$p < 0{\cdot}001$		
	Group III (N = 15)	
	Number of Farmers	
Over 2s. 0d.	1	11
2s. 0d. and under	3	..

TABLE VI

"Total Expenditure"—Past and Intended

Expenditure in the Past (Average for 1954–55 to 1956–57)	Group I and II (N = 45)	
	Intended Expenditure in the Future (Average for 1957–58 and 1958–59)	
	Same as in Past	Different to Past
	Number of Farmers	
Over £1,000	6	10
£1,000 and under	27	2
	$p < 0{\cdot}025$	
	Group III (N = 15)	
	Number of Farmers	
Over £1,000	5	7
£1,000 and under	3	..

is in agreement with data on the increase in the improved pasture acreage,[5] during the corresponding periods. In Groups I and II, fifteen (out of forty-five) farmers improved pasture acreage by over 5 per cent during 1955-56 and 1956-57 and twenty-two intended to make the same increase in the next two years.[6]

In Group III, however, eight (out of fifteen) farmers increased their improved pasture acreage by more than 5 per cent during 1955-56 and 1956-57, but plans indicated that this number would remain the same in the next two years.

These findings cannot be substantiated by the rate of superphosphate application. The reason for this lack of correspondence is that considerable portions of the farms are not topdressed; this is borne out by the absence of significant relationships between improved pasture acreage and either total quantity of superphosphate used or landed costs on the farm. This is in accordance with findings of Emery and Oeser (1958)[7] for the Bairnsdale area, where relationship could be established between farming practices and total tonnage of superphosphate bought, but not between farming practices and the quantity of superphosphate used per acre of cleared area.

[5] Expressed as percentage of the cleared acreage of the farm. Improved pasture was defined as pasture which, according to the farmer, contained substantial subterranean clover and/or improved grasses in the sward.

[6] The increase in the number of farmers is statistically not significant.

[7] F. E. Emery and O. A. Oeser, *Information, Decision and Action* (Melbourne: University Press, 1958), p. 74.

Details of the relatively small expenditure on superphosphate by most farmers are shown in Tables XXIII and XXIV in Appendix II. Summed up these findings indicate that more farmers intended to use substantial quantities of superphosphate and more intended to carry out a pasture improvement programme than in the preceding years, but a severe reduction of expenditure on permanent improvements and particularly on machinery was also planned.[8] There was also a greater tendency for pasture improvements to be carried out on farms between 200-2,000 acres than on those over 2,000 acres. Expenditure on permanent improvements would be reduced by about the same proportion of farmers in each acreage group, but the reduction in expenditure on machinery would be more prevalent among farmers with large holdings.

Plans for the future were given by the farmers on the assumption that wool prices would be at about the same level as at the time of the interview. Since the interviews, however, wool prices have fallen considerably and it is not feasible to assess the adverse affect of this on the farmers' earlier plans.

4. FACTORS ASSOCIATED WITH HIGH INCOMES AND EXPENDITURE

A number of factors can be expected to affect farmers' expenditure on improvements. These factors may affect expenditure directly or through influencing gross income, hence the farmers' ability to spend. In this section some of these relationships will be examined, but the influence of credit and soil erosion on farm development are examined in the next section.[9]

Factors Associated with Gross Income

EXTENT OF IMPROVED PASTURES AND SUPERPHOSPHATE PURCHASES

As one would expect, relatively high gross income per acre is related to the proportion of the farm under improved pastures. This is shown in Table VII. While income (forty farmers) refers to 1957 and pasture acreage to 1955, the increase in improved pasture acreage between 1955 and 1957 was not large enough to affect the validity of this Table.

Table VIII shows that high incomes in 1956-57 were associated with large superphosphate use in that and the previous year. However, as shown in Table IX, an even more pronounced association exists between present income (*i.e.*, 1956-57) and intended fertiliser purchases (*i.e.*, 1957-58 and 1958-59).

A test of association between gross income per acre (at £5) and intended future fertiliser expenditure per acre (at £$\frac{1}{3}$) showed a similar positive association ($p < 0.05$).

[8] Soil Conservation Authority, *Ninth Annual Report*, for year ended 30th June, 1958 (Melbourne: Government Printer), p. 32.

[9] In the tables shown in this and subsequent sections p values were computed by using all the figures shown in each Table. Farmers in Group III were ignored because no pattern was shown by the small number of farmers in this group with the various factors used in the analysis.

TABLE VII

Relation between Gross Income per Acre (1956-57) *and Pasture Improvement* (1955)

Gross Income per Acre	Group I and II (N = 40)	
	Number of Farmers with—	
	Over 33 per cent of the Farm under Improved Pasture*	33 Per cent or Less of the Farm under Improved Pasture*
£5 and over	13	5
Under £5	5	17

$p < 0{\cdot}01$. * Based on cleared acreage.

TABLE VIII

Relation between Gross Income (1956-57) *and Total Superphosphate Use* (1955-56 *and* 1956-57)

Gross Income	Group I and II (N = 40)	
	Number of Farmers with—	
	Over 30 Tons Superphosphate Usage	30 Tons and Under Superphosphate Usage
Over £3,000	16	11
£3,000 and under	1	12

$p < 0{\cdot}01$

TABLE IX

Relation between Gross Income (1956-57) *and Total Planned Superphosphate Use* (1957-58 *and* 1958-59)

Gross Income	Group I and II (N = 40)	
	Number of Farmers with—	
	Over 30 Tons Superphosphate Usage	30 Tons and Under Superphosphate Usage
Over £3,000	22	5
£3,000 and under	1	12

$p < 0{\cdot}001$

Family Relationship and Education

Some farmers were hindered in their farm management because the final managerial decision rested either on some aged member of their family, or on several family members who themselves did not work on the farm. Farmers hindered in this way were put into a separate category under the heading, "Family Relationship Retarding". Table X shows that only one out of seven farmers with a retarding family relationship had over £3,000 gross income, while 26 out of 33 with a more helpful family relationship had over £3,000 gross income.

Education was measured by an index using level of schooling, urban residence and overseas war service as criteria. The method of computation used is given in Appendix III. As shown in Table XI there is a moderate association between relatively high gross income and better than "low" education.

Taxation Concessions

Farmers were asked whether they were taking into consideration the available taxation concessions before making farm improvements or purchasing machinery. As one would expect, farmers with relatively high incomes were more conscious of the available concessions (Table XII).

It is pertinent to note at this juncture that when farmers were shown the free booklet, *Income Tax for Farmers and Graziers,*[10] out of the 60 successfully interviewed farmers only 12 claimed to have seen it before, and, of those only nine farmers claimed to have been influenced by it; the other three had not read the booklet. An additional 23 farmers, who had not seen it previously claimed to have had "some idea" about the concessions and were also influenced by them. A total of 32 farmers (out of a total of 60) were thus influenced by the available concessions when planning improvements or purchasing machinery.

TABLE X

Relation between Gross Income (1956-57) *and Family Relationship*

Gross Income	Group I and II (N = 40)	
	Number of Farmers with—	
	Family Relationship Retarding	Family Relationship not Retarding
Over £3,000	1	26
£3,000 and under	6	7

$p < 0{\cdot}01$

[10] *Income Tax for Farmers and Graziers* issued under the authority of the Commonwealth Treasurer and the Minister for Primary Industry, Canberra, (Fourth Edition), 1957.

TABLE XI

Relation between Gross Income (1956-57) *and Education*

Gross Income	Group I and II (N = 40)	
	Number of Farmers with—	
	Better than "Low" Education	"Low" Education
Over £3,000	13	14
£3,000 and under	1	12

$p < 0{\cdot}01$ (one way test)

TABLE XII

Relation between Gross Income (1956-57) *and Taxation Concession*

Gross Income	Group I and II (N = 40)	
	Number of Farmers—	
	Influenced by Tax Concessions	Not Influenced by Tax Concessions
Over £3,000	19	8
£3,000 and under	3	10

$p < 0{\cdot}02$

Factors Associated with Expenditure

EXPENDITURE IN THE PAST (1954-55 TO 1956-57)

Just as high gross income was shown to be associated with an absence of retarding family relationship, there was an association between high total expenditure (*i.e.*, over £1,000 per year) and an absence of such relationship ($p < 0.01$). Similarly, high total expenditure and knowledge of taxation concessions were found to be associated ($p < 0.02$).

INTENDED EXPENDITURE (1957-58 AND 1958-59)

Education is the only factor directly associated with total intended expenditure over this period (Table XIII).[11] Farmers with better education intended to spend more on improvements and machinery than farmers with "low" education. It has to be borne in mind, however, that farmers

[11] No direct relationship between education and past expenditure could be established.

with better education have also a higher income than other farmers and that higher incomes (*i.e.*, over £3,000) and total expenditure (over £400) are also associated ($p < 0.02$).

The influence of tax concessions was associated with planned increases in superphosphate applications though it was not in the past. Over thirty tons of superphosphate will be used by a greater proportion of those farmers who have been influenced by tax concessions than other farmers. This is shown in Table XIV.

Relation between Past and Future Expenditure

It was shown before that farmers who had a relatively high gross income in 1956-57 intended to use large quantities of superphosphate in the future (Table IX). Similarly, farmers who had spent relatively high amounts (over £300) on superphosphate in the past intended to continue to do so in the future ($p < 0.001$). Furthermore, those farmers whose holdings are substantially under improved pasture intended to spend more on permanent improvements in the future (Table XV).[12]

Table XIII

Intended "Total Expenditure" and Education

Intended Average Annual "Total Expenditure" 1957–58 and 1958–59	Group I and II (N = 45)	
	Number of Farmers with—	
	Better than "Low" Education	"Low" Education
Over £1,000	7	1
£1,000 and under	11	26

$p < 0.01$

Table XIV

Intended Superphosphate Use and Influence of Tax Concessions

Total Intended Superphosphate Usage 1957–58 and 1958–59	Group I and II (N = 45)	
	Number of Farmers—	
	Influenced by Tax Concessions	Not Influenced by Tax Concessions
Over 30 Tons	18	8
30 Tons and under ..	6	13

$p < 0.05$

[12] There is, also, a relationship between relatively high gross income in 1956-57 and a substantial acreage of the holding under improved pastures (Table VII).

TABLE XV

Relation between Extent of Improved Pastures (1955) *and Intended Expenditure on "Permanent Improvements"*

Improved Pasture*	Group I and II (N = 45)	
	Average Intended Annual Expenditure on "Permanent Improvements" 1957–58 and 1958–59	
	Over £$\frac{1}{3}$ per Acre	£$\frac{1}{3}$ and Less per Acre
	Number of Farmers	
Over 33 per cent	12	9
33 per cent and under ..	5	19

$p < 0{\cdot}05$. * Based on cleared acreage.

These findings can be further substantiated by those shown in Tables XVI and XVII. These tables show that farmers with relatively high total expenditure or expenditure on permanent improvements during past years intended to expand their improved pasture acreage.

Those farmers who had increased their improved pasture acreage by over 5 per cent in the past two years (1955-56 and 1956-57) were not affected by retarding family relationships ($p < 0.02$). Neither were those farmers who intended to make such an expansion in the succeeding two years ($p < 0.05$).

5. SOIL EROSION AND THE SOIL CONSERVATION AUTHORITY

SOIL EROSION

Farms were regarded as being seriously eroded when either the farmer had admitted erosion on his holding or when serious erosion was found on subsequent inspection by a surveyor though no erosion was claimed by the farmer. There was a no-erosion claim by farmers on five holdings which were found later to be seriously eroded. (This amounts to 15 per cent of the 34 eroded holdings). Thus soil erosion is still not fully recognised even in areas where conservation works have been carried out over a period of several years.

Farmers were asked to give the approximate area of their holdings which could be improved by aerial topdressing only. Table XVIII is based on such findings and shows, what one might expect, namely, a moderate relationship between erosion and relatively large portions of the farm improvable by aerial topdressing only.

SOIL CONSERVATION AUTHORITY

Of the 34 farmers whose holdings were seriously eroded 11 had no contact with the SCA. Table XIX shows the distribution of these farmers with regard to erosion control works.

TABLE XVI

Relation between "Total Expenditure" and Intended Increase in Improved Pasture

Average Annual "Total Expenditure" 1954–55 to 1956–57	Group I and II (N = 45)	
	Number of Farmers with—	
	Over 5 per cent Increase in Improved Pastures 1957–58 and 1958–59	5 per cent or Less Increase in Improved Pastures 1957–58 and 1958–59
Over £1,000	12	4
£1,000 or less	10	19

$p < 0{\cdot}05$

TABLE XVII

Relation between Expenditure on "Permanent Improvements" and Intended Increase in Improved Pasture Acreage

Average Annual Expenditure on Permanent Improvements, 1954–55 to 1956–57	Group I and II (N = 45)	
	Number of Farmers with—	
	Over 5 per cent Increase in Improved Pastures 1957–58 and 1958–59	5 per cent or Less Increase in Improved Pastures 1957–58 and 1958–59
Over £300	15	6
£300 and less	7	17

$p < 0{\cdot}02$

TABLE XVIII

Relation between Topography and Erosion

Proportion of Holdings Improvable from Ground	Group I and II (N = 45)	
	Number of Farmers—	
	With Erosion on Their Holdings	Without Erosion on Their Holdings
Over 75 per cent	19	11
75 per cent and under ..	15	..

$p < 0{\cdot}02$

In Table XIX under the heading "contacted SCA" two farmers are shown (at the end of the middle column). One was unable to proceed with the necessary work because the catchment to his holdings belonged to a neighbour who was unwilling to co-operate. The other farmer was advised by the SCA in 1957 to postpone the control of a gully until the proposed water disposal area became adequately grassed.

Farmers listed under the heading, "not contacted SCA" can be discussed in the order they are shown in the Table.

One of the two farmers shown as having done erosion control works did the work himself and considered it adequate but this was found to be insufficient by the inspecting surveyor. The other farmer was located in an area which had no SCA District Officer until recently. This farmer engaged a contractor for the work and had only a hazy idea about the existence of the SCA.

Three of the last seven farmers claimed no erosion on their holdings but these holdings were found to be seriously eroded when inspected by the surveyor. The remaining four farmers decided on making erosion control works only after they were given an explanation, at the time of the interview, concerning the activities of the SCA about which they knew little or nothing. These farmers were also in areas to which a District Conservation Officer was appointed only recently, or where (in one instance) the farm was located on the fringe of a SCA District, about 40 miles from its district office.

Table XX shows that a higher proportion of those farmers was in contact with the SCA whose total expenditure was over £1,000 than those whose expenditure was less. This is some indication of the greater interest in soil conservation of those farmers who were spending substantial amounts on improvements and/or machinery.

The SCA holds three field days annually in the districts which embrace most of the 45 parishes covered by the survey. Of the 34 farmers whose holdings were seriously eroded, only 19 (or 55 per cent) attended such field days; 14 attended one and five attended two. However, only two farmers travelled more than 25 miles to them.[18]

TABLE XIX

Erosion in Relation to Erosion Control

	Farmers with Seriously Eroded Holdings—			
	Contacted SCA		Not Contacted SCA	
	No.	Per cent	No.	Per cent
Erosion Control Works Done	7	30	2	18
Erosion Control Works Planned	8	35	1	9
Erosion Control Works Done and Planned ..	6	26	1	10
	21	91	4	37
	2	9	7	63
Total	23	100	11	100

[18] Average distance between homestead and the location of field days.

TABLE XX

Relation between "Total Expenditure" (1954-55 to 1956-57 average) and Contact with Soil Conservation Authority

Average Annual "Total Expenditure" 1954–55 to 1956–57	Group I and II (N = 34)	
	Number of Farmers with Erosion on Their Holdings—	
	Contacted SCA	Not Contacted SCA
Over £1,000	12	1
£1,000 and under	11	10

$p < 0{\cdot}02$

TABLE XXI

Intended Superphosphate Use and Indebtedness

Intended Superphosphate Usage	Group I and II (N = 45)	
	Farmers with over £2,000 Debt	Other Farmers
Over 30 Tons..	8	18
30 Tons and under	..	19

$p < 0{\cdot}01$

Of the 15 farmers who did not attend any field days, five claimed that these field days were "too far away" though three had their holdings within 25 miles from the localities where the field days were held and had a choice of two field days to attend. The others who did not attend were either "too busy" or "not interested". Eight of these farmers were within 25 miles of the field days and, with one exception, had two or more field days to select from.

Two farmers with no erosion problems attended field days. One was a recent Dookie College diplomate and the other one lived in the same locality where the field day was held.

Almost half of the farmers knew of the announcement of field days in the local press, the other half were told of it mainly by neighbours and by officers of the SCA but only two knew of it through radio announcement.

Farmers who attended field days and had erosion on their holdings did not differ significantly from those who did not attend (but had erosion on their holdings) with regard to any of the important factors used in the analysis, including soil conservation. Thus it appears to be a fallacy to assume that only the "converted" ones attend field days.

6. CREDIT IN RELATION TO IMPROVEMENTS AND LAND PURCHASE

Of the 45 farmers in Group I and II four had debts between £1,000-£2,000, three between £3,000-£5,000 and five between £5,400-£7,000, at July 1, 1957. All these debts were owed to trading banks for loans made since 1950. Half of these debts, including the four biggest ones, could be traced back to loans granted for land purchase. In these instances it appeared that the farmers concerned had invested in improvements during recent years instead of endeavouring to repay their debts in the shortest possible time. For this reason, farmers with debts over £1,000 could be regarded, with one exception, as users of borrowed money for improvements and/or machinery purchase. Some of the details of these debts were as follows:—

Debts between £1,000-2,000 (Four Farmers)

The indebtedness of these farmers was the result of borrowings in 1954 or 1955. Two farmers had not reduced their debts, one had reduced his by about a third and one by about three-quarters.

Debts Between £3,000-5,000 (Three Farmers)

The indebtedness of one of these farmers goes back as far as 1950 and that of the other two to 1954. The farmer who borrowed in 1950 still owed the full amount, one had reduced his indebtedness by about a half and one by about a quarter.

Debts between £5,400-7,000 (Five Farmers)

The indebtedness of one farmer was due to borrowing in 1952, of two farmers due to borrowings in 1954 and of another farmer to borrowing in 1957, while one farmer had increased his indebtedness prior to July 1, 1956. The three first mentioned farmers had reduced their indebtedness by 10 to 40 per cent.

In addition to the 12 farmers, there were three others who, though without debt at July 1, 1957, had overdrafts between £1,000-£2,000 *available* to them. One of these overdrafts was of a seasonal nature repayable from the wool cheque each year.

Since July 1, 1956, two increases of the existing overdrafts had been granted. One was seasonal and the other was given to a farmer with unusually good credentials.

Since July 1, 1956, only one farmer had been refused a loan. He wished to increase the £1,500 overdraft available to him to £3,000 for the purchase of machinery. A further two farmers wanted to borrow for improvements but neither had approached a bank. One assumed that he could not

obtain any more money from his bank and considered one of the wool firms as a possible source of a loan. The other, although without debt, was waiting for the opening of a local branch of a particular bank before seeking a loan.

Only nine farmers out of the twelve who had over £1,000 debts outstanding at June 30, 1957, gave access to figures of their gross incomes. In terms of these incomes, the loans were generally small and none of the nine farmers was granted an amount greater than one and a half times his gross income; three were granted less their gross income. In addition, the loans were generally of short duration, the majority of farmers having made substantial repayments since the original borrowing.

Although with the exception of three farmers there was no interest shown in new borrowing for improvements, there was little hesitation shown in borrowing for land purchase when this possibility was raised. It is likely that farmers would borrow more readily for improvements if money was expressly provided for this purpose.

Only three of the farmers had made *hire purchase* agreements for farming purposes since July, 1954. These agreements were made for the purchase of tractors. One farmer purchased a tractor in 1954 but made full payment of £725 within nine months because he thought that "about eight per cent interest was too high". The other two arranged for hire purchase loans through a bank in 1957. On these loans eight and a half per cent simple interest was charged on the outstanding balance of £1,000 and £800 respectively.

With one exception, farmers with over £1,000 debt used the borrowed money (partly or wholly) on improvements and/or machinery ($p < 0.001$). No similar relationship can be shown for the coming years except that farmers with over £2,000 debt will invariably use over 30 tons of superphosphate (Table XXI).

In addition to these relationships, there is a not unexpected relationship also between land purchase and indebtedness. Farmers who purchased land during the last 10 years were the main users of borrowed money for improvements and machinery ($p < 0.01$). Furthermore, most farmers with such newly acquired land wished to use borrowed money for improvements in the future also ($p < 0.01$).

APPENDIX I

Method of Sampling

From the Shire ratebooks lists were made in acreage groupings of those farmers whose holdings were mainly in the selected parishes and a random sample was drawn from this list.

It was intended from the start to keep the size of the sample within manageable proportions and the number of farmers in the sample was, therefore, limited to twenty-five in the 200-1,000 acre size group, to twenty in the 1,001-2,000 acre group, while in the 2,001-3,000 acre group, on account of the small total number, all the available farmers were interviewed.

There were two farmers with land under 1,000 acres, three with 1,001 to 2,000 acres and five farmers with over 2,000 acres whose holdings were partly composed of leased land. Although all farmers (including replacements for the sample) were chosen at random for the interview, a considerable number was rejected. Table XXII shows the number of farmers rejected for various reasons.

TABLE XXII

Number of Farmers Rejected for Interview—Grouped by Farm Area

Reason for Rejection	Group I 200–1,000 Acres	Group II 1,001–2,000 Acres	Group III 2,001–3,000 Acres
	Number of Farmers		
Farm Acreage changed since 1955 ..	7	3	9
Farm Sold, Leased, or for Sale or Lease ..	9	1	1
Type of Farming not predominantly Sheep	6	2	..
Part-Time Farming	5	..	..
Age of Farmer 70 Years or Over ..	5	..	..
Soldier Settler	3	1	..
Management of Farm changed since 1955	2	2	..
Farmer Seriously Sick	2	2	..
Acreage of Farm Exceeded Grouping Size	3	..	1
Farmer could not be Contacted ..	2	..	2
Farm Affected by Bushfire since 1955 ..	1	1	..
Absentee Farmer	..	..	1
Total Number Rejected	45	12	14

APPENDIX II

Expenditure on Superphosphate

TABLE XXIII

Expenditure on Superphosphate per Year

Expenditure per Year*	Group I and II		Group III	
	1954–55 to 1956–57 Average	1957–58 to 1958–59 Average	1954–55 to 1956–57 Average	1957–58 to 1958–59 Average
£	No. of Farmers		No. of Farmers	
0 —100	11	6	0	0
101—200	12	13	2	0
201—300	10	13	2	1
301—400	4	3	2	4
401—500	3	5	3	2
501—600	3	3	4	4
601—700	1	2	2	1
>700	1	..	..	3
Total Number of Farmers	45	45	15	15

* Based on landed costs on the farm.

TABLE XXIV

Expenditure per Acre on Superphosphate per Year

Expenditure per Acre* per Year	Group I and II		Group III	
	1954–55 to 1956–57 Average	1957–58 to 1958–59 Average	1954–55 to 1956–57 Average	1957–58 to 1958–59 Average
£	No. of Farmers		No. of Farmers	
0·00 — 0·25	24	19	11	11
0·26 — 0·50	13	16	4	4
0·51 — 0·75	7	6	..	..
0·76 — 1·00	1	3	..	..
> 1·00	0	1	..	..
Total Number of Farmers	45	45	15	15

* Based on landed costs on the farm.

APPENDIX III

The Index of Education

	Score for Index	Frequency in Groups I and II
Schooling—		
Primary	0	30
Secondary	1	11
Tertiary	2	4
Urban Residence—		
None	0	40
Some	1	5
War Service Overseas—		
None	0	43
Some	1	2

Total Score: 0 = Low, 27 farmers; 1 = Moderate, 12 farmers; 2 = High, 4 farmers; 3 = Very High, 2 farmers.

APPENDIX IV

Factors Used for Statistical Analysis

Cleared area of farm under 1,000 acres, 1,001 to 2,000 acres, 2,001 to 3,000 acres.

Leased acreage of farm as per cent of cleared area: 10 to 15 per cent, over 15 per cent.

Per cent of cleared area of farm improvable from the ground: 0 to 75 per cent, over 75 per cent.

Per cent of cleared area of farm under improved pasture at 1955: 0 to 33 per cent, over 33 per cent.

Increase in improved pasturage of the farm (as per cent of cleared area) during:

1956 and 1957: 0 to 5 per cent, over 5 per cent.
1958 and 1959: 0 to 5 per cent, over 5 per cent.

Superphosphate usage during:

1956 and 1957: 0 to 30 tons, over 30 tons
1958 and 1959: 0 to 30 tons, over 30 tons.

Average annual expenditure during:

(i) 1954-55 to 1956-57, and
(ii) 1957-58 to 1958-59:

On superphosphate £0 to £300, over £300.
On "permanent improvements" £0 to £300, over £300.
On machinery £0 to £49, £50 to £200, over £200.
"Total" £0 to £399, £400 to £1,000, £1,001 to £2,000, over £2,000.

Average annual expenditure per acre during:

(i) 1954-55 to 1956-57, and
(ii) 1957-58 to 1958-59:

On superphosphate: £0 to £$\frac{1}{3}$, over £$\frac{1}{3}$.
On "permanent improvements": £0 to £$\frac{1}{3}$, over £$\frac{1}{3}$.
On machinery: less than 2 shillings, 2 shillings and over.
"Total": less than £1, £1 and over.

Farmer claimed to be influenced by knowledge of tax concessions.

Farmer had seen booklet on *Income Tax for Farmers and Graziers.*

Gross income for the year ending June 30, 1957: under £3,000, £3,000 to £6,000, over £6,000.

Gross income per acre for the year ending June 30, 1957, under £5, £5 and over.

Enterprise at time of interview wool and fat lamb, wool only.

Future enterprise if produce prices fell: Lower standard (reduced improvements), part time employment (some improvements), higher standard (more intense production).

Wool producers (as distinct from wool and fat lamb producers) breeding own replacement.

Length of new fences erected (including replacements) during:

(i) 1954-55 to 1956-57 average: under $\frac{1}{2}$ mile, $\frac{1}{2}$ mile and over.
(ii) 1957-58 to 1958-59 average: under $\frac{1}{2}$ mile, $\frac{1}{2}$ mile and over.

Average size of permanently fenced paddocks: under 100 acres, 100 acres and over.

Number of permanent workers (including farmer) 1 only, more than 1.

Indebtedness at June 30, 1957: none under £1,000, £1,001 to £5,000, over £5,000.

Farmer approached lending agency for loan with success since July 1, 1956; without success.

Farm procurement: by inheritance, wholly, partly; by purchase, wholly, partly.

Land purchase since 1949: part of the farm, the whole farm.

Education of farmer: low, moderate, high, very high.

Time spent on present farm: all life, part of life.

Family association: retarding, promoting.

Field day(s) organised by SCA: attended, not attended.

Average distance from field days: up to 25 miles, over 25 miles.

Serious erosion on farm: present, absent.

Erosion control works: contemplated, performed, performed and to be continued.

Age of farmer under 50, 51 and over.

SCA contacted, not contacted.

Improvements planned from loan, not planned from loan.

Improvements performed from loan, not performed from loan

Original borrowing for land purchased, not for land purchased.

Farmer used hire purchase, not used hire purchase.