

**LINCOLN  
COLLEGE  
NEW ZEALAND**



**DEPARTMENT OF HORTICULTURE**

**BULLETIN 10**

**Berry Fruit Management**

**Editor : G.F.Thiele**

## BERRY FRUIT MANAGEMENT

### Introduction

We have available today in New Zealand the necessary husbandry knowledge and experience needed for the successful production of most horticultural crops. But the ability to put this knowledge into practice in a profitable way is a very young field of human endeavour. There is little doubt that the leaders in the berry fruit industry are well aware of the importance of management and are arming themselves with the knowledge necessary. Unfortunately there is a tremendous gap between the berry fruit leaders and the average as far as true managerial ability is concerned.

Management is a very young science as far as horticulture is concerned, barely 10 years old in New Zealand. In the berry fruit industry it has not even jumped the first hurdle of establishing basic costs and returns for varying conditions of production and selling. It is imperative in a rapidly expanding industry competing more and more on export markets that we have detailed knowledge of costs and returns to provide a firm basis for negotiations both with exporters and processors. Attention to detail of this nature will in turn make growers more cost-conscious and provide an incentive for budgeting and other simple forms of planning which are so essential to the efficient running of a business. In other countries detailed cost studies have been conducted on horticultural crops as a basis for managerial analysis and planning. The National Agricultural Advisory Service in Kent, England has published a 26-page booklet on "The profitability of Strawberries". It would be invaluable if we had something similar for each berry fruit in New Zealand. This is one of our management objectives at Lincoln College to provide basic income and expenditure data on a range of horticultural crops.

Unfortunately one has to demonstrate the value of this data before growers will release reliable information from their own records. This is one of the reasons why we have had to produce crops of berry fruit ourselves. In addition of course the Department of Horticulture does not receive Government money for management research and must therefore supply money for this out of farm profits.

Work at Lincoln College

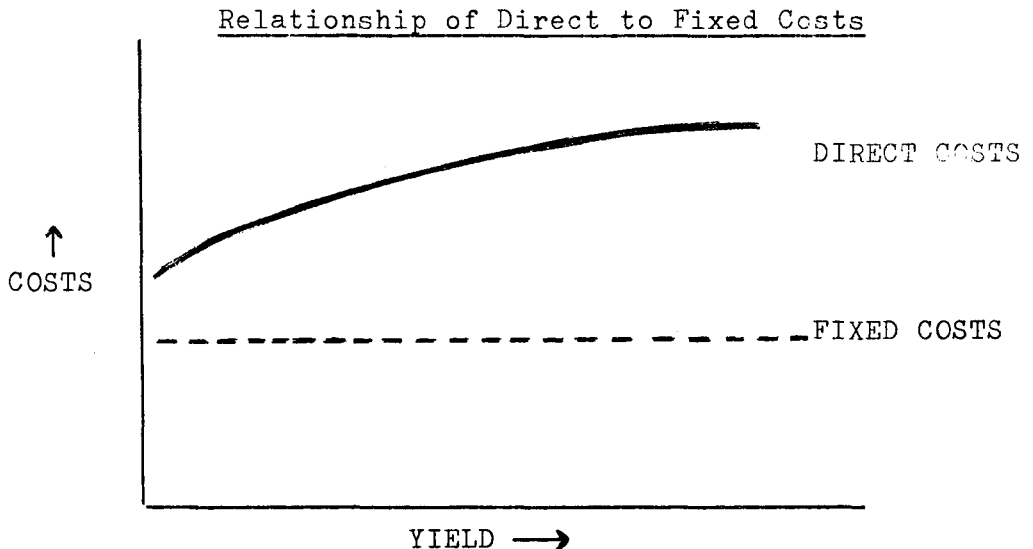
(a) Gross Margins:

Much criticism has been levelled at the Canterbury Chamber of Commerce bulletin published last year setting out figures on strawberry production (Bulletin No. 460). Although some of the statements were speculative the bulk of the figures were based on factual accurately recorded detail. I trust that everyone will take the trouble to understand what a gross margin is and carefully read what is written before criticising unjustly. The definition of a gross margin is -

$$\text{Gross Margin} = \text{Gross Income less Direct Costs}$$

Strictly this takes no account of permanent labour and other fixed costs such as rates, insurance, interest and other capital charges. Only those costs which are directly applicable to the production of the particular crop on a particular property in a particular district in a particular season are included as direct costs. Fertilisers, sprays, transport, commission and casual labour are all direct costs. Clearly gross margin is not net profit. A gross margin only contributes to the payment of fixed costs which do not vary with price or yield (Fig. 1)

Fig. 1



Even although a berry fruit crop may show a positive gross margin the margin may not be sufficient to cover fixed costs and still give a return on capital invested and wages of management.

Table 1 gives an example of a way to calculate gross margins when price and yield are varied. Not only may price and yield vary but method of marketing and age of the crop will also alter the margin. These eventualities for strawberries are summarised in Fig. 2 where processing outlets clearly show a reduction in direct costs and demonstrate that a lower price is necessary to break even. The absence of establishment costs for strawberries in the second and third years automatically increases the margin in the second year by about \$700. Where crop varies with age, it may be more feasible to work out a crop margin which would be an average of a number of years.

GROSS MARGIN FOR STRAWBERRIES - Red Gauntlet per acre; Canterbury 1st Year

|                                |            |       |                    |                  |
|--------------------------------|------------|-------|--------------------|------------------|
| (a) <u>GROSS REVENUE</u>       |            | \$    | \$                 | \$               |
| i. 3 tons at 10c/lb            |            | 672   |                    |                  |
| ii. 3 tons at 15c/lb           |            |       | 1008               |                  |
| iii. 3 tons at 20c/lb          |            |       |                    | 1344             |
| <u>DIRECT COSTS</u>            |            |       |                    |                  |
| <u>Production Costs</u>        |            |       |                    |                  |
| Plants 20,000 at \$20/1000     | \$400      |       |                    |                  |
| Plastic 15,000' at \$15/1000'  | 225        |       |                    |                  |
| Fertiliser 1 ton               | 102        |       |                    |                  |
| Straw                          | 30         |       |                    |                  |
| Spray Materials                | 50         |       |                    |                  |
| Machinery 75 hrs at 40c        | 30         |       |                    |                  |
| Labour 100 hrs casual at \$1   | <u>100</u> |       |                    |                  |
| TOTAL PRODUCTION COSTS         |            | \$937 |                    |                  |
| <u>Marketing Costs</u>         |            |       |                    |                  |
| Packing materials              | 300        |       |                    |                  |
| Harvesting labour at \$0.05/lb | 336        |       |                    |                  |
| Transport at 1c/lb             | 70         |       |                    |                  |
| Commission i.                  | 67         |       |                    |                  |
| ii.                            | 101        |       |                    |                  |
| iii.                           | <u>134</u> |       |                    |                  |
| TOTAL MARKETING COSTS          |            |       | i. 773             |                  |
|                                |            |       | or ii. 807         |                  |
|                                |            |       | or iii. <u>840</u> |                  |
| TOTAL DIRECT COSTS             |            |       |                    | i. <u>1710</u>   |
|                                |            |       |                    | ii. <u>1744</u>  |
|                                |            |       |                    | iii. <u>1777</u> |
| <u>GROSS MARGIN</u>            |            |       |                    | i. <u>-1034</u>  |
|                                |            |       |                    | ii. <u>-732</u>  |
|                                |            |       |                    | iii. <u>-429</u> |

(b) GROSS REVENUE

- i. 4 tons at 10c/lb
- ii. 4 tons at 15c/lb
- iii. 4 tons at 20c/lb

\$     \$  
896           1344  
                  1

DIRECT COSTS

Production Costs

as in (a) above 937

Marketing Costs

|                   |       |
|-------------------|-------|
| Packing materials | 400   |
| Harvesting labour | 448   |
| Transport         | 90    |
| Commission        |       |
| i.                | 90    |
| ii.               | 134   |
| iii.              | 179   |
|                   | <hr/> |

|                       |         |             |
|-----------------------|---------|-------------|
| TOTAL MARKETING COSTS | i.      | 1028        |
|                       | or ii.  | 1072        |
|                       | or iii. | <u>1117</u> |

TOTAL DIRECT COSTS

i. 1965  
ii. 2009  
iii. 2

GROSS MARGIN

i. -1069  
ii. -655  
iii. -

GROSS REVENUE

|                       |      |      |      |
|-----------------------|------|------|------|
|                       | \$   | \$   | \$   |
| i. 5 tons at 10c/lb   | 1120 |      |      |
| ii. 5 tons at 15c/lb  |      | 1680 |      |
| iii. 5 tons at 20c/lb |      |      | 2240 |

DIRECT COSTS

Production Costs

as in (a) and (b) above 937

Marketing Costs

|                   |            |
|-------------------|------------|
| Packing materials | 500        |
| Harvesting labour | 560        |
| Transport         | 110        |
| Commission        |            |
| i.                | 112        |
| or ii.            | 168        |
| or iii.           | <u>224</u> |

|                       |      |             |
|-----------------------|------|-------------|
| TOTAL MARKETING COSTS | i.   | 1282        |
|                       | ii.  | 1338        |
|                       | iii. | <u>1394</u> |

TOTAL DIRECT COSTS

|      |             |
|------|-------------|
| i.   | <u>2219</u> |
| ii.  | <u>2275</u> |
| iii. | <u>2331</u> |

GROSS MARGIN

|      |              |
|------|--------------|
| i.   | <u>-1099</u> |
| ii.  | <u>-595</u>  |
| iii. | <u>-91</u>   |

SUMMARY: GROSS MARGINS - STRAWBERRIES

| 1st Year Marketed | 3 tons | 4 tons | 5 tons |
|-------------------|--------|--------|--------|
| 10c               | - 1034 | - 1069 | - 1099 |
| 15c               | -732   | -655   | -595   |
| 20c               | -429   | -262   | -91    |
| 25c               | -127   | +146   | +413   |
| <u>Process</u>    |        |        |        |
| 10c               | -601   | -489   | -377   |
| 15c               | -265   | -41    | +183   |
| 20c               | +71    | +407   | +743   |

The fact that labour requirements vary so much between various horticultural crops suggests that permanent labour should be included as a cost. There is no reason why this should not be done, but in this case the margin could well be called an enterprise margin. This is what is represented in Table 2, where permanent labour has been included at a contract rate of \$1 per hour and machinery has also been included at \$1 per hour for a tractor and 50c per hour for an implement.

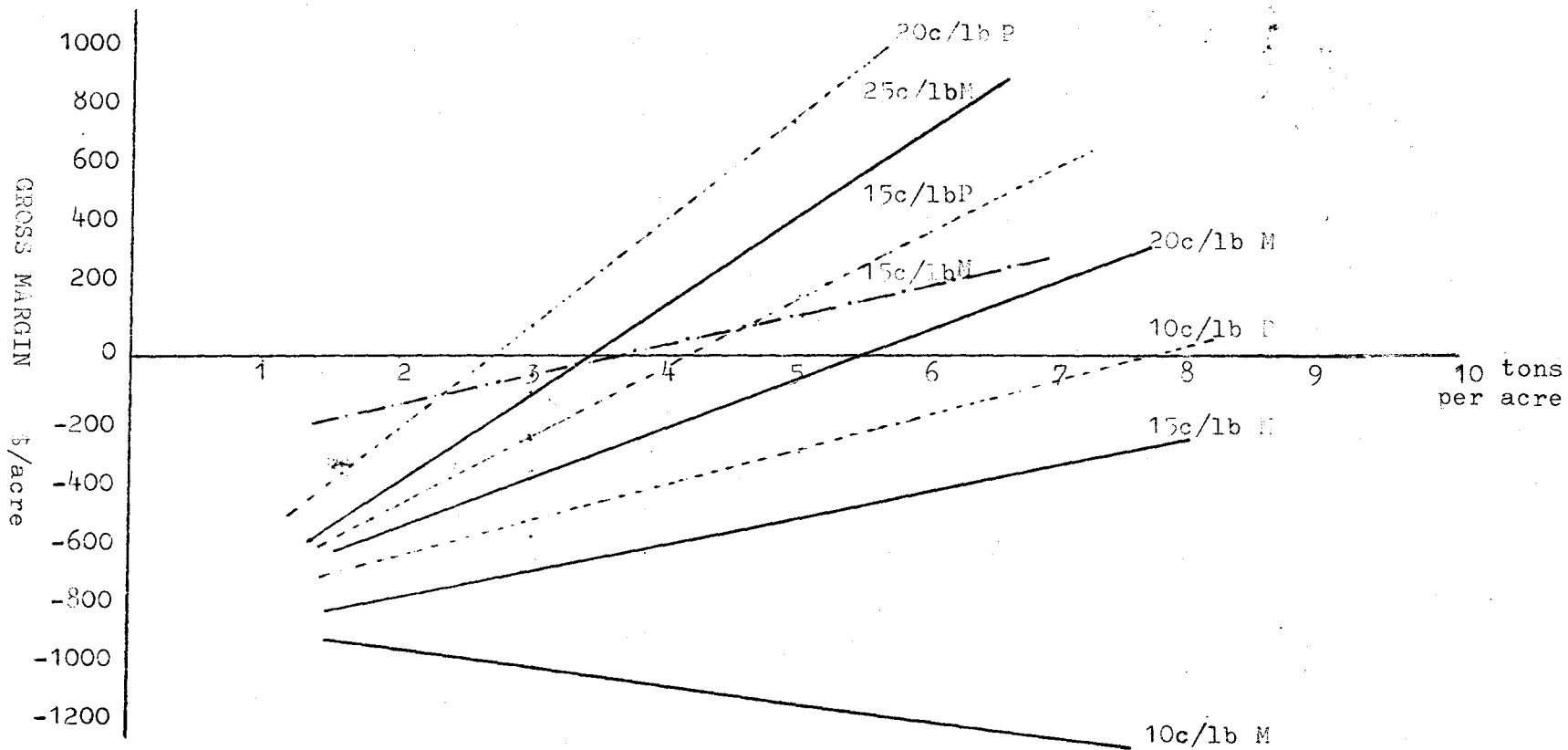
TABLE 2

ENTERPRISE MARGIN  
(Lincoln College Records)

|                | Yr 1 | Yr 2  | Total | Yr 3 (Estimate) |
|----------------|------|-------|-------|-----------------|
| Strawberries   | +14  | +5125 | +5139 | 2000            |
| Black Currants | -308 | -92   | -400  | 730             |
| Raspberries    | -242 | -704  | -946  | 500             |
| Boysenberries  | -467 | -128  | -595  | 300             |

These are results of two years recordings at the College with an estimate of the likely third year figures based on yields of crops of a similar age in recent years (full details are given in Appendix 1). These might be quite different from other properties and other districts and could vary from year to year on the same property. This is shown the 1st year figures for a new planting of strawberries which this year showed a gross margin of -\$783, a substantial deficit, due mainly to the season. The average yield in this case was only a little over 1/2 ton p

STRAWBERRY GROSS MARGINS



\_\_\_\_\_ 1st Year Market  
 ----- 1st Year Process  
 -.-.-.-.- 2nd Year Market



acre compared with  $3\frac{1}{2}$  tons per acre for the previous season's first year plants.

(b) Time of Planting

One of the main reasons for strawberry yield variation in the first season could well be associated with time of planting. South Island growers can be at a distinct disadvantage compared with North Islanders in that the northern plantings establish much better and yields can average 8-10 tons in the first year.

In a planting trial to test this assumption Red Gauntlet strawberries were planted at monthly intervals from February to September inclusive, using new runners (not cool stored).

Summarised yields are shown in Table 3 and graphically depicted in Fig. 3.

TABLE 3

Red Gauntlet Yields, 1st Year: Time of Planting Varied

| <u>Time of Planting</u>   | <u>Yield lbs/acre</u> |
|---------------------------|-----------------------|
| February                  | 3552                  |
| March                     | 4926                  |
| April                     | 4502                  |
| May                       | 4697                  |
| June                      | 3147                  |
| July                      | 1306                  |
| August                    | 308                   |
| September                 | 229                   |
| February (double planted) | 8500                  |

These results are very similar to work in Victoria, Australia, where first year recordings also suggested a distinct yield drop when plants were set out after the end of June. It is recorded that in the 2nd year there is no effect. Australian work also shows almost 100% increase in yield with double plantings (in the vicinity of 38,000 plants per acre) although in the second year close planting could bring troubles with Botrytis and small fruit. I realise of course that close planting is the rule in the North Island where strawberries are often cropped as annuals.

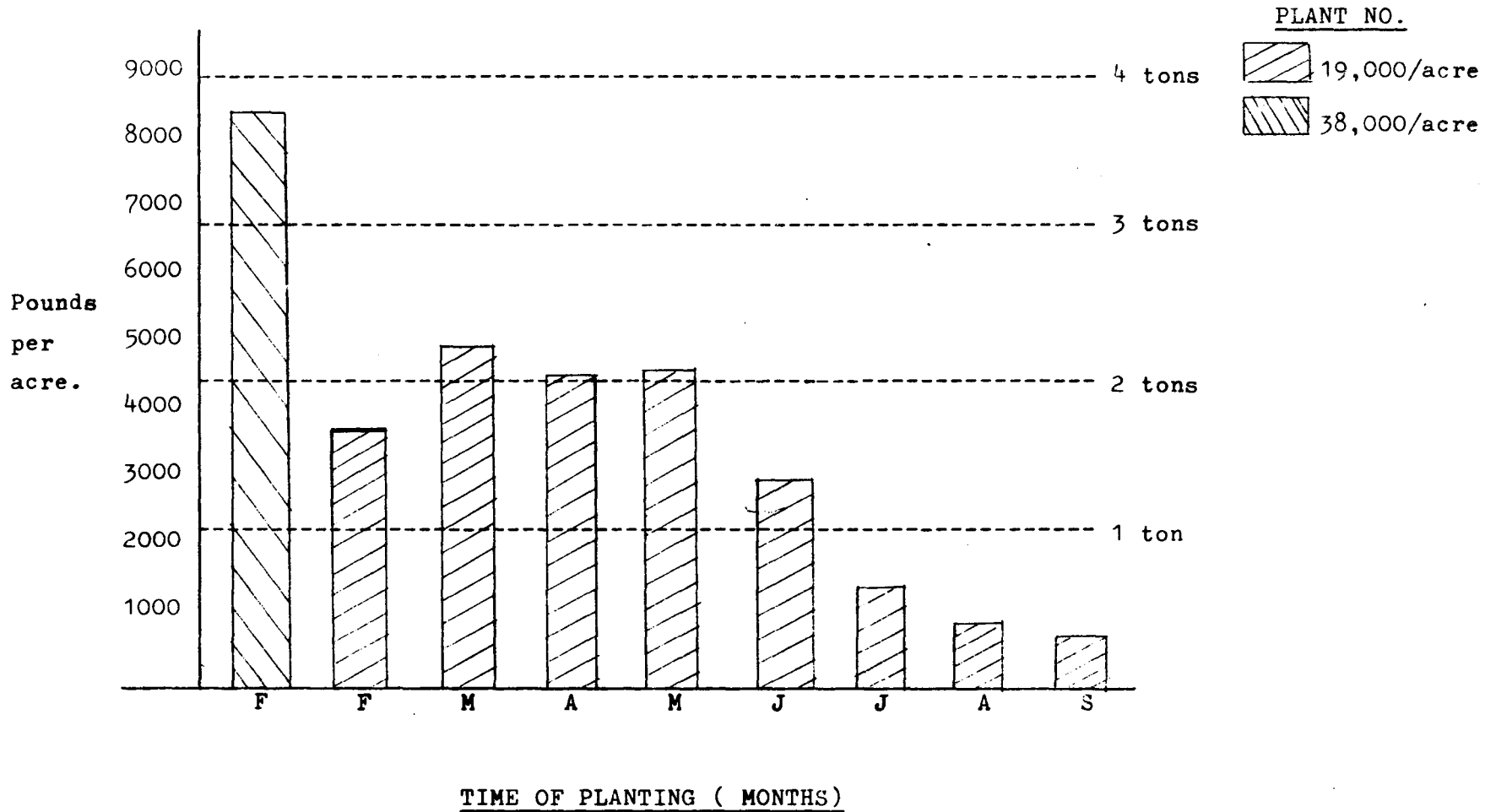
Time of planting in the Lincoln trial did not seem to affect the time of harvest as far as earliness is concerned.

(c) Seasonal Distribution

An accurate record of day to day berry fruit harvesting has

FIG. 3

STRAWBERRY YIELDS - RED GAUNTLET (1st Year)



1  
6  
1

allowed efficient planning for disposal of crops next season. It is doubtful if many growers could produce data of this type but for booking air space, negotiating contracts and arranging harvesting labour it is invaluable.

Table 4 summarises seasonal yields for Red Gauntlet and Cambridge Favourite strawberries, and the results are shown in Fig 4.

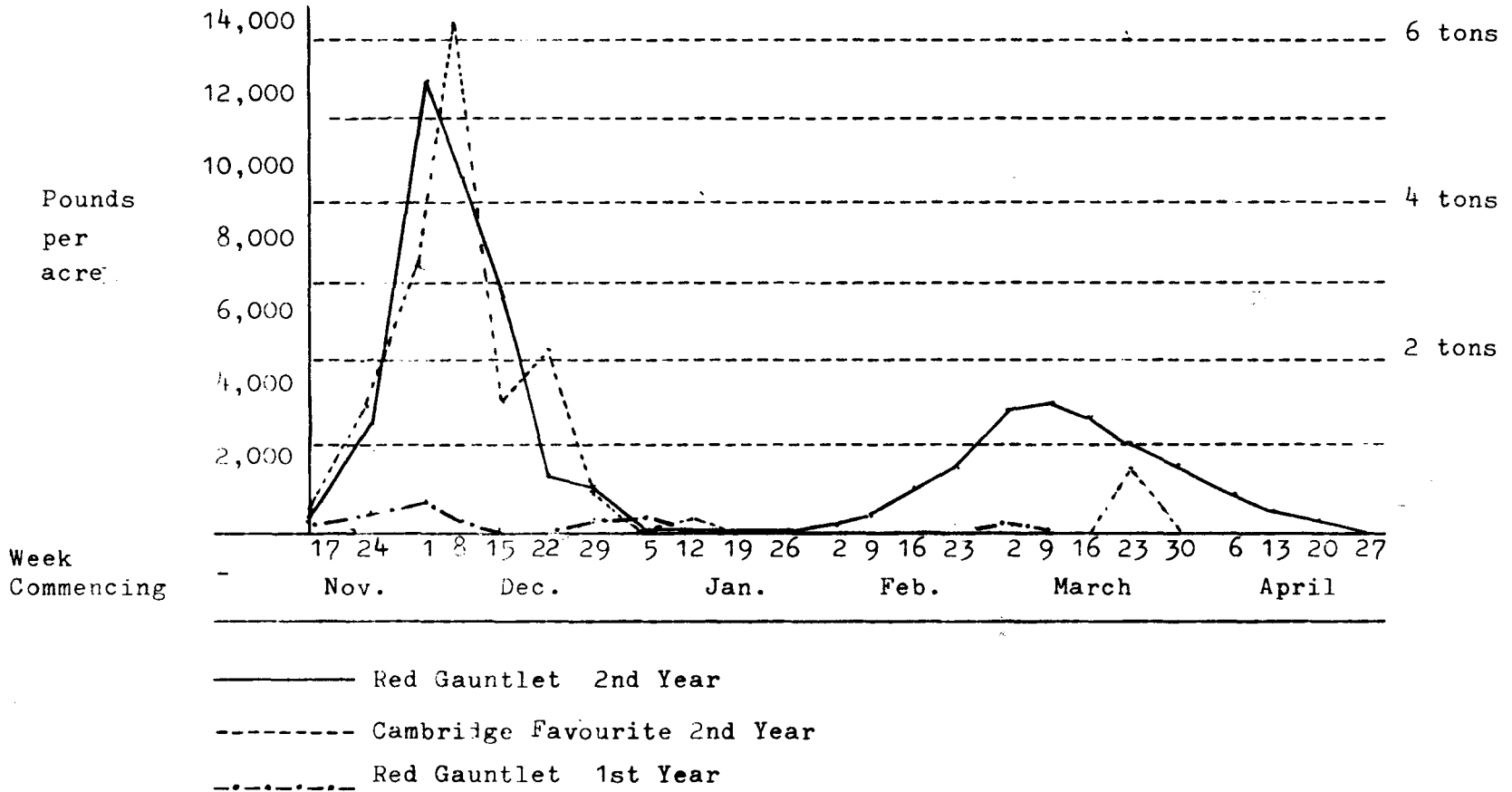
TABLE 4

Yields of Fresh Strawberries, tons/acre  
1968-69 Season at Lincoln College -  
(4 weekly totals in parenthesis)

| <u>Week<br/>Commencing</u> | <u>Red<br/>Gauntlet</u> | <u>Red<br/>Gauntlet</u> | <u>Cambridge<br/>Favourite</u> |
|----------------------------|-------------------------|-------------------------|--------------------------------|
|                            | <u>1st season</u>       | <u>2nd season</u>       | <u>2nd season</u>              |
| 17 November                | .05                     | 0.09                    | 0.10                           |
| 24 November                | .11                     | 1.22                    | 1.48                           |
| 1 December                 | .22                     | 5.46                    | 3.20                           |
| 8 December                 | .01 (.39)               | 4.33 (11.10)            | 6.24 (11.02)                   |
| 15 December                | .00                     | 2.81                    | 1.59                           |
| 22 December                | .00                     | 0.65                    | 2.35                           |
| 29 December                | .03                     | 0.58                    | 0.60                           |
| 5 January                  | .09 (.12)               | 0.00 (4.04)             | 0.00 (4.54)                    |
| 12 January                 | .10                     | 0.02                    | 0.09                           |
| 19 January                 | .04                     | 0.00                    | -                              |
| 26 January                 | .02                     | 0.00                    | -                              |
| 2 February                 | .01 (.17)               | 0.02 (0.04)             | - (0.09)                       |
| 9 February                 | .01                     | 0.16                    |                                |
| 16 February                | .00                     | 0.39                    |                                |
| 23 February                | .00                     | 0.69                    |                                |
| 2 March                    | .07 (.08)               | 1.30 (2.54)             |                                |
| 9 March                    |                         | 1.45                    |                                |
| 16 March                   |                         | 1.26                    |                                |
| 23 March                   |                         | 1.02                    | 0.89                           |
| 30 March                   |                         | 0.81 (4.54)             |                                |
| 6 April                    |                         | 0.55                    |                                |
| 13 April                   |                         | 0.29                    |                                |
| 20 April                   |                         | 0.14 (0.98)             |                                |
| Total yield/acre           | .76                     | 23.24                   | 16.54                          |

FIG. 4

SEASONAL DISTRIBUTION - STRAWBERRIES



111

It is clear that nearly 50% of the second year Red Gauntlet yield was harvested during the first 4 weeks and 66% of the Cambridge Favourite yield during the same period.

In the 2 weeks beginning 1 December, 42% of the total Red Gauntlet crop was harvested, and 57% of the total Cambridge Favourite crop was harvested.

(d) Use of Records

Although one season is seldom the same as the next, planning for the future must be more accurate using some historical data than with none at all. Admittedly there is no point in keeping records if they are not going to be used. There is also little point in keeping records on one property and applying them directly to a different set of circumstances on another property. It is statistically sound to assume that the longer records are kept the more likely is a decision to be correct when the information is averaged over a number of years.

Consider the example set out in Table 5. This is an effort to plan a cropping programme given several alternative crops to choose from and their gross margins.

TABLE 5

| PROGRAMME PLANNING      |      | Strawberries | Raspberries | Tomatoes | Pumpkins | Peas | Sheep | Lettuce | Wheat | Lucerne |
|-------------------------|------|--------------|-------------|----------|----------|------|-------|---------|-------|---------|
| Gross Margin per acre   | \$   | 800          | 500         | 300      | 100      | 40   | 40    | 200     | 90    | 70      |
| Constraints             |      |              |             |          |          |      |       |         |       |         |
| Land - acres            | 20   | 1            | 1           | 1        | 1        | 1    | 1     | 1       | 1     | 1       |
| Dec. Labour Man-weeks   | 300  | 40           | 20          | 2        | 0.5      | -    | -     | 1       | -     | -       |
| Capital \$              | 4000 | 250          | 400         | 100      | 40       | 35   | 60    | 100     | 20    | 15      |
| Max. Peas - acres       | 10   |              |             |          |          | 1    |       |         |       |         |
| Max. Tomatoes - acres   | 5    |              |             | 1        |          |      |       |         |       |         |
| Max. Berryfruit - acres | 10   | 1            | 1           |          |          |      |       |         |       |         |
| Max. Wheat - acres      | 5    |              |             |          |          |      |       |         | 1     |         |
| Max. Lettuce - acres    | 2    |              |             |          |          |      |       | 1       |       |         |

It is stated that there are 20 acres of land, 300 man-weeks of December labour and \$4000 of working capital available. There are also limits placed on the maximum acreage of peas (10), tomatoes (5), berry fruit (10), wheat (5) and lettuce (2). The figures in the main section of the table refer to the requirements of each crop for the various constraining factors. For instance it is estimated that strawberries require 40 man-weeks of labour in December, raspberries 20 and so on.

The optimum solution is shown in Table 6.

TABLE 6

| <u>PROGRAMME PLANNING SOLUTION</u> |                         |                             |  |
|------------------------------------|-------------------------|-----------------------------|--|
| <u>CROP</u>                        | <u>AREA<br/>(Acres)</u> | <u>STABILITY RANGE (\$)</u> | <u>MARGINAL COST</u>                   |
| Strawberries                       | 4.6                     | 338 - 910                   | } Total Gross<br>} Margin<br>} \$8,469 |
| Raspberries                        | 5.2                     | 462 - 774                   |  |
| Tomatoes                           | 5.0                     | 140 →                       |  |
| Lettuce                            | 2.0                     | 123 →                       |  |
| Wheat                              | 3.2                     | 87 - 182                    |  |
|                                    | Gross Margin            |                             | Marginal Value Product                 |
| Peas                               | 93                      | Land                        | 86                                     |
| Sheep                              | 98                      | Dec. Labour                 | 17                                     |
| Lucerne                            | 89                      | Capital                     | 0.2                                    |
| Pumpkins                           | 103                     |                             |  |

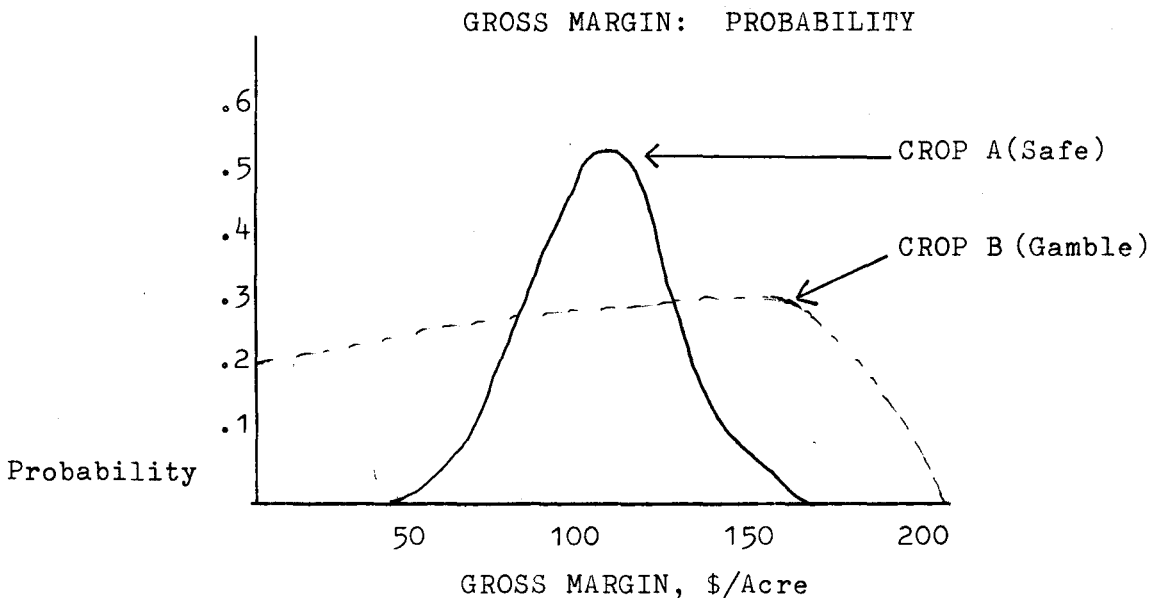
It is not possible from the figures to see how this solution was obtained. It was produced by the computer using a technique known as linear programming. The maximum total gross margin obtainable is \$8469 growing strawberries, raspberries, tomatoes, lettuce and wheat. The stability range shows the variation necessary in the gross margins for each crop before the solution would change. In the case of tomatoes and lettuce the acreages of these are restrained by the limit placed on them. If another acre of tomatoes could be grown this would increase the total gross margin by \$160 and another acre of lettuce would produce an extra \$77. The gross margins listed beside peas, sheep, lucerne and pumpkins indicates the level to which each would have to rise before any of these crops would enter the solution. The marginal value products listed mean that the total gross margin could be increased by \$86 if another acre of land was available, \$17 if another man-week of

December labour was available and \$0.2 if another \$1 of working capital was available.

This is certainly all very theoretical but it does give some idea of the importance of more simple planning; simple budgeting for instance to determine a financial plan in advance so that the resources available can be used more effectively. In every case the accuracy of planning depends on the accuracy of the data used.

Deciding on growing one type of berry fruit using average gross margin figures is all very well but we all know that there are many more factors to be taken into account. It has already been shown that gross margins for strawberries can vary very markedly and that it is not uncommon to have a negative gross margin. However, with the range of common farming crops the chances of making a loss are not so great due to assured markets and fixed prices. Although the likely gross margin is not very high, farmers generally prefer to play safe and to produce traditional farming crops such as wheat, barley, lucerne and peas, which will give them a steady, rather than a spectacular return for their labour and capital invested. The decision is one concerning risk and two alternatives are depicted in Figure 5.

FIG. 5



Crop A usually produces a gross margin between \$50-150/acre but Crop B could produce anything from a negative gross margin to 200. Most farmers choose to play safe and grow Crop A even although there is a chance of them making much more by growing Crop B. Berry fruit crops are in the B category and of course could produce a much higher gross margin than shown in the figure. But if farmers' gross margins drop on average, as they have tended to do during the last 2-3 years, then they will look around for alternatives even though these may involve some additional risk. This is why farmers have become interested in berry fruit, perhaps initially in small acreages, but as their experience develops and the risks are decreased by improved outlets, they will increase their acreages.

Who, for instance, could deny that black currants mechanically harvested and sold for processing at 20c per pound would be a good thing at say 2-3 tons per acre? The farmers are aware of this, they know the risks are not as great as with some other horticultural crops but are they certain that there is a guaranteed market available every year at that price? Many are considering it is worth the risk. If we could reliably measure risk in all cases we would be in a much better position to make decisions. The more information we have the more likely we are to make the right decisions. It's not unlike backing racehorses!

(e) Questionnaires

During the year the Degree IV horticultural management students have conducted three surveys, two through the mail and one by interview. The first of these was designed by the students as an exercise in studying how to conduct surveys and how to evaluate the results. It was by chance that the strawberry industry was selected by the students. The promise of anonymity has been respected and only one student saw and analysed the returns.

i. Survey of Strawberry Industry

A random selection of 120 growers received questionnaires. Slightly more than one third were returned in time for analysis representing more than 10% of registered growers. This is a similar percentage of replies noted from overseas surveys at first asking, but not sufficient to be able to view the results as fully reliable. Nevertheless the main results are presented to give an indication of the type of useful information which could be gathered without too much effort. The full questionnaire is presented in Appendix 2.

Only one grower objected strongly to the survey.

1. 15% of the total area owned was in strawberries  
60% of growers had 1 acre of strawberries or less  
20% of growers had between 1 and 2 acres



2. 53% derived their main income from strawberries  
 26% " " " " " " other horticultural crops  
 15% " " " " " " farming  
 6% " " " " " " other occupations.

3. The total percentage area in the various varieties was:-

|                     |      |
|---------------------|------|
| Red Gauntlet        | 70%  |
| Cambridge Favourite | 15%  |
| Tioga               | 8.5% |
| Other varieties     | 6.5% |

4. Age of plants:

|           |     |
|-----------|-----|
| 1st year  | 57% |
| 2nd year  | 40% |
| Remainder | 3%  |

5. 75% of growers could give approximate tonnage sold through the various outlets.

|                          |     |
|--------------------------|-----|
| Gate sales               | 31% |
| Processing               | 12% |
| Fresh sales local market | 35% |
| Fresh sales export       | 17% |
| Other (including waste)  | 5%  |

50% of growers had gate sales as their main outlet and 36% sold mainly through local markets.

6. Average prices. (Note: The variation in method of stating price and the need to weight the answer according to amount of fruit sold made this an extremely difficult section to summarise accurately and some of the figures appear distinctly suspect).

|  |                         |          |
|--|-------------------------|----------|
| Gate Sales                                     | dessert/lb              | 28 cents |
|  | jam/lb                  | 21 cents |
| Processing/lb - calyx on                       |                         | 15 cents |
| /lb - calyx off                                |                         | 15 cents |
| Fresh sales local market                       |                         |          |
|  | $\frac{3}{4}$ lb punnet | 26 cents |
|  | $\frac{1}{2}$ lb punnet | 23 cents |
|  | bulk/lb                 | 25 cents |
| Fresh sales export - $\frac{3}{4}$ lb punnet - |                         | 33 cents |

7. Fruit was exported to Sydney, Melbourne, Hong Kong, Japan, Los Angeles and London. Estimates of export quality ranged from 20 - 80% of the total crop. A number considered only first year crops were suitable but most had no comment on this point. Red Gauntlet appeared to be the only variety recommended for export although Tioga has also been tried.

- 8. 28% of growers had difficulty getting suitable labour
- 64% preferred women as pickers
- 30% preferred secondary school children
- 6% did not express a preference

9. Payment for harvesting showed marked variation and averaging has not produced the true position.

|                                |             |
|--------------------------------|-------------|
| Punnets (graded and/or packed) | 4.5c/punnet |
| By pound graded but not packed | 5c/lb       |
| By pound ungraded              | 4.3c/lb     |
| By hour                        | 57c/hr      |

10. Projections for next season's area in strawberries varied by only 0.2 of an acre from last season's area. These will be:

- 70% of the area in first year plants
- 24% of the area in second year plants
- 6% of the area in older plants

Growers did not propose to vary their outlets significantly although there was a slight trend towards increased processing outlets.

11. The time taken by growers to complete the 22-question sheet varied between 5-90 minutes with the average 17 minutes.

12. There was one main fault observed in the questionnaire and that concerned the questions on prices. It was not clearly stated whether prices were to be stated at the farm gate, less commission F.O.B. etc.

It was obvious that a large percentage of growers did not have sufficient records to be able to answer the questions accurately. Although the results of this survey cannot be used in any way by individual growers they do serve to highlight the type of valuable information the industry could gather for the benefit of all its members.

ii. Postal Labour Survey

This survey was sent to a random sample of 100 growers covering all major sections of the horticultural industry and was designed to gain an overall picture of employment of labour in horticulture, and to bring out the sections of the subject warranting special investigation. It is not appropriate in this bulletin to summarise all the questions but some general points may be of interest. (The full questionnaire is presented in Appendix 3)

1. 55% of the questionnaires were returned and covered 900 permanent employees excluding owners.
2. The importance of labour costs in horticulture was emphasized by the high ratio of labour to total costs as taken from the grower's profit and loss account. These varied from 14 to 82% with the majority in the 35-40 range. This did not include the owner's wages. Several growers expressed surprise at the high figure and admitted that they had never before considered labour costs in this light. Berry fruit growers invariably had a high percentage of labour costs.
3. 32% of growers had difficulty getting suitable male labour and 10% difficulty in employing reliable female permanents. The reasons expressed for the difficulty were:

Low award rates  
Poor image of horticulture  
Lack of future prospects  
Conditions and type of work

4. 60% of permanent employees were paid above award rates, 45% were paid more than \$2 per week above award.
5. Only 6% of growers had any difficulty getting casual labour. The method of payment varied according to the enterprise.
6. 40% of growers keep employees informed about the management of the property without qualification, 32% keep them informed to a limited extent and 28% only keep some employees informed.
7. 66% took a personal interest in the employees and 34% took an interest to a limited extent.
8. The average time taken to complete the 31-question sheet was 32 minutes. All growers were willing to complete future management questionnaires provided they did not occur too frequently and provided they were informed of the results. It was evident from the survey that many growers could not

complete some of the more detailed questions relating to costs of labour. To be of value the survey would have to be conducted on individual industries within horticulture and some grouping of properties into district and size would be necessary. The value of postal questionnaires is seriously impaired where growers leave difficult sections unanswered. Hence an interview questionnaire was conducted on one property employing about 12 permanent staff at one time.

### iii. Interview Questionnaire on Labour

In this case individual employees were interviewed confidentially and asked questions ranging from their opinion of their employer, to their attitude to and satisfaction with their work. They were also questioned on their opinion of the efficiency of the labour on the property and how, in their opinion, might it be improved. (The basis for questioning is presented in Appendix 4). Although the property concerned was an extremely efficient one, some surprising results emerged, allowing for improvement in staff relationships and better methods of labour use. "Lack of clear instructions" came from several employees who did not feel they could mention this to their employer for fear of appearing unintelligent.

So successful was this survey that we conducted a similar one on our own staff, resulting in several major improvements, such as regular weekly staff meetings to discuss and plan work done and to be done. Special instruction sessions have also been introduced and a wider allocation of responsibility to let every employee feel he is an important part of the property. We found all employees keen to co-operate with this type of survey.

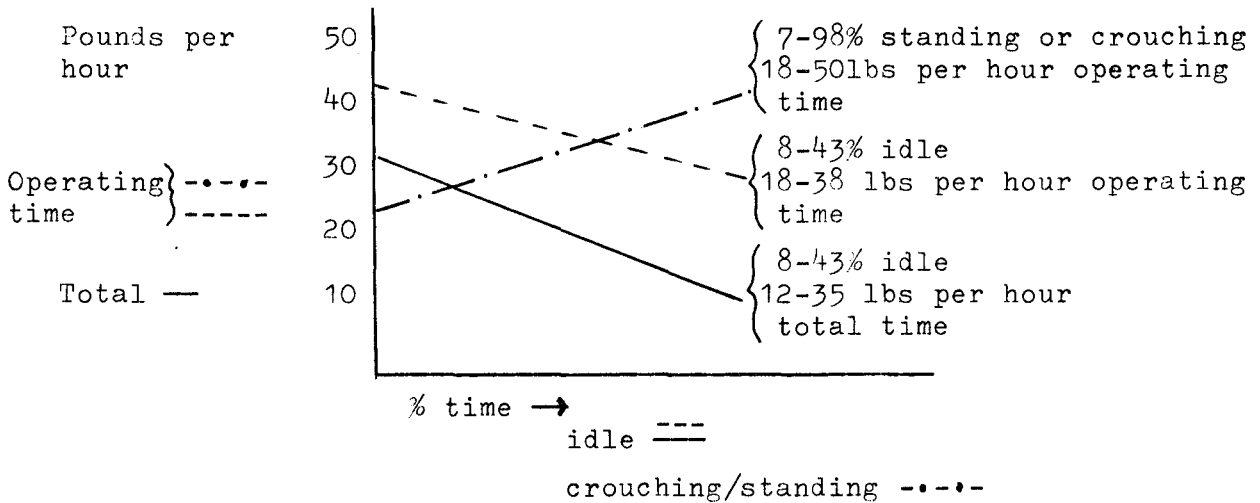
### (f) Labour studies

One of the main reasons for keeping detailed records of expenditure in the production of our berry fruit at the College, was to determine the sections where expenditure is invariably high, so that research may be conducted to reduce the particular cost. It is obvious in berry fruit growing that the harvesting, handling and packing operation is very labour expensive. One of the first moves we made in strawberries was to ask our Engineering Institute to build a self-propelled labour carrier in an attempt to speed up harvesting. This six-bed machine has not had sufficient testing to warrant release of results and further detailed records will be kept during the 1969-70 season.

Any move to reduce harvesting costs requires some basic knowledge of what pickers do now, how they vary in their position of picking and what effect this has on rate. Figure 5 summarises the results of a study on this type of interaction. Regression lines have been calculated from data obtained by watching pickers at work. The method used was an activity sampling one, whereby workers are observed for a second at random intervals. This avoids the necessity of watching

a person continuously, so that worker embarrassment is avoided and a more natural result achieved.

HARVESTING STUDY - STRAWBERRIES



The results showed:

1. As the percentage of time spent crouching and/or standing increased, the amount harvested per hour of operating time increased. Regression equation is  $y = 0.17x + 24.63$

2. As the time spent idle increased, the amount harvested per hour of actual operating time decreased. This means that those who were idle more often also picked less when they were not idle. Regression equation is  $y = 41.90 - 0.37x$

3. As the time spent idle increased the amount harvested per hour of total time decreased and the regression line was steeper in this case. The amount of fruit harvested varied between 12-35 lbs/hour.

Regression equation is  $y = 34.12 - 0.50x$

More work study of this nature is to be undertaken next season with a view to improving harvesting technique and introducing labour-saving devices.

(g) Management Analysis

Most growers are producing horticultural crops to make money. Some may be growing to improve their assets, some as a hobby in retirement and a few merely for the satisfaction of "working the soil" but "profit" is the key word for the majority. An accountant prepares an annual set of accounts for each grower with the main objective of determining net profit for taxation purposes. How many growers subsequently analyse their accounts critically to determine the stability of their business and how efficient their management has been?

Although sufficient net profit has been generated to cover a grower's drawings during the year (including taxation) it does not follow that the business is efficient. The accounts as received from the accountant do not even show the true financial position from the management point of view. Unless the accounts are for a company they do not show an allowance for wages of management. Unpaid family labour may have been used repeatedly during the year and should be considered as a cost. Income from gate sales may not have been shown realistically. Some allowance for dwelling rental and mileage for private use of a car are other "real" income items.

Earlier in this paper gross margins were discussed. These were only a measure of the profitability of one crop as compared to another. These margins must be used to cover fixed costs including permanent labour and the owner's labour, while still leaving an amount for return on the capital invested.

$$\text{Interest-earning capacity} = \frac{\text{Net profit} - \text{Wages of management} + \text{interest}}{\text{Total business capital}}$$

Expressed as a percentage this figure should be consistently higher than the rate of interest which could be earned by investing the same amount of capital in some other way. To give a true indication of the interest-earning capacity the current value of assets should be used, not the balance sheet figure.

Other forms of analysis could include various sections of expenditure; the efficiency of labour or of machinery in terms of gross output. Actual physical efficiency, including crop production and average prices should be calculated also.

All this of course requires standards for comparison. It is our object at Lincoln to gradually accumulate information of value for all forms of analytical management work and to publish and revise this regularly in the form of a management handbook. This has already

been accomplished for horticulture in a number of countries and is available for agriculture in New Zealand.

To do this requires the confidence, trust and co-operation of growers and a close liaison with the Horticulture Division of the Department of Agriculture. Ten years ago farmers were suspicious of revealing personal financial detail but they now realise the advantages to be gained from seeking management advice. The efficient grower has nothing to hide and the inefficient grower cannot fail to benefit.

There is so much work to do and such a short time in which to do it, if the berry fruit industry in New Zealand is to continue to progress and to remain efficient enough to compete on world markets.

APPENDIX I

Detailed income and expenditure records from Lincoln College Horticultural Research Area:

COST/REVENUE DATA: STRAWBERRIES 1st YEAR  
LINCOLN COLLEGE 1967/68  
Red Gauntlet/Acre

|  |            |                      |
|--|------------|----------------------|
| <u>GROSS REVENUE</u>   | \$         |                      |
| Dessert (local market)   | 1798       |                      |
| Jam  | <u>448</u> |                      |
|  |            | \$2246               |
| <u>Less Direct Costs</u>   |            |                      |
| Materials:   |            |                      |
| Plants (23,000)  | \$375      |                      |
| Plastic  | 262        |                      |
| Fertiliser (10 cwt)  | 41         |                      |
| Straw  | 20         |                      |
| Spray Materials  | 13         |                      |
| Punnets  | 105        |                      |
| Rubber bands, cellophane   | <u>32</u>  |                      |
|  |            | 848                  |
| Machinery at \$1 per hour for tractor<br>and 50c per hour for an implement | 111        |                      |
| Irrigation (electric power)  | 1          |                      |
| Permanent and casual labour at \$1 per<br>hour                             | 603        |                      |
| Harvesting at \$0.05c per lb   | 379        |                      |
| Transport  | 53         |                      |
| Commission at 10% (including containers)                                   | <u>237</u> |                      |
|  |            | <u>\$2232</u>        |
| ENTERPRISE MARGIN FOR FIRST YEAR   | -          | <u>\$14 per acre</u> |



COST/REVENUE DATA: STRAWBERRIES 2ND YEAR  
LINCOLN COLLEGE 1968/69  
Red Gauntlet/acre

---

|                                     |            |                      |
|-------------------------------------|------------|----------------------|
| <u>GROSS REVENUE</u>                |            | \$                   |
| 49,600 lbs at 18c (in bulk)         |            | 8928                 |
| <u>Less Direct Costs</u>            |            |                      |
| Materials:                          |            |                      |
| Insecticides & fungicides           | \$40       |                      |
| Weedkillers                         | 10         |                      |
| Straw                               | 30         |                      |
| Boxes for harvesting                | <u>132</u> |                      |
|                                     |            | \$212                |
| Machinery:                          |            |                      |
| Tractor \$1/hr & implements         |            |                      |
| \$0.50/hr (248 hrs)                 |            | 372                  |
| Irrigation at \$1/hr (50 hrs)       |            | 50                   |
| Permanent & casual labour at \$1/hr |            |                      |
| (202 hrs)                           |            | 202                  |
| Harvesting labour (hourly basis)    |            | 784                  |
| Harvesting labour (3-6c/lb)         |            | 1588                 |
| Transport at 1.2c/lb                |            | <u>595</u>           |
|                                     |            | <u>\$3803</u>        |
| ENTERPRISE MARGIN FOR SECOND YEAR   |            | <u><u>\$5125</u></u> |

NOTE: Itemised costs vary markedly between the two years due to the difference in handling and marketing. During the 1967/68 season all fruit was graded and packed at the College for sale as dessert fruit on the local market. The 1968/69 crop was harvested ungraded in bulk and sold by contract to the exporter.

**COST/REVENUE DATA: BLACK CURRANTS 1ST YEAR**  
**LINCOLN COLLEGE 1967/68**  
**50:50 Cotswold Cross & Magnus/acre**

---

|  |          |               |
|--|----------|---------------|
| <u>GROSS REVENUE</u>                             |          | \$            |
| 58 lbs at 25c/lb                                 |          | 14            |
| <u>Less Direct Costs</u>                         |          |               |
| Materials:                                       |          |               |
| Cuttings (1438 at 5c each)                       | \$73     |               |
| Plastic (3' x .0015")                            | 51       |               |
| Fertiliser                                       | 19       |               |
| Spray materials                                  | <u>8</u> | \$151         |
| Machinery at \$1.50/hr<br>(tractor & implements) |          | 115           |
| Labour: permanent and casual<br>at \$1/hr        |          | 50            |
| Irrigation                                       |          | 1             |
| Harvesting at 5c/lb                              |          | 3             |
| Marketing costs                                  |          | <u>2</u>      |
|  |          | <u>\$322</u>  |
| ENTERPRISE MARGIN FOR 1ST YEAR                   | -        | <u>-\$308</u> |

COST/REVENUE DATA: BLACK CURRANTS 2ND YEAR  
LINCOLN COLLEGE 1968/69  
50:50 Cotswold Cross & Magnus/acre

|  |           |              |
|--|-----------|--------------|
| <u>GROSS REVENUE</u>                             |           | \$           |
| 560 lbs at 20c/lb                                |           | 112          |
| <u>Less Direct Costs</u>                         |           |              |
| Materials:                                       |           |              |
| Spray materials                                  | \$16      |              |
| Replanting                                       | 10        |              |
| Fertiliser                                       | <u>25</u> |              |
|  |           | \$51         |
| Machinery at \$1.50/hr<br>(tractor & implements) |           | 16           |
| Irrigation                                       |           | 20           |
| Labour (permanent & casual) at<br>\$1/hr         |           | 81           |
| Harvesting at 6c/lb                              |           | 34           |
| Transport  |           | <u>2</u>     |
|  |           | <u>\$204</u> |
| ENTERPRISE MARGIN FOR 2ND YEAR                   | -         | <u>\$-92</u> |

COST/REVENUE DATA: RASPBERRIES 1ST YEAR  
LINCOLN COLLEGE 1967/68  
Marcy/acre

---

|  |       |                   |
|--|-------|-------------------|
| <u>GROSS REVENUE</u>   |       | \$                |
| Jam (228 lbs) & punnets (296)                                |       | 138               |
| <u>Less Direct Costs</u>                                     |       |                   |
| Materials:   |       |                   |
| Plants (3,000)   | \$120 |                   |
| Fertiliser   | 25    |                   |
| Spray materials  | 5     |                   |
| Packing materials  | 8     |                   |
|  | <hr/> | \$158             |
| Machinery at \$1/hr for tractor<br>and 50c/hr for implements | 70    |                   |
| Labour (casual & permanent at<br>\$1/hr)                     | 105   |                   |
| Irrigation   | 1     |                   |
| Harvesting at 5c/lb or punnet                                | 28    |                   |
| Transport  | 4     |                   |
| Commission   | 14    |                   |
|  | <hr/> | 380               |
| ENTERPRISE MARGIN FOR 1ST YEAR                               | -     | <hr/> <hr/> \$242 |

COST/REVENUE DATA: RASPBERRIES 2ND YEAR  
LINCOLN COLLEGE 1968/69  
Marcy/acre

---

|  |           |                |
|--|-----------|----------------|
| <u>GROSS REVENUE</u>                                   |           | \$             |
| 1074 lbs at 27c/lb                                     |           | 290            |
| <u>Less Direct Costs</u>                               |           |                |
| Materials:   |           |                |
| Spray materials  | \$23      |                |
| Fertiliser   | 5         |                |
| Posts 144 at \$1.50                                    | 216       |                |
| Wire 12 coils at \$9.73                                | 117       |                |
| Packing materials                                      | <u>10</u> |                |
|  |           | \$371          |
| Machinery costs at \$1.50/hr<br>(tractor & implements) |           | 84             |
| Irrigation   |           | 20             |
| Labour (casual & permanent at<br>\$1/hr)               |           | 454            |
| Harvesting at 6c/lb                                    |           | <u>65</u>      |
|  |           | \$994          |
| ENTERPRISE MARGIN FOR 2ND YEAR                         |           | <u>- \$704</u> |

COST/REVENUE DATA: BOYSENBERRIES 1ST YEAR  
LINCOLN COLLEGE 1967/68  
Levin Selected/acre

---

GROSS REVENUE:

Nil

Less Direct Costs

Materials:

|                       |       |
|-----------------------|-------|
| Plants (660)          | \$198 |
| Plastic (3' x .0015") | 73    |
| Fertiliser            | 25    |
| Spray materials       | 21    |
| Clover                | 4     |

\$321

|  |    |
|--|----|
| Machinery costs at \$1.50/hr<br>(tractor & implements) | 75 |
| Irrigation   | 1  |
| Labour (casual & permanent at<br>\$1/hr)               | 70 |

70

3467

ENTERPRISE MARGIN FOR 1ST YEAR

- 3467

COST/REVENUE DATA: BOYSENBERRIES 2ND YEAR  
LINCOLN COLLEGE 1968/69  
Levin Selected/acre

---

GROSS REVENUE

Nil

Less Direct Costs

Materials:

|                 |                   |      |
|-----------------|-------------------|------|
| Fertiliser      | \$10              |      |
| Spray materials | 20                |      |
|                 | <u>          </u> | \$30 |

|   |  |           |
|---|--|-----------|
| Machinery at \$1.50/hr<br>(tractor & implement) |  | 17        |
| Irrigation                                      |  | 4         |
| Labour at \$1/hr (casual &<br>permanent)        |  | <u>77</u> |

\$128

ENTERPRISE MARGIN FOR 2ND YEAR

-\$128

APPENDIX II

Questionnaire on Strawberry Growing in New Zealand

Conducted by the Horticulture Department, Lincoln College for educational purposes. Growers may remain anonymous if they desire, but in the case of anonymity the district is required.

- 1. Name (not essential) .....
- 2. Address (not essential) .....
- .....
- .....
- .....

3. District (Auckland Canterbury etc) .....

4. What is the total area of your property? .....acres

5. What area do you have in horticultural crops? .....acres

6. From what crops or farming activity was the major section of your income derived during the 1968-69 season?

- (List in order of importance)
- (a) .....
  - (b) .....
  - (c) .....

7. What area have you had in strawberries for the 1968-69 season?  
(Note: give average to nearest one-tenth of an acre if possible, taking the actual area of ..... acres strawberries and excluding headlands)

8. State the area of each variety according to age. (Average to one-tenth of an acre)

|                         | Age in years | Average |
|-------------------------|--------------|---------|
| (a) Red Gauntlet        | 1            | .....   |
|                         | 2            | .....   |
|                         | 3 and older  | .....   |
| (b) Cambridge Favourite | 1            | .....   |
|                         | 2            | .....   |
|                         | 3 and older  | .....   |



| 8. (cont'd)  | Age in years | Average |
|--|--------------|---------|
| (c) Tioga  | 1            | .....   |
|  | 2            | .....   |
|  | 3 and older  | .....   |
| (d) All other varieties<br>(State name of main<br>ones in order) |              |         |
| a).....  | 1            | .....   |
| b).....  | 2            | .....   |
| c).....  | 3 and older  | .....   |

9. State your main outlets for strawberries by marking 1,2,3,4, or to represent descending order of importance and if possible give the approximate tonnage (to nearest quarter of a ton).

|   | Order of<br>importance | Approx.<br>tonnage |
|---|------------------------|--------------------|
| a) Gate sales                             | ....                   | .....              |
| b) Processing                             | ....                   | .....              |
| c) Fresh sales local market               | ....                   | .....              |
| d) Fresh sales export                     | ....                   | .....              |
| e) Any other outlet (state this<br>.....) | ....                   | .....              |

10. State actual or contract price where possible or alternatively give a price range.

- a) Gate sales    i) Dessert/lb .....    ii) Jam/lb .....
- b) Processing    ...../lb (calyx on)
- ...../lb (calyx removed)

State if price is    i) delivered    ii) farm gate (cross out whichever does not apply)

- c) Fresh sales local market    i) ...../¾lb punnet
- ii) ...../½lb punnet
- iii) .....in bulk per lb
- d) Fresh sales export    i) ...../¾lb punnet
- ii) ...../½lb punnet
- e) Any other outlet    i) ...../ lb

1. If exporting fresh fruit, state
  - a) Main cities of destination in descending order of importance .....  
.....  
.....
  - b) Do you make your own export arrangements i) own  
or export through an agent (Cross out ii) agent  
whichever does not apply) iii) both
2. If you are an exporter, what percentage of your crop do you consider to be of fresh export quality? .....per cent
3. State if you think percentage export quality varies with variety, age or time of the year and in what way?  
.....  
.....  
.....  
.....
4. Do you have difficulty in obtaining sufficient suitable labour for harvesting? (Cross out whichever does not apply) YES/NO
5. How do you pay your harvesting labour, and state rate?
  - a) by punnets graded and packed in the field .....
  - b) by pound graded and packed in the field .....
  - c) by punnet graded but not packed .....
  - d) by pound graded but not packed .....
  - e) by pound ungraded .....
  - f) by hour .....
  - g) any other method .....
6. What type of labour do you prefer?
  - (a) primary school children
  - (b) secondary school children
  - (c) women
  - (d) men
  - (e) no preference

17. What area of strawberries do you intend to have for the 1969-70 season?

- ..... acres 1 year or older
- ..... acres 2 year or older
- ..... acres 3 year or older

(Note: Give acreage to nearest one-tenth of an acre if possible, taking the actual area of strawberries and excluding headlands)

18. How do you propose to dispose of the 1969-70 crop? Write 1, 2, 4 or 0 beside the appropriate outlet to represent descending order of importance.

- a) Gate sales .....
- b) Processing .....
- c) Fresh fruit local market .....
- d) Fresh fruit export .....
- e) Any other outlet (state this)  
.....

19. How long did it take you to complete this questionnaire?

..... minutes

20. Do you object to being asked to complete this questionnaire?  
(Cross out whichever does not apply) YES/NO

21. If the answer to 20 is Yes, please state reasons.

- .....
- .....
- .....
- .....

22. Would you object to answering an occasional questionnaire in future in assist with horticultural management research?

(Cross out whichever does not apply) YES/NO

APPENDIX III

Questionnaire on Labour in Horticulture

This questionnaire is conducted by the Horticulture Department, Lincoln College, for a study on labour management. It is to be used for educational purposes.

Growers may remain anonymous if they wish but in the case of anonymity, please answer Question 3.

1. Name .....  
(not essential)
2. Address .....  
(not essential .....  
.....  
.....)
3. District  
(Hawkes Bay, Canterbury etc) .....
4. What is the total area of your property? ..... acres.
5. What are your main three crops by area (excluding headlands)  
in descending order?  

| <u>Crop</u> | <u>Area</u> |
|-------------|-------------|
| 1. ....     | ..... acres |
| 2. ....     | ..... acres |
| 3. ....     | ..... acres |
6. How far are you from the nearest city? ..... miles
7. How many permanent employees do you have, excluding yourself?  
A. Male .....  
B. Female .....
8. What is the approximate annual cost of your permanent labour?  
\$ .....

9. What is the maximum number of casual employees you have at any one time?

.....

10. At this time, approximately how many of your casual employees are -

Men ..... Boys .....

Women ..... Girls .....

(Count boys and girls as 15 and under)

11. If you show a preference in question 10, please give reasons for and against (e.g. need for men to do heavy work, women more reliable, minors cheaper, availability, etc.)

.....  
.....  
.....  
.....

12. If possible, give the approximate annual cost of your casual labour. \$.....

13. Do members of your family perform work towards the running of the property (including items such as tea making or clerical duties) for which they are not paid? Please list members of family, ages and approximate accumulated time in terms of 8 hour days per year.

| <u>Members of Family</u> | <u>Age</u> | <u>Time</u> | <u>Type of Duty Performed</u> |
|--------------------------|------------|-------------|-------------------------------|
| 1. Wife                  |            |             |                               |
| 2. Son                   |            |             |                               |
| 3. ....                  |            |             |                               |
| 4. ....                  |            |             |                               |
| 5. ....                  |            |             |                               |
| 6. ....                  |            |             |                               |

14. Classify your permanent employees as follows:

- (a) Number of unskilled labourers .....
- (b) Number of apprentices .....
- (c) Number of qualified in some way -
  - (i) qualified gardener .....
  - (ii) qualified in other trade .....
  - (iii) N.D.H. or College Diploma .....
  - (iv) degree .....
  - (v) other (state what other) .....

15. What percentage of your total costs are labour costs?

(i.e.  $\frac{\text{labour costs}}{\text{total costs}} \times \frac{100}{1}$  )

Take these costs from your farm working or profit and loss account.

..... %

16. Do you employ a manager?

(Delete that which is not applicable) YES/NO

17. How many permanent employees have some degree of responsibility such as -

- foremen .....
- responsible for an area .....
- responsible for a crop .....
- responsible for machines .....
- other in charge jobs .....
- (state jobs)
- .....

18. Do you have any difficulty in obtaining responsible permanent

men? YES/NO

women? YES/NO

19. If you do have difficulty what do you think are the main reasons? For example, poor image of horticulture, type of work, low award rates, lack of future advancement etc.

.....  
.....  
.....  
.....

20. What, in your opinion, should be done about the availability of reliable permanent labour in horticulture if in fact you consider it a problem?

.....  
.....  
.....  
.....

21. How many of your permanent employees' wages fit into the following categories?

- (a) Award rates .....
- (b) \$0 - \$2/week above award .....
- (c) \$2 - \$4/week above award .....
- (d) \$4 - 6/week above award .....
- (e) more than \$6/week above award .....
- (f) on a salary .....

22. What is your attitude to the setting of wage rates?

e.g. pay minimum rates,  
pay extra for responsibility,  
pay extra for skill,  
pay extra for work output etc.

.....  
.....  
.....  
.....

23. Do you have any difficulty in obtaining casual employees, including harvesting labour?

YES/NO

(If so, state the main reason(s).)

.....  
.....  
.....  
.....

24. How do you pay casual employees?

(a) by the hour (or week) YES/NO

(b) by piece rates YES/NO

&/or (c) use incentives or bonuses or any other method YES/NO

Give details of (c) -

.....  
.....  
.....  
.....

25. Do you believe in keeping your employees informed about the management of the property and the purpose of the work you ask them to do?

YES/NO

To a limited extent

Only some employees

(Cross out those which do not apply)

26. Do you encourage employees to make suggestions for improving the property or methods used.

YES/NO



27. Do you consider an employer should take a personal interest in the welfare of his permanent employees so that he may encourage their loyalty, respect and co-operation?

YES/NO

To a limited extent

(Cross out that which does not apply)

28. How long did it take you to complete this form?

..... minutes

29. Do you object to answering any of the questions?

YES/NO

If so, list the numbers of the questions .....

.....

30. Do you object to a questionnaire such as this?

YES/NO

31. Would you be prepared to complete occasional questionnaires on management in the future for research purposes?

YES/NO

APPENDIX IV

Horticulture Management  
Labour Interview Questionnaire

1. Employer:-

Name : (Can be eliminated to protect anonymity)

Address :

2. Employee:-

Male/Female: Age. Married/Single

Period in horticulture

Period in present position (Can be eliminated to protect  
anonymity)

Previous employment

3. Attitude towards and opinion of

Employer

and/or

Foreman

Considerate towards you

Interested in you

Demanding

Clear instructions

Critical

Appreciative

General suggestions on improvements in employer/staff  
relationships:

4. Miscellaneous questions:

Treated fairly by firm?

Sufficient pay?

Sufficient overtime?

Lenient attitude towards time off?

Do you feel part of the business?

Do you know sufficient of the results  
and plans of operations on the property?

Good and bad points about the property  
and general work atmosphere?

5. Work enjoyment and satisfaction:

Do you enjoy your work?

Is it monotonous?

Fatiguing?

Which work do you prefer most?

Which work do you not like?

What is the main reason for working here?

6. Relationship with other staff:

Enjoy working with them.

What work factors in other staff members annoy you or affect your work?

Low work output

High work output

Talkative

Moody

Demanding

Selfish

Others

7. What changes in relation to labour usage and control would you make if you became the employer or foreman?

Have you any distinct opinions on the efficiency of labour on the property?

8. Do you object to answering any of the questions asked?

Are there any other points you would like to make?