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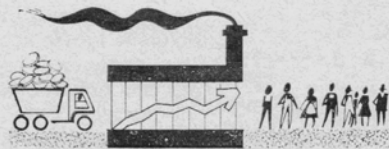
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Beef carrying capacity has been trebled, return on capital lifted from 2.3 to 6.3 per cent. in the former scrubland; how the land is allocated is also explained by

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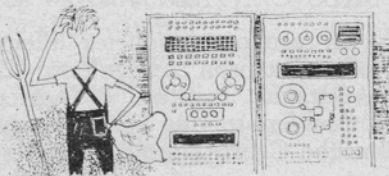


It would appear that the advantages and functions of farm management clubs at Kojonup are not fully appreciated by half the farmers. A number of interesting trends are pointed up.

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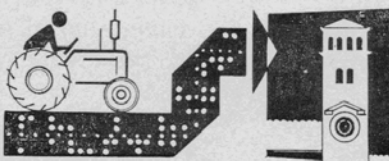


By being allowed to develop haphazardly, computer planning on American farms has not been given the same chance of success as Australian forward farm planning with EDP aids.

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Farm management accounting for planning ahead

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Linking the farmer to the university through his accountant and farm management adviser is seen as the most exciting agricultural development of the decade.

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farm policy

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Farm Policy is a quarterly on economic policies affecting Australian agriculture, compiled by the John Thomson Agricultural Economics Centre at the University of Western Australia's Institute of Agriculture. This Centre was established in 1961 as a problem-solving research unit in agriculture and economics. From time to time the Centre's research findings are reported here.

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The effects of increasing by one million dollars production from various West Australian industries is analysed—for the number of new jobs and amount of new income it would create and how much income per job this would entail. Farming comes out high on the list of job-generators. Results for dairying and the Kimberley and pastoral industries are shown. Also new guidelines for policy-makers.



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Generating jobs and income in Western Australia

THE need to generate more jobs and to diversify the economy are reasons which have been given for speeding the rate of industrialisation in Western Australia. Industrialisation is certainly a means of diversification. However, whether it should be encouraged because it generates more jobs than does agriculture, is questionable. It may be asked; "what industries have a high job generating ability?" But jobs need income, and the income generated by an industry must also be considered.

The dependence of each industry on every other industry in Western Australia was measured for 1958-59 by M. L. Parker of the John Thomson Agricultural Economics Centre. He showed, for instance, how dairying

depends on the products of the fertiliser industry, and how the sawmilling industry depends on forestry. His measures of dependence are helpful in estimating the likely effects of changes in an industry, on the whole economy. When an industry increases its output, the associated changes in income and employment within this industry are termed the primary effects; the associated changes in all of the other industries are termed secondary effects.

The whole of the Western Australian economy was classified into 54 "industries". Each of these is an industry within one or other of agriculture, mining, engineering, manufacturing or commerce. Some of the agricultural industries have been

TABLE 1
EXTRA JOBS ASSOCIATED WITH AN INCREASE IN PRODUCTION OF
ONE MILLION DOLLARS

	Primary (1)	Total (2)	Multiplier (2) ÷ (1)
High labour requirement			
Dairying	261	416	1.6
Forestry	207	314	1.5
Paper and printing	136	206	1.5
Bakeries	104	320	3.1
Low labour requirement			
Wheat and sheep	131	224	1.7
Fertilisers	55	187	3.4
Iron and steel	22	84	3.9

regionally defined. For example there are the Kimberleys and the Southern Agriculture industries.

Table 1 shows the total number of extra jobs which could be expected to be generated by an increase of one million dollars in production in each of several widely differing industries. The *total* number of extra jobs is the sum of those likely to be generated by both primary and secondary effects of the increase in production. The multiplier is the number of jobs generated for every extra primary job. This multiplier is widely accepted as a good measure of the job creating power of an industry.

Those who favour industrialisation in Western Australia have often argued that job creation is greater in manufacturing than in farming industries. Table 1 shows that the total number of extra jobs likely to be generated by one million dollars of increased production is at least as great for farming industries as for manufacturing industries. This is also true for most of the other industries investigated but not shown in Table 1.

However two industries in Table 1 have relatively high multipliers. These are the fertiliser and the iron

and steel industries. These may be expected to generate about the same number of secondary jobs throughout the economy as did the other industries. However they had relatively small labour requirements for themselves. This turned out to be true for most of the other industries with high multipliers. Industries with high multipliers do not necessarily generate a large number of jobs.

Farming generates more jobs

Viewed in this way, the multiplier alone appears to be inadequate as the basis for choosing which particular industry to promote in Western Australia. If the policy goal is to generate the greatest possible number of jobs, the better guide is the *total* number of jobs generated by a given increase in production in an industry. In general, the evidence shows the small-scale industries, particularly farming, appearing to have the greater job-generating power. Given a choice, for the generation of more jobs, farming industries should be promoted rather than large-scale industries.

There is another consideration—the effect of the initial capital expansion that may be required to increase production in a particular industry. There are certainly more

TABLE 2
EXTRA INCOME ASSOCIATED WITH AN INCREASE IN PRODUCTION OF
ONE MILLION DOLLARS

	Primary (1)	Total (2)	Multiplier (2) ÷ (1)
High labour requirement			
Dairying	309,000	662,000	2.1
Forestry	530,000	774,000	1.5
Paper and printing	312,000	466,000	1.5
Bakeries	203,000	696,000	3.4
Low labour requirement			
Wheat and sheep	424,000	620,000	1.5
Fertilisers	165,000	427,000	2.6
Iron and steel	199,000	333,000	1.7

jobs in building a steel mill than in constructing a bakery or developing a dairy farm. However, the number of men required to build the many small factories with a combined output equal to that of the steel mill may equal or exceed the number of men required to build the mill. This aspect is not to be taken into account in the foregoing calculations.

The incomes which may be expected to be generated by an increase in production of one million dollars in the industries in Table 1 are shown in Table 2. Again the distinction is made between the primary and total effects and the multiplier. The income multiplier measures the total income associated with each extra dollar of income generated within the industry. This is widely accepted as a good measure of an industry's income generating ability.

The industries with high income multipliers (bakeries and fertilisers) do not necessarily generate large increases in total income because total income is the product of the primary increase in income and the income multiplier. In fact, as shown in Table 2, industries with the highest income multipliers had smaller increases in primary income than industries with the smaller multipliers. Consequently, these latter industries

generated as great a total of income as those with a much larger multiplier. Thus, the income multiplier alone is not a good measure of income-generating ability of industries in Western Australia.

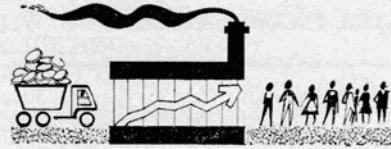
What is total income?

Total income generated is the best measure of income generating ability, and it can be seen in Table 2 that farming and forestry may be expected to have greater income generating ability than most other industries. On average, farming—with large labour requirements—generated about 600,000 dollars of income for each million dollars of extra production. For dairying it was 662,000 dollars of income: for farming with small labour requirements (wheat and sheep, pastoral, Kimberley and poultry); and for extractive industries (forestry, fishing and mining), the average was about 650,000 dollars.

There was a great deal of variation between individual industries, but generally manufacturers yielded less extra income, namely 580,000 dollars and 450,000 dollars for factory industries with high and low labour requirements, respectively. Engineering was the lowest with only 300,000 dollars of extra income generated by

Generating jobs and income in Western Australia

continued



one million dollars of additional production.

One qualification must be made. The additions to income and to jobs have been calculated from the average amounts of income and of numbers of jobs associated with the level of production in 1958-59. The assumption is, therefore, that extra production would require the same proportion of workers and yield the same income as average production.

Where the general economic situation ensures full employment there is no special need to promote labour-using industries. Policy therefore could concentrate on promoting those industries which generate highest income per job. This would result in expansion of total Western Australian income and increases in income per head of population. Income per

job in each of several industries is shown in Table 3.

Industries with small labour requirements may be expected to generate more income per person employed than those with large labour requirements. In particular, heavy industries (mineral oil and iron and steel) generated most income per job of all industries considered. Primary industries with low labour requirements were next highest on the measure of income per job.

Implications for policy decisions

If the goal is to raise incomes as much as possible, the indications from this analysis suggest that policy should favour increases in production in heavy manufacturing and large-scale farming, both of which have small labour requirements.

TABLE 3
INCOME GENERATED FOR EACH JOB (DOLLARS)

	Primary (1)	Total (2)
High labour requirement		
Dairying	1,181	1,592
Forestry	2,561	2,465
Paper and printing	2,282	2,250
Bakeries	1,960	2,173
Low labour requirement		
Wheat and sheep	3,244	2,768
Fertilisers	2,980	2,283
Iron and steel	9,209	3,981

Note: Figures in Column (1) are derived by dividing the appropriate figure in Column (1) of Table 2 by the figure in Column (1) of Table 1. Column (2) is obtained in a similar manner.

The total can be less than the primary figure, since we are calculating on a per job basis. Where this occurs it indicates that the secondary increase in income is proportionately less than the secondary jobs produced.

The Kimberley industry is an interesting example. It is similar to the pastoral industry in terms of its ability to generate jobs and total income. A million dollars of extra production in the Kimberley industry may generate an extra total income of 672,000 dollars. In the case of the pastoral industry it is expected to be 640,000 dollars. The primary income generated within each industry is much higher for the Kimberley than for the pastoral industry, being 543,000 and 443,000 dollars respectively. Conversely the Kimberley industry generated a smaller amount of secondary income than the pastoral industry. This is an expression of the economic isolation of the Kimberley industry and is an important point for those who advocate the expansion of such industries. If economic isolation and geographic isolation are connected, the foregoing point is one which should be considered by advocates for northern development.

Criteria for development should be used which are in keeping with the local economic environment. Not every industry which generates a large total income per extra job has the ability to expand. It may already be close to its limit for expansion because of market or resource restric-

tions. For Western Australian development, both the likely number of jobs and the likely income generated per job should be taken into consideration in choosing which industries to promote.

This point is well illustrated by the case of the dairying industry. Apart from rail transport, this industry may be expected to generate more total jobs than any other single industry for a given increase in production. However, the total income generated for each of these jobs would only be of the order of 1,592 dollars, which is less than the basic wage. Within the dairying industry the position is even worse at 1,181 dollars of income expected for each extra job. Incomes of this order do not warrant the expansion of these industries even though their expansion may generate a large number of additional jobs.

The criteria which have been presented here do not directly lead to any particular policy proposals. Nor could they provide the sole basis for policy. Awareness of an industry's ability to generate jobs and income per job is a powerful adjunct to the many other guidelines for policy makers.

A review of Queensland's three-year-old scheme for developing brigalow land shows that carrying capacity has been trebled with scrub clearance and pasture improvement; it is planned eventually to treble beef numbers to 1 million head. The imaginative brigalow land allocation system is explained. A comparison of theoretical average properties, on a before-and-after basis, shows return on average capital up from 2.3 to 6.3 per cent. And there is implicit warning not to push the scheme too hard, and to budget ahead more effectively.



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Economic aspects of the brigalow development scheme, Queensland

INCREASED rural production in Australia is necessary mainly to provide exports with which to pay for imports, but also to satisfy the food needs of a growing internal population. Total production can be raised either by increasing output on existing relatively improved farms, or by closer settlement of idle or little-used land.

As far as Queensland in concern, the scope for closer settlement is greatest in the fertile brigalow lands, although the Spear grass region (40 million acres) and the Wallum (6 million acres) also offer possibilities. All these areas have an annual rainfall in excess of 20 inches so they are capable of supporting improved

pastures, the key to pastoral development on an intensive scale.

The Queensland brigalow lands occur as a discontinuous belt approximately 200 miles wide stretching from the N.S.W. border north 700 miles almost to Townsville. Within this area there are around 14 million acres which originally carried brigalow scrub or other scrub associations of which brigalow was an important component.

In terms of stage of development and present land use, the area can be divided into three regions; northern, south-western and eastern. The latter two regions have developed faster because of proximity to markets,

availability of roads and other transport services, and a more reliable rainfall. Thus, the northern region now contains most of the remaining uncleared brigalow. Predominant land use patterns are sheep and cropping in the south west, dairy and cropping in the east, and beef cattle raising in the north.

In 1961 the Queensland Government approached the Federal authorities for financial assistance to help develop up to 9.5 million acres of brigalow in the northern region. The Government divided the land into three areas called simply Area I (1.5 million acres), Area II (2.8 million acres) and Area III (5.2 million acres, later amended to 6 million).

Following an economic assessment by the Bureau of Agricultural Economics, a Commonwealth-State Government agreement covering Areas I and II was drawn up in July, 1962. The Commonwealth agreed to lend \$14.5 million over a five year period, which when added to a State contribution of around \$10 million, was to be used for development advances to new settlers and to provide an augmented road network. The State agreed to terminate leases in the development area (no significant areas having been freeholded) and to re-subdivide into smaller blocks to be offered to new settlers.

**Outlook for
beef more
favourable**

Although the land was suitable for both crop and livestock production, the new blocks were planned as beef producing units mainly because of the more favourable market outlook for beef. It was visualized that each new settler's block would be around 10,000 acres in size with up to 6,000 acres of improved pasture

(rhodes, buffel and green panic), and capable of carrying 800 head of cattle without cultivation. Approximately 75 per cent of the new blocks were to be offered for selection by ballot and 25 per cent by public auction. Settlers obtaining blocks by auction and existing land holders wishing to retain land, were to be treated somewhat differently from settlers winning blocks by ballot.

The main requirements for eligibility of settlers obtaining blocks by ballot were that age should be between 18 and 55 with three to 10 years pastoral or farming experience immediately prior to ballot, and that the applicant or spouse be landless or at the most hold 50 per cent of a living area which had to be disposed of within 12 months.

The applicant was also required to have cash, convertible assets or livestock of a minimum value of \$24,000. Development conditions stipulated that the block be brought to full carrying capacity within three years. This would normally mean grassing of all brigalow and softwood scrub areas up to 6,000 acres. At least two permanent watering points were also required by this time, as well as adequate subdivision.

Necessary finance up to \$48,000 was to be provided at around 5 per cent interest by a corporation set up within the Queensland Department of Lands. Loans could be obtained for clearing, pasture establishment, fencing, cattle dips, water facilities and some breeding stock.

If the block was under 10,000 acres it was automatically freeholded after repayment of the upset price over a period of 25 years, interest

free. For areas over 10,000 acres the lessee had the option to freehold, but only when the Lands Department considered the block fully developed.

For settlers obtaining blocks by auction, developmental conditions were to be similar to the balloted blocks. Payment of the purchase price could be spread over 10 years. However, these settlers were not to be eligible for development loans from the corporation but were expected to use normal commercial channels.

Existing landholders in the development area were to be compensated for improvements and given the option of retaining part of their holding. Where further development of the retention area was required, the new lease stipulated that this should be completed within five years. Provision for freeholding was similar to that for new settlers. These landholders were also ineligible for development loans from the corporation.

Applicant to block ratio: five - to - one AREAS I AND II: The whole or part of 57 tenancies involving 2,453,640 acres have been terminated. The existing lessees were granted 47 new leases totalling 1,027,162 acres. The first ballot for new blocks took place in March, 1963 and to date 90 blocks with a total area of 861,859 acres have been made available. Of these 68 were balloted for and 22 sold by auction. Approximately five times as many applicants were admitted to ballot as there were blocks available.

An indication of the demand for blocks is that the average actual sale price per acre of auctioned blocks is \$6.12 compared with an average up-

set price of \$2.82. It is proposed to offer a further 52 blocks in Areas I and II, of which 36 will be for ballot and 16 for sale. Thus eventually, in place of 57 settlers, there will be 47 on retention areas and a further 142 on new blocks.

Overall carrying capacity is expected to increase from around one cattle beast per 30 acres to around one cattle beast per 10 acres. In order to minimize development costs by large scale contracting and purchasing, the corporation has co-ordinated activities such as scrub pulling, burning and grassing, and dam excavation. As well, items such as grass seed and fencing materials have been bought in bulk.

AREA III: In December 1965 the Queensland Government approached the Federal Government for further financial assistance to help develop the 6 million acres of Area III. This scheme has recently been approved but no agreement has yet been signed. It will involve the expenditure of about \$11 million.

Economics of development It is assumed that the decision of Federal and State Governments to invest capital in brigalow development represents to them the "best" use of this scarce resource.

A thorough assessment of earning capacity of properties is not yet possible as the first blocks were settled only three years ago. Hence adequate actual cost and performance data do not exist. However, a conditional or tentative assessment can be made by comparing an "average" property before and after the inauguration of the scheme. In the former case actual data are available (from University of Queensland and

Economic aspects of the brigalow development scheme

continued



Bureau of Agricultural Economics surveys), while in the latter some estimates are still involved. It is assumed the properties are somewhere in Areas I or II.

The total acreage of an "average" pre-scheme property is 38,000, of which just under half is brigalow and softwood scrub and the remainder forest. There are 1,400 acres of run out "improved" pastures consisting mainly of rhodes grass which was sown sporadically over a long period. Total cattle numbers including breeding stock are 1,130, giving an average carrying capacity of one beast per 33 acres.

Beef only source of income

The only source of income is beef. Saleable production averages 100 lb. per herd animal per annum. At \$14 per 100 lb. (allowing for the store component of sales), this gives a gross income of \$15,800. Major expense items are labour, overheads, repairs and maintenance, and freight. The property is unencumbered. After allowing for a management reward, total expenses are \$11,900. Hence the interest surplus is \$3,900.

Total capital investment in improvements to the land, stock and plant, fences and buildings is \$92,000. This does not include the land itself since the property is held under leasehold tenure. The return on the lessee's invested capital is therefore 4.2 per cent. However, for a more

valid comparison with the post-scheme property the unimproved value of the land should be included. If a conservative figure of \$2 per acre is assumed, total capital investment rises to \$168,000 and return falls to 2.3 per cent.

An "average" new block covers 9,500 acres with 5,000 originally under brigalow and 4,500 under forest. The brigalow has all been pulled and grassed; fencing, cattle holding facilities and watering points are adequate. Total capital investment is \$124,000 including land and improvements. Cash cropping has not been permitted by the corporation.

The property carries 950 head of cattle including breeding stock, and store cattle are not bought in for fattening. Meat production per animal is 110 lb. per annum. At \$15 per 100 lb. (a \$1 quality premium over the pre-scheme property) this means a gross income of \$15,700.

Total expenses, including management reward, amount to \$7,900. In order to calculate percentage return on capital it is assumed the property is unencumbered, thus mortgage repayments have not been included in expenses. The calculated interest surplus is thus \$7,800 and the return on capital 6.3 per cent.

The major simplification made here has been to assume the property

is in a stable financial state in the sense that stock turnover has stabilized and there are no further capital expenditures. Also neglected are the problems of debt servicing and accumulated deficits in the development period.

Another way of assessing the scheme is in overall view. The planned trebling of beef numbers to around 1 million head will result in at least a comparable increase in turnoff and hence potential exports. The larger number of properties each at a higher level of production will require additional producer and consumer goods and services, thus assisting in increasing prosperity in surrounding districts and further afield.

Retrospect and prospect

(1) The major weakness of the scheme to date has been that the time lag between first taking up the block and full development was under-estimated. This has lowered income, thus affecting ability to service debt and it has cut down on working capital. It is proposed to rectify this problem in Area III by pre-development of blocks before selection to the extent that 400 to 600 cattle can be maintained.

(2) Management difficulties have centred around control of brigalow sucker regrowth. The normal resuckering problems have been made worse by some settlers, being anxious to earn income as soon as possible, introducing cattle too early on to new pasture.

(3) Initial capital requirements for new settlers may be too low. This in turn means that considerable capital has to be borrowed, leading

to difficulties in repayments in the early years when incomes are not yet at a peak.

(4) Data from the Bureau of Agricultural Economics indicate that a higher return to capital can be obtained by adding cash cropping to the livestock enterprise. However a greater initial investment in plant and machinery is also required. Some people believe that the great variability of rainfall in the area will preclude cash crops from becoming important on individual properties. On the other hand, others believe that if some blocks were made larger than average, machinery costs could be spread over a greater output, hence compensating for seasonal variability.

Summary and conclusions

The scheme has been pushed forward with vigour. Certainly there have been disappointments. Resuckering problems have been no easier than anticipated. The speed of development has been over-estimated, probably because planners were not thoroughly familiar with budgeting techniques as a practical tool for forward planning and for pinpointing likely future financial problems.

If future settlers were required to have more capital of their own there would be less difficulty with debt servicing. However this requirement would not accord well with current State Government policy of equal opportunity for experienced applicants who are short of capital. Nevertheless, the scheme is progressing well and the accumulating experience is being taken into account in future planning.

The implication from the preliminary results of this pilot study is that there is considerable ignorance about farm management clubs. Half the farmers questioned about the clubs did not grasp fully their function. Among the many interesting fragments of information is the leaning of club members towards field days, farm walks, and discussion groups; and the increasing popularity of press and radio among non-members as a way of getting information.



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Farm management clubs

THESE are preliminary results of a pilot study of farm management clubs and farmers' sources of information. More than 100 farmers in the Kojonup district were interviewed eight years ago, and about 80 of them were interviewed again this year, using almost the same interview schedule.

The aims of this survey (done in conjunction with C.S.I.R.O.) were to identify changes in the pattern of farming during the eight-year period and to help define plant, animal and economic research problems. The 83 farmers interviewed comprised about 26 per cent of farmers in the Shire.

Two farm management clubs have been functioning in the Kojonup

Shire, one since 1962 and the other since 1964. Fifteen farmers out of the 83 in the second survey were members of a club so it was possible to analyse replies according to those given by "members" and "non-members".

Replies to the question "*Why haven't you joined a farm management club?*" are given in Table 1 (on next page). They indicate that many non-members do not appear to understand what a farm management club does. Typical replies were: "I dislike being told how to run my farm" . . . "I prefer to make my own decisions" . . . "I am not clear what clubs do" . . . and "I know my farm better than any adviser".

TABLE 1

(TO NON-MEMBERS) Q. "Why haven't you joined a farm management club?"			(TO MEMBERS) Q. "Why haven't others joined a farm management club?"		
Category	No. of Replies	%	Category	No. of Replies	%
Dislike being told how to run farm.	6	17	Think they'll be told what to do.	7	29
Prefer to make own decisions.	8				
Not clear what they do.	4	7	Have a wrong idea of how clubs operate.	5	21
"Know my farm better than any adviser."	2				
Don't agree with advice being given.	14	26	Can't see how an outsider can help them.	3	13
Would not necessarily follow advice.	7				
Satisfied with present progress.	9	17	Indifference and/or pride.	6	25
Don't need to make more profit.	5				
Can't afford to.	9	11	Can't afford to.	2	8
Don't know.	1	1	Don't know.	1	4
Can get advice and information elsewhere.	10	12		—	—
Prefer to wait and see how they succeed.	8	9		—	—
Total No. of replies	82	100		24	100
Total No. of farmers.	56			15	

TABLE 2

(TO NON-MEMBERS) Q. "Why do you think others have joined a farm management club?"			(TO MEMBERS) Q. "What do you get from being a member?"		
Category	No. of Replies	%	Category	No. of Replies	%
More profit wanted.	16	26	Business and budget advice for planning ahead.	14	28
To get up-to-date information. To experiment with new ideas.	2	10	Kept up-to-date with latest information.	10	20
To get more credit.	4		Better records and/or credit rating.	4	8
To benefit from experience of others.	2	3	To compare performance with others in the club.	7	15
Don't know.	7	11			
Lack of confidence and/or experience.	13	21			
To "keep up appearances".	14	23			
	4	6	"Whole farm" advice.	6	14
			More intensive advice.	7	15
Total No. of replies	62	100		48	100
Total No. of farmers	51			15	

The question: "Why haven't others joined a farm management club?" was put to the 15 farmers who are members of a club. Half of their replies (Table 1) indicated either that "they think they'll be told what to do" or "they have a wrong idea of how clubs operate".

Non-members often indicated their disagreement with advice they thought was being given, while some of them claimed that although the advice was sound, they were unable to put it into practice. The equivalent response from members was: "They can't see how an outsider can help them."

Members did not feel they had lost control of their farms, or were "told what to do", nor did they feel obliged to agree with their adviser. Several, in fact, maintained that some disagreement was an advantage, and helped them maintain an open mind on various issues. Other replies about non-members mentioned indifference, pride, and "can't afford to join".

Some non-members preferred to wait and see if the club movement

succeeded, and others claimed that advice and information was available from other sources.

Non-members did not readily respond to the question "Why do you think others have joined a farm management club?", and 21 per cent. of replies were "Don't know". Furthermore, some replies seemed ill-considered or disparaging, for example, "to keep up appearances" or "because they lack confidence and experience." Nearly half the non-members recognised that those who had joined wanted more profit, were seeking up-to-date information, or wanted to benefit from the experience of other farmers.

The 15 members gave 48 replies to the associated question, "What do you get from being a member?" All except one farmer valued the business, budgeting and planning advice. This was despite the fact that as a group the 15 members were already in a sound financial position and carried, on average, more stock per acre than non-members. Eight years ago, present day members carried approximately 50 per cent more stock per acre than

TABLE 3

Q. "What in your opinion is the best way of passing on information to farmers?" (Check List)	Non-Members		Members		"New" Farmers ^o
	1958	1966	1958	1966	1966
	%	%	%	%	%
Radio	8	17	8	8	14
Press	18	23	19	10	20
Field Days	27	35	16	35	23
Lectures and Films	19	9	19	—	6
Personal Farm Visits	28	10	38	31	26
Discussion Groups	—	6	—	8	3
Other Farmers	—	—	—	8	8
Total Replies	91	94	26	26	35
No. of Farmers	48	47	13	14	19

^o In the sense that they have taken over properties since 1958. Five of these are members of a farm management club.

did non-members. Despite this, members have increased their stock numbers much faster than non-members since the first club began operating in 1962.

Others replies mentioned the value of keeping up-to-date with the latest information; the value of being able to compare performances with other club members; improvement in the keeping of records, and credit rating. In particular, the advantages of "whole farm" advice and "more intensive advice" were mentioned in almost one-third of the replies from members.

**Contacts with
Agriculture
Department** A question asked in 1958 and again in 1966 was: "*Have you had any business contacts with officers of the Department of Agriculture through (a) a visit to your property, (b) a visit to the department's office, (c) by 'phone or letter?*"

It was apparent that categories (a), (b) and (c) were closely related. In other words, farmers who asked for a farm visit were also likely to have visited the department's office, and to have 'phoned or written to the adviser. However, in 1958 those who subsequently joined a club reported more than twice as many contacts with the department as those who did not join. Moreover, by 1966, non-members had maintained about the same frequency of contact with the department, while members had tended to seek even more contact. Thus, having their own adviser has not so far diminished the frequency of contacts that club members had previously maintained with the department.

Another question asked in both

years was: "*Have you attended any field days in the past three years?*" For non-members, the numbers of affirmative replies remained at about 60 per cent in 1958 and in 1966. Members reported a 77 per cent attendance in 1958, and 100 per cent in 1966. This, of course, reflects the clubs' policy of encouraging field days.

"*What . . . is the best way of passing on information?*": Preferences of farmers towards various sources of information are shown in Table 3. Some properties have changed hands since 1958, so this comparison is restricted to those farmers who answered this question in 1958, and again in 1966.

The right-hand column of Table 3 headed "New" farmers also lists the replies from 19 farmers who had either purchased or taken control of their farms since 1958. Their preferences are clearly for personal visits and field days, followed by mass media (radio and press), and other farmers. Although not shown in Table 3, it is worth emphasising that seven of these 19 "new" farmers, showed personal farm visits as a first choice, and another six favoured field days. Thus, two-thirds of the more recent farmers preferred farm visits or field days to other sources of information.

The comparative section of Table 3 shows that radio and press gained popularity among non-members, but not among members. Field days have become more popular with both groups, but farm visits have shown a big decline among non-members. The reasons for this are not clear, although it was often mentioned that too few Department of Agriculture staff were available

to give prompt on-the-farm advice. Members receive regular on-farm advice as part of the club service, and the comments shown in Table 2 emphasise the sort of topics they discuss. There is also evidence that some advice spills over from members to non-members.

**Farmers more
"extension
conscious"**

Even before 1958, farmers who now belong to farm management clubs have been more "extension conscious" as measured by the number of requests for visits from advisers.

In the latest survey, it was noted that several farmers expressed a preference for small, informal types of demonstrations and field days where "seeing the results for yourself" could be combined with asking questions. This outlook would help to explain not only the popularity of field days, but also the role of discussion groups as a useful source of information. Several mentioned TV as being worth developing, although the timing of programmes to suit farmers is not easy.

The chief impression from these preliminary observations is the potential that exists for intensifying farm advisory work at Kojonup. The majority of farmers were not opposed to farm advice even though some of them did not clearly perceive what an adviser could do, or should do. There is undoubtedly a diversity of opinion about farm management clubs themselves, ranging from outright scorn and condemnation on the one hand, to regret that no vacancies were available to join either of the two clubs on the other. There were, in fact, five farmers in

this latter category, and since the sample included about one-quarter of farmers in the Shire, it may be inferred that there is already a nucleus of 20 farmers who would join a third farm management club. In addition, a number of others indicated their interest.

The differences in attitudes between members and non-members of farm management clubs are largely due to lack of understanding. Even so, 47 per cent of replies from non-members recognised that members joined to make more profit, to compare their performance with others, and to get up-to-date information. These were almost precisely the same advantages that members laid claim to.

Over the eight years, both groups showed an increasing interest in field days; there seems room for even more of these, together with farm walks and discussion groups that enable farmers to see, question and compare.

**Members'
wants
satisfied**

Despite the small sample, we may conclude that farm management clubs at Kojonup appear to have satisfied members' wants for intensive business and management advice, coupled with personal farm visits and field days to get up-to-date technical information, and to evaluate performance against that of others.

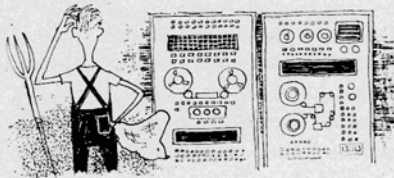
Finally, there is the unanswered question: How many of the 50 per cent who do not clearly understand the function of a farm management club would join if they were better informed?

Evolution of the use of the computer to help U.S. farmers has been more haphazard than in Australia. American farmers have not sought out this advance, and some State universities, in offering it, have tackled their extension work without planning adequately the mechanics, or establishing the implications. As a result of this lack of imaginative planning, the computer's capacity has not been fully tapped. The review concludes by pointing up the differences between Australian and American EDP prospects.



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Electronic data processing and the farm — U.S. style

IN the past seven years electronic data processing (EDP) record keeping schemes have swept across the United States and Canada. Sixteen university centres serving 35 States and Provinces have begun operations since 1959. However, at a most generous estimate, and including the services offered by the Farm Bureau Federation in a number of States, less than 1.0 per cent of commercial farmers and about 0.2 per cent of all farmers are using EDP facilities.

What is the interest of American universities in offering these schemes? How do they operate? Why are they not more popular with farmers at costs that are heavily sub-

sidised or, in many instances, when they are free? This article will supply one person's answers to these questions.

There are major differences in the operation of these schemes compared with those in Australia. These are summarised in Table 1. There are perhaps two main reasons why there are great differences between the schemes in these two countries:

(1) Farmers in the United States do not seek outside assistance, such as that provided by accountants or tax agents in Australia, for compiling their income tax returns. This provides an opportunity for the universities to help with tax returns as an

TABLE 1
EDP SCHEMES:
AMERICA AND AUSTRALIA COMPARED*

Item	America	Australia
Itemisation of all business transactions	Yes	No
Monthly return provided by farmer	Yes	No
Data forwarded to centre by	Farmer	Consultant or accountant
Who enrolls the farmer	Usually County agent	Usually farm consultant
Detailed record of each farm enterprise	Usually available	No
Special income tax report	Usually	No
Frequency of output to farmer	Monthly or quarterly plus annual summary followed by comparative analyses	Annual analysis, flow of funds and comparative analysis

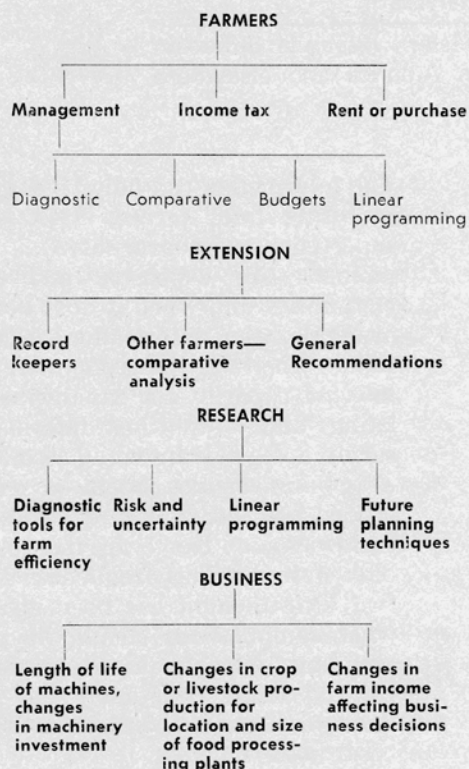
*(The proposed scheme for Western Australia differs in many respects from those in America and elsewhere in Australia.—Editor)

incentive for farmers to keep records. Also it means that the provision by the universities of a free or subsidised service to farmers in exchange for data for extension, research and teaching does not conflict with established accountancy services.

(2) Extension in the United States is a State university responsibility, not a responsibility of departments of agriculture. Because extension there is more economically orientated, the extension people place considerable pressure upon their research colleagues for up-to-date information on the costs and returns associated with farm enterprises. For example, there may be 30 methods of lot feeding beef; but which is best *this year*?

The information can only be supplied by using farm records kept under supervision or by farm surveys. Both methods are expensive and time-consuming, and when it does become available, the information is often stale. Therefore the computer, with its vast capacity for rapidly assimilating and outputting information, seems a logical answer. Also, once a few universities begin a service, others feel compelled to "join the bandwagon". However, the rush to offer a service has frequently meant that little thought has been given to what computations should be made and how data should be presented. By and large, little more has been done than to mechanise the old record book schemes.

Another point is that the universities want the data for teaching, research and extension. Hence public funds are used to set up the schemes and frequently, to run them. In return the farmer may have to supply a minimum level of detail in his records. Some schemes which do not charge, select the farmers to ensure representation of particular fields of interest; some will accept all-comers; some have yet to formulate a policy. However, the programmes or systems are made available, free of charge, to institutions such as banks, which are interested in providing a commercial service. The problem of what data to record arises because this can be defined only in the light of purpose for which it is to be used. The major uses of farm data recorded by universities in the United States are set out as follows:



From this scheme, it may be appreciated that the sort of records which would satisfy the present needs of many farmers, namely to file their tax returns correctly, would be of no assistance to an extension agent trying to assess a new technique of production for which he may need to know changes in labour, in feed and in other inputs and how these affect production. The university schemes frequently provide for different levels of detail in record keeping. Thus, as the farmer develops an interest and understanding of what record analysis can offer, he can keep his accounts in increasing detail.

EDP record-keeping services can be divided into the following stages:

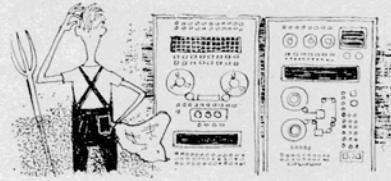
- (1) Data collection
- (2) Coding
- (3) Computation
- (4) Report output
- (5) Use of data

The responsibility is on the farmer to fill in a monthly report. This report may be mailed direct to the university or it may first go to the County extension agent who checks it for inconsistencies and clears these up with the farmer before forwarding it to the service centre. The forms to be forwarded monthly vary in number from two to seven. Usually receipts and expenditure forms are kept separate, hence the minimum of two. The larger numbers occur where there are specific forms for machinery, labour, changes in livestock and changes in assets.

Usually there is group tuition in how to fill in the collection forms, followed by personal assistance to the farmer for the first month or two. At the end of the year when special

Electronic data processing and the farm – U.S. style

continued



inventory forms have to be completed there is further group training in completing the forms, but usually considerable personal assistance is needed. The extra work involved in opening and closing the annual accounts has led to some extension workers resisting farmers enrolling in the schemes.

The detail which these forms require for each transaction depends in part upon who does the coding required for computer processing. If the farmer codes, he needs only enough data to act as a reminder of what the transaction was about. If the form is coded off the farm, there must be enough information recorded on it for the transaction to be coded correctly. The minimum requirement for a financial transaction is date, description of the item, physical quantity, type of transaction (that is, farm, non-farm, capital), amount received or spent, and whether cash or credit. This could be expanded to include with whom the farmer dealt, price per unit, enterprise identification, partnership or share-farmer allocation, and cheque or invoice number.

Coding can become complex

A code is necessary so the data can be identified and handled expeditiously and systematically by the computer. In some instances, coding reaches a frightening complexity with up to 20 digits to identify *each* transaction. In such a system we could identify the paddock,

the crop, tractor repairs while working the crop, who was driving the tractor and each specific repair job. Nevertheless some States get by quite well with seven digit codes and one uses only three digits. Again it depends upon the detail required. The former permits accurate costing of each crop by paddock, as well as providing complete individual machine costs.

Usually coding is done at the centre, but there is a considerable swing towards having the farmer code his data. Farmers often feel that it adds to their interest and understanding of the records and it substantially reduces the cost of processing. However, there will not usually be any check on the accuracy of coding except for outstanding instances such as a receipt coded as an expense.

Once the data have been coded and checked for completeness at the service centre, they are placed on data cards and verified ready for computing. The computation may be done by university computers or by computers off-campus. Due to the high cost of processing one or two farms at a time, the processing is done in batches. This can lead to problems if farmers do not meet deadlines for forwarding monthly returns. Such delay usually means the farmer will be excluded from processing for that month, and his data for two months will be combined in the following month.

Report output varies

The reports received by the farmer vary from State to State. Some list all transactions, then give a monthly statement. Some give monthly enterprise accounts. One centre goes so far as to present a monthly profit and loss account, balance sheet, and comparison with the previous year for financial and physical items, as well as enterprise accounts and a list of all assets. Some centres give quarterly summaries and others make no provision for enterprise accounts. Perhaps most remarkable is one centre which supplies up to 48 pages of closely printed, poorly laid out computer output per month. This just cannot be put to the use for which it was intended!

Data are of no value if not used, and this happens all too frequently. Many farmers use the schemes almost solely as a tax record device. In few instances could one find farmers who had made use of the data for planning decisions—usually not because they did not think the data would help, but because they did not know how to use the information. The responsibility, mostly but not universally, is with the County extension agent to help the farmer to interpret his records and to assist him to plan. Often the agent is not competent in this field and he already has a full-time job. Therefore he cannot devote the necessary time to assist individual farmers to make use of the deluge of information so often supplied.

Almost universally, when the an-

nual results are finalised and the comparative analyses made, the farmers in an area are invited to a group meeting, and the analyses are explained to them. In some cases farmers are trained in the interpretation of the output sheets and in budgeting techniques so they can analyse their own business. In one State, farmers are joined into groups which are looked after by a paid adviser. Cost probably limits better use of records most. By and large, the American farmer does not seem willing to pay for assistance to the same extent as those Australian farmers who use an accountant, join a farm management club, or employ a consultant.

U.S. scheme lacks imagination

The final impression of EDP record schemes in the United States is that in most, but not all instances, the computer is used for calculations previously done by hand or not at all. Little imagination has been used in harnessing the capacity of the computer to assist in forward planning, or even in displaying the monthly or quarterly returns in a way which would highlight changes from a plan, or is even readable. In only a few instances are there enough capable extension personnel available to help farmers make effective use of the data. The Australian farmer who is prepared to use a farm management adviser or consultant, either as a club member or as a private individual, has a better chance of helping himself than has the average American farmer in an EDP recording scheme.

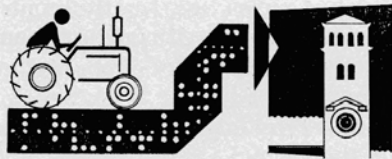
This material is based upon "EDP and Farm Records—A Survey and Appraisal" by Robert M. Finley and Robert A. Pearse, Agric. Econ. Paper 1966—2, Federal Extension Service U.S.D.A., Washington, D.C., and Dept. of Agric. Econ., University of Missouri, Columbia.

The linking of farmers to universities, through their accountants and farm management advisers, is the decade's most exciting agricultural possibility. It gives the farmer access to the computer, adding immeasurably to the scope of farm management decision-making. What does this mean to the farmer, his accountant and management adviser? What new techniques are involved in the farm-computer linkage? This survey outlines these, along with the drawbacks as well as the prospects; it concludes that the resultant upgrading of management skills will have economic benefits comparable with those of a greatly improved crop or pasture plant.



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Farm management accounting for planning ahead

A MANAGERIAL revolution in Australian agriculture is in the making. More than 60 farm management advisers have been appointed in Western Australia alone since 1958. This number equals that of the full time professionally qualified extension officers of the State's Department of Agriculture. Most of them are fully financed by, and are employed directly by, about 2,000 farmers, who comprise about 15 per cent of the full-time commercial farmers in the State.

Despite our managerial revolution, accountancy services to farmers are

predominantly income tax and legal accounting. Except for possibly a couple of hundred farm businesses, the remainder of the State's 15,000-20,000 commercial farm businesses receive an accounting service which is better described as a tax service. Therefore the accounts prepared for farmers, for the most part, are not adequately informative for farm management.

They are incomprehensible to most farmers. They are for the tax year, which for many types of farming is not the decision-making year. They are prepared for the tax-payer, who

is often a sub-unit of the managerial unit. They are prepared to insufficient detail. They include inappropriate conventions of the farm business decision-maker. They are set out and presented in a manner which does not encourage their use in planning ahead.

Farm management accounts should measure up to the following criteria:

- (1) They should be comprehensible to the farmer and enable him to understand his financial *position*, and the financial results of his farm management and household *operations*.
- (2) They should encourage and help him to *evaluate* his previous plans and revise his current plans.
- (3) They should encourage and help him to plan ahead.
- (4) They should facilitate financial control within the frame of the chosen plan.
- (5) They should be timely and inexpensive.

**Taxation
should not
dominate**

The criterion of comprehensibility requires that the system includes a profit-and-loss type of statement, a statement of all financial transactions, and a statement of net worth. Included in this concept is truthfulness. This implies the valuation of assets at current market values and the preparation of accounts for the farm decision-making unit regardless of the legal entities into which it may be subdivided for tax and probate purposes: the farming year should be used instead of the tax year, unless they coincide or overlap sufficiently. Realistic rates of non-cash costs should be used instead of the tax rates of non-cash

items such as depreciation. Revenue, consumption, and expenditure on items of capital should all be classified in strict accord with principles of managerial accounting, not with tax accounting as at present.

If a previous plan is to be evaluated, the layout of the budget of that plan, and the accounts of the final result of the plan, should *match* so they can be compared. It is not likely that the accounts for the outcome of the previous plan can be prepared in readiness for the initial preparation for the current year's programme. Consequently the accounts will be used to revise the current plan and to evaluate last year's plan.

**Two stages
in forward
planning**

Planning ahead proceeds in two stages. The first involves calculating and choosing between possible plans; the second involves providing for the control of the cash and credit requirements of the selected plan. The method in common use for the first stage is comparative budgeting. It is a function of the farmer or the farmer and his farm management adviser rather than of the accountant, and can be encouraged and facilitated by the appropriate layout and presentation of farm accounts.

Planning involves the following steps:

- (1) A review of the needs of the household and of the technical and physical needs of the farm business.
- (2) Assessment of farm business opportunities.
- (3) A review of constraints, obstacles, and limitations to the realisation of needs and opportunities.

(4) Calculation and comparison of alternative solutions.

The consideration of production possibilities can also be encouraged by the results of inter-farm comparisons being incorporated into the accounting statement. There are three kinds of between-farm comparisons: one enables the individual farmer to compare the results of his farm managerial skills with those of the average, or the lowest or best performers; another emphasises the relationships between managerial variables; the third emphasises the distribution of the number of farmers within each of several ranges of managerial performance.

The criterion of timeliness simply recognises that a farmer should get the relevant accounting information when he needs it. What is relevant depends partly on the nature of the planning process. For trend of account budgeting, which is the method most commonly used for the second stage of planning ahead (control of cash and credit requirements) a monthly flow of information may be best, and it may be sufficient for the farmer to receive such information as inter-farm comparisons in mid-year, and the final accounts in February.

The criterion of inexpensiveness may require (and I am doubtful) that accountants use electronic data processing (EDP) facilities. However, managerial accounting does require the recording, collecting and processing of considerably more data than does tax accounting, and the demand for managerial accounting services is likely to become very strong. If accountants are to be involved in this emerging demand,

many of them in Western Australia will need to re-orient their thinking and re-organise their practices.

Proposals represent the ideal

Up to this point I have simply set out what I consider to be the major essential elements in the ideal system of farm management accounts. These can best be illustrated by looking at a mock-up of the major elements in the proposed farm management accounting system of Western Australia's Farm Management Service Laboratory. (See Appendix.) Although it can best speak for itself, I would like to draw your attention to several features.

Opening and closing inventories are combined with sales and purchases. Cash and non-cash costs are separately identified but remain within the one statement. Farm costs per unit of resource and/or per unit of output are also incorporated in the same statement. The sources and disposition of cash and funds statement, here called needs for and sources of dollars, highlight needed sales of farm production and integrate the farm-business farm-household finances, capital and operating costs, loans and loan repayments, savings, taxation, and off-farm investments. The net worth statement summarises and displays all causes of change in net worth during the year.

The comparative analysis emphasises the distribution of managerial performance within several ranges, rather than relationships between one indicator of managerial efficiency and others which are imagined to be causally associated with it. There is provision for comparing the previous plan with the

accounting results. And finally, there is provision for a trend of accounts budget for financial control.

Another feature is that the lay-out and presentation are designed to integrate past, current and future plans and budgets with the results of previous performance. It is hoped thereby to encourage farmers and advisers to do more planning ahead and to plan ahead more effectively.

It may be inferred from this prototype that electronic data processing machines are not really necessary for many calculations other than for the inter-farm comparisons. For the first year we propose that a full set of accounts along these lines be prepared by the accountant. It is possible, but by no means certain, that in later years information may be sent monthly to the data processing centre, and running accounts with budgets kept for farmers and sent out to them either monthly or quarterly. Meantime, however, we propose to use accounting information which has already been finalised, that is, the books will have first been proven.

Practical problems on the farm

A major obstacle to initial, widespread participation by farmers in a farm management accounting service is the lack of on-farm records keeping. Until now, Departments of Agriculture throughout Australia—and I believe, New Zealand too—have failed in their periodic drives to interest farmers in on-farm recording systems. I think that the causes of these failures emerge from both sides. Farmers have not seen the reason for such pencil and paper work, and Departments of Agriculture have not convinced them of their need for it.

However, the current farm management revolution is setting up a demand by farm management advisers for appropriate financial and physical performance information. This information has suddenly become valuable to advisers and to those farmers who see themselves as dynamic businessmen. But on-farm record keeping is in a primitive state in Australia, though I expect it won't be long before the mounting pressure of demand for accurate and more easily and more cheaply obtained information for accounting and farm management extension and research will cause efficient systems to be designed and installed. Here I see a need for further co-operation between accountants and farm management economists.

Another obstacle to widespread acceptance of managerial accounting by farmers may be cost. Where a farmer requires an accountant to keep his records and to fill in the data collection sheets, there are two major sources of additional cost: One arises from the primitive state of the primary records; and the second is the accountancy time required for managerial accounting, much of which may be done by the accountant before he returns the data collection sheets to the electronic data processing centre. This cost is additional to that of income tax accounting so that the reaction by farmers to the total costs of accountancy may be adverse.

Costs may be reduced, however, by inducing farmers to keep better records. They could also be reduced by by-passing the accountant altogether. Farmers might send basic-records direct to the EDP machines, and receive a monthly, quarterly, or annual flow of accounting and other

Farm management accounting for planning ahead

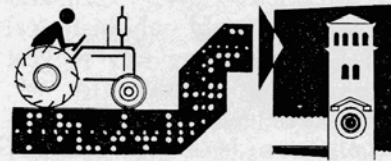
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information, including tax accounts. This may well be a development in the future. Although in Western Australia, we are planning to organise the management accounting service specifically to include accountants, not as in some states of the U.S.A., to exclude them. However, farm accountants will need to re-think their position.

Accounting methods overlap

With the advent of EDP and the managerial revolution in agriculture, the management accounting needs of farmers are likely to develop into big accountancy business. But managerial and tax accounting overlap substantially and I think that those farm accountants who do not become involved in management accounting will lose much of their tax accounting business to the accountants who *do* become involved. I would like to emphasise that we in Western Australia have specifically chosen to work through accountants. Even so, I think most accountancy practices will need to undergo substantial re-organisation.

For survival and for service the accountant must be a link between his client and the computer. In Western Australia this link will be as a collector and assembler of data rather than as a processor. In their farm management accounting work, therefore, I see the accountant's chief role to be an organiser of the collection of data for managerial and



tax accounting, and as an interpreter of the EDP output to his clients.

Another practicality is the danger that farm accountants may come to think of themselves as farm business planners and farm management advisers. It is tempting and easy to budget ahead financially without regard for technical farming considerations, and it is tempting to budget ahead from the between-farm comparisons. This has been resisted by several firms of accountants in Western Australia which are in the process of staffing up with professionally qualified farm management advisers.

It is appropriate at this point to question the value of between-farm comparisons which are now becoming fashionable in Australia. It is my view that they are a useful gimmick rather than a useful guide. I know of no better way of getting farmer interest and in orienting him toward managerial achievement and away from (and I am not saying, to the exclusion of) his traditional pre-occupation with technical achievement. This gimmick value is well known to experienced farm management advisers, though there is a tendency to elevate them to standards of performance. These comparative analyses are also being refined into between-farm comparisons of gross margins.

Despite this development, I doubt whether this sort of calculation is worth the effort except in special

farming situations. These comparative analyses can yield only historical answers. At best they can suggest questions leading farmers to ask, "Why do my managerial performances compare so badly (or so well) with those of other farmers?" The answers are to be found *outside* of the comparative analysis. The value of comparative analyses lies in their power to induce farmers to want to plan ahead formally. They are unlikely to give him any clues, though he may become motivated to start looking in the right direction, namely towards himself—to his own managerial inadequacies.

A step nearer to computer planning For the accountant the completion of the accounts, perhaps, is a final step. But farm management accounting is certainly only a stage in farm management planning. No matter how well management accounts are designed, they do not produce plans. But with management accounting organised as outlined, where accountants and farm management advisers co-operate with the farmer in using the output for planning ahead, the position is reached whereby computer planning for farmers seems to be commercially practicable. EDP requires standardised data and centralised processing.

Therefore to be organised for management accounting is to be organised also for special collections of additional data which will be needed for computer planning above the requirements of management accounting. It is also to be organised for the distribution and interpretation of computer-calculated programmes. If management accounting is organised to make use of EDP services, it is but one further step to computer planning. And so it is our plan that

the Western Australian Farm Management Service Laboratory will provide the twin services of managerial information and computer planning. These services will be organised around the University's EDP and computer facilities into which raw data are fed from accountants and farm management advisers and from which management information and computer-determined plans flow out to farmers and to their advisers.

What may farmers expect from computer planning? The superiority of computer planning techniques for solving problems of management are widely understood though they have some practical drawbacks. These are not insurmountable and I see their immediate use, not only for a direct planning but also as testing devices. They will enable farm management advisers and farmers to gauge how far their particular plans deviate from the optimal plan. I see their use in testing the price and yield stability of plans, alerting the farmer and adviser to combinations of relative prices and yields beyond which serious consideration should be given in advance.

Moreover, they will enable advisers to present farmers with many optimal plans for each set of farm resources. This appears to be a self-contradicting statement. But in practice, a specific quantity of each resource is subject to a wide range of constraints. Each farmer can be seen to have many sets of resources, although the textbook usually stipulates that he has merely one.

For much managerial problem-solving in agriculture there now exist the techniques, the computers, the analysts and the farm management advisers. But it is only now that in

Australia and New Zealand serious thought is being given, and attempts are being made, to organise and integrate them into the service of farmers.

I think it is important to note that the moves for these developments are emanating from the universities. I think not only that universities can be, but that they should be involved in management accounting, information and computer planning for farmers. It is in universities that managerial problem solving techniques are being formalised and from there that the annual crop of farm management advisers and many farm management accountants emerge. This linking of farmers to universities through their accountants and farm management advisers is the most exciting agricultural development this decade.

For accountants, the demand from farmers for managerial information and computer planning is a demand for managerial accounting. The increased demand for these things is an increased demand for the services of accountants and of farm management advisers. This is likely to result in an improvement in professional standing and in status, besides being good for business.

Managerial services needed

In Australia we have an army of agronomists, agrostologists, pedologists, entomologists and rumenologists, supported by technicians, laboratories and research stations. This army is linked to univer-

sity faculties of agriculture by the supply line of Honours, Masters and Ph.D. graduates, and it is linked to the farming community by another army of graduate and diplomate extension officers and advisers. This is as it should be.

But alongside this scientific and technical affluence, there is, by comparison, a very scruffy set of managerial services available to farmers. There is an institutional lag or gap in the organisation of recording, collecting and processing of managerial information and in computer planning, and in the advising and the educating of students of farm management extension and farm management accounting.

Yet farmers are prepared to pay, *voluntarily*, for management services. This is evidence that they effectively *want* what farm management economists have long recognised to be what they *need*. We are on the threshold of most exciting developments.

Even so, the task we are involved in is much bigger than just to improve our accounting or our farm management planning. We are now consciously engaged in raising the levels of the managerial skills of the nation's farmers. For countries such as Australia and New Zealand this is a continuing national problem. And each time managerial skills are raised a notch, the economic effects are as if a new, more productive crop or pasture plant had been found.

1966 FARM BUSINESS ANALYSIS FOR PLANNING 1967 AND 1968
SUMMARY OF RESULTS 1966

PROFIT AND LOSS \$

Farm Income	
Farm Costs	
Management Income	
Return to Management, Capital and Labour	
Rate of Return on Farm Investment	%

SOURCES AND USES OF DOLLARS \$

AVAILABLE DOLLARS		
Cash and Credit Balances, 1st February, 1966		
Farm Production Sales		
Other Receipts		
Total Available Dollars		
USE OF AVAILABLE DOLLARS		
Farm Operating Cash Expenses		
Living Expenses		
Other Expenditures		
Cash and Credit Balances 31st January, 1967		
Total Dollars Accounted for		
Taxation as % Available	\$	%
Living Expenses as % Available	\$	%
Debt and Interest Payments as % Available	\$	%

NET WORTH \$

As at 1st February, 1966	
As at 31st January, 1967	
Gain in Net Worth	
Debts as % Assets	%

FARM INCOME 1966

	Opening Inventory		Production	Purchases		Sales		Dead, Fed, Sown, Lost		Closing Inventory		Adjusted Income	
	No./Qty.	\$		No./Qty.	Cash and Credit	No./Qty.	\$	No./Qty.	\$	No./Qty.	\$	No./Qty.	\$
TOTALS													

FARM EXPENSES 1966

	Cash & Credit	Non-Cash	Total Expenses	Crop Costs Per Acre	Stock Costs Per lb. Wool	Dairy Costs Per lb. B ¹ fat Gallon Milk
	\$	\$	\$	\$	\$	\$
TOTALS						

**NEEDS FOR AND SOURCES OF DOLLARS
ACTUAL 1966 AND PLANNED FOR 1967 AND 1968**

Needs	1966 Plan	1966 Actual	1967 Plan	1967 Revised	1968 Plan
Family Living and Household					
Family Insurance and Superannuation					
Income Tax					
Interest on Farm Business Debts					
Principal Payments on Farm Debts					
Farm Business Cash Expenditures					
Farm Machinery Purchases					
Farm Improvement Expenditures					
Farm Land Purchases					
Non-Farm Business Expenditures					
Non-Farm Business Investments					
Cash on Hand at End of Year					
Total Dollars Used or Needed					
Sources					
Cash on Hand at Beginning of Year					
Machinery Sales					
Farm Land Sales					
Receipts—Other Farm Assets					
Non-Farm Business Receipts					
Sales—Non-Farm Business Assets					
Borrowing—Farm Business					
Non-Farm					
Sub Total					
Sales of Farm Production					
Total Dollars Available or Planned					

ASSETS, LIABILITIES AND NET WORTH 1966 AND 1967
PLANNED AND EXPECTED CHANGES 1968 AND 1969

Assets and Liabilities	1966 1st Feb. Inventory	Rise/Fall Market Values + / -	Improvements Increases Purchases +	Depreciation Used, Sold, Repaid —	1967 1st Feb. Inventory	Changes Planned and Expected	
						1968 + / -	1969 + / -
Net Worth							

COMPARATIVE ANALYSES 1966
MANAGERIAL PERFORMANCE—SAME SIZE FARMS

	Unit	Your Farm	Ranges for 50 Farms			
Farm Income						
Farm Costs						
Management Income						
Return to Management, Capital, and Labour						
Labour Income						
Proportion Total Farm Area in Wheat						
Other Crops						
Grazing						
LSU as Sheep Shorn						
as Ewes Mated						
as Cattle						
Yields Wheat/Acre Sown						
Wool/Acre Grazing						
Value of Crop Production/Acre Sown						
Crop Costs/Acre Sown						
Crop Costs/Bushel Harvested						
Value of Livestock Production/Acre Grazing						
Livestock Costs/Acre Grazing						
Livestock Costs/Lb. Wool Shorn						
Farm Production Sales/Man Equivalent						
Acres/Man Equivalent						
Farm Investment/Man Equivalent						
Sheep Shorn	}					
Crop Area Seeded						
Total Value of Investments/Acre Crop Sown						
Bushel Grain Produced						
Total Value of Investments Per LSU						
Per Lb. Wool Shorn						
Expenses Per \$1,000 Value of Farm Production						

1966 RESULTS AND PLANS AHEAD FOR 1967 AND 1968

	1966		1966		Plans 1967		Plans 1968			
	Plan	Results	Results	First	Revised	1	2	3	Final	
Cash Surplus Needed From Farm Business										
Total Sales										
Total Farm Operating Expenses										
Cash Surplus Planned From Farm Business										