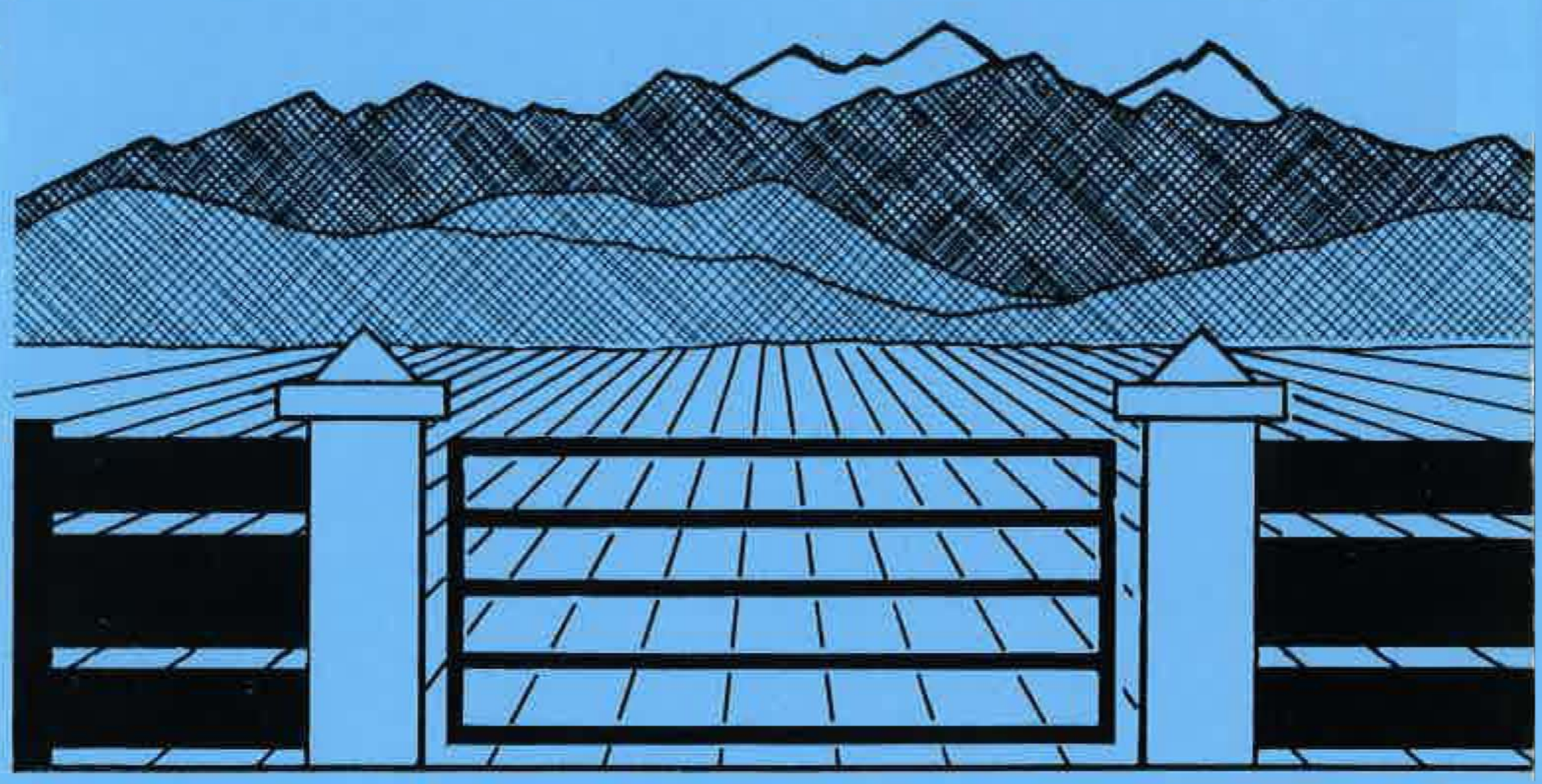
Lincoln College
Farm Management and Rural Valuation Department

1983 Farm Budget Manual



FINANCIAL Volume 2

1983 FARM BUDGET MANUAL

FINANCIAL

Volume 2
Sections 5 – 7

Editors : M. B. CLARK
Senior Lecturer
in Agricultural Accounting
G. P. RENNIE
Lecturer in Farm Management

Department of Farm Management
and Rural Valuation
Lincoln College,
Canterbury, New Zealand

SECTION 5

ENTERPRISE ANALYSIS

5. ENTERPRISE ANALYSIS

5.1 GROSS MARGIN ANALYSIS - A CRITICAL EVALUATION
(Prepared by G. Tate, December 1979)

5.1.1 Introduction

The farm manager is frequently faced with selecting the most appropriate production possibility from amongst several alternatives. If the alternatives or adjustments to be considered involve no significant changes in the fixed cost structure, then some form of partial budgeting can give a satisfactory guide to correct decision. Partial budgeting involves giving consideration only to those cost or income items that are directly affected by the proposed alternatives. Where the proposed change does not involve altering the requirements for a particular resource (e.g. labour), then the costs related to this resource may be regarded as fixed and thus excluded from the analysis without affecting its validity. A partial budget is merely a simplified whole farm budget in which certain fixed considerations are ignored.

The use of partial budgeting has been extended in use by the development of gross margins analysis. This system involves only the consideration of the gross contribution made by a particular enterprise in excess of the additional variable costs necessary to operate it. It assumes complete linearity, that is that each additional unit of production is worth as much as and costs as much as each preceding unit. It also assumes that the enterprise being assessed can be technically and financially isolated from other activities, and thus considered independently.

A knowledge of the gross margins of possible enterprises on the farm is a valuable guide for farmers and their advisers when making decisions on the best combination to adopt. Unfortunately, because of the mechanical and conceptual ease of this method of analysis, there has been a growing tendency for inappropriate and misleading application. The failure to appreciate the limitations of the technique can lead to faulty decision making. In a simple problem, such as the choice between growing Kopara wheat and Arawa wheat in a particular padddock, the use of gross margins analysis gives a quick and reliable answer. The only considerations are the likely yield and price for each variety together with the additional costs of harvesting where the yield differs. Other aspects such as possible marketing difficulties with Arawa can be considered outside the gross margin framework. Even in this simple example however, and as indeed with any other method of analysis, the reliability with which the crit-

ical parameters may be assessed is of great significance to the value of the answer obtained. The critical measures in most considerations are the yield and the price obtained for the product. In general, far too much attention is paid to getting the last detail of cost correct while sweeping a broad brush over the really significant parameters of yield and price.

It is well to be aware that farmers' performance figures are not always reliably recorded and rarely include disaster years. This often means that average yields quoted are the average performance of good years not the average of all years. The significance of the last few kilograms of yield to the profitability of an enterprise is generally appreciated. Any discrepancy in this respect is likely to lead to significant errors in the choice of the most profitable alternative. Where a farmer has a well prepared set of farm accounts extending over several seasons, the extraction of performance figures from these is likely to be more reliable than relying on undocumented opinion.

The effect of not accurately establishing yield performance can be illustrated by the hypothetical example of a Canterbury light land farm where severe drought occurs one year in five, resulting in no harvest.

Wheat may yield an average of 3.5 tonnes per hectare over the four good years, but in the fifth dry season nothing. A gross margin analysis calculated on the 3.5 tonnes yield might show a return of about $350 per hectare. However, on the true crop mean yield over the five years of 2.8 tonnes per hectare the gross margin would be reduced to about $280 per hectare.

At all times when considering an individual farm situation, it is the performance on that farm that is relevant, not the district average or some standard obtained from elsewhere. This means that the farm adviser constructing an alternative management policy on two similar farms may well have a differing gross margin for the same crop based on the individual farmer's past experiences in the area.

Among the problems that can arise with the use of gross margins analysis, the following have all been observed by the writer and are provided here to illustrate the dangers of adopting an over-simplified approach to the consideration of farm management alternatives.

5.1.2 Choice of the Limiting Resource

Gross margins are customarily expressed in terms of returns per unit of land area or per head of livestock. In many farm management decisions, maximisation of returns to capital may be of greater significance. Occasionally labour is a critical constraint and maximisation of returns to this resource is the farm manager's goal. Perhaps the best known example of conflict between returns to land and to capital lies in a consideration between the alternative enterprise of cattle or sheep.

For the purpose of illustration let us assume that the gross margin per stock unit for a ewe flock is $20. At 15 ewes per hectare the gross margin per hectare would be $300. For a cattle policy, buying in weaners and selling prime stock, let us assume a gross margin per stock unit of $26, or at 15 stock units per hectare $399. On this basis of gross margin per hectare cattle look more profitable by $90 per hectare. ($390 compared with $300.)

For many farmers however, capital or access to it will be the most critical constraint. If a farmer cannot get more capital then looking at a gross margin purely in terms of feed utilisation can give a completely false picture of the most desirable alternative.

Let us assume that a stock unit in sheep costs $25 and a stock unit in cattle costs $50 (if we assume a weaner steer being the equivalent of 3 ewes this values the weaner at about $150 per head). With 15 stock units per hectare we find the following position:

Cattle $\dfrac{\text{Gross margin per hectare}}{\text{Livestock capital per hectare}} = \dfrac{\$390}{\$750}$

i.e. a 52% return to livestock capital

Sheep $\dfrac{\text{Gross margin per hectare}}{\text{Livestock capital per hectare}} = \dfrac{\$300}{\$375}$

i.e. an 80% return to livestock capital

Recognising capital is the limiting resource we should conduct our gross margins analysis to establish relative returns to this factor, i.e. to establish the relative gross margin per $1 invested.

In the above example we find the following:

Cattle $750 invested returns $390.
i.e. a gross margin return of 52 cents per $1 invested.

Sheep $375 invested returns $300.
i.e. a gross margin return of $80 per $1 invested.

The above illustrates the necessity to decide on any farm what the critical scarce resource is. If the farmer wishes to maximise his return to feed grown and can obtain additional capital cheaply then the absolute return from cattle is going to be higher than for sheep. For example

	Cattle	Sheep
Gross margin per hectare	$390	$300
Less interest at 10% on capital invested in livestock - approx.	$ 75	$ 37
Residual margin per hectare	$315	$263

If capital is available at 10% then the farmer on a 500 hectare property with the above figures is likely to be better off by $26000 by running cattle. In the above example the cost of capital would have to be greater than 33% before the residual margin per hectare would favour investment in sheep rather than cattle.

If our farmer has unlimited surplus grass, but only a thousand dollars of capital available to buy livestock then, in the above example, his return to the scarce resource is going to be $800 if he uses the capital to buy sheep but only $520 if he used his capital to buy cattle.

5.1.3 Selecting the Correct Rate of Substitution

In comparing alternative livestock practices on a gross margin basis, the rate of substitution of one animal for another is critical.

On tussock country the proposal to replace some sheep by cattle may require an entirely different rate of substitution than would be the case for a similar proposal relating to a prime lamb farm. For example, on a tussock block at present carrying sheep it may well be that the replacement of some sheep with cattle will initially give a complementary effect resulting not in a substitution but in an improvement in production by the sheep carried as well as additional production by cattle. As total stocking rate is increased there may be reached the stage of fixed production by sheep, but some addition to total

production by the extra cattle, i.e. a supplementary effect. This may be due to cattle eating different plants to the sheep.

It may only be at a third or higher stocking rate that the competitive effect between sheep and cattle comes into play and any rate of substitution for gross margin analysis is valid. On a prime lamb farm, cattle and sheep will probably be directly competitive from the outset.

A further example where the correct rate of substitution is critical to the problem to be analysed could be seen in considering two alternative enterprises such as the buying of ewe lambs for sale as two tooth ewes and the running of a conventional breeding flock. Common practice is to use the accepted rate of substitution of one hogget being equal to 0.6 breeding ewes. In this example however, there are really three periods of the year to be taken into account when considering the substituion rate in respect to feed supply. Over the winter the hogget must be fed for growth, the ewe requires only maintenance. It may well be that at this period of the year one hogget directly substitutes for one ewe. In spring the breeding ewe with a lamb at foot has a full productive requirement, the hogget has only to maintain itself with some growth. In spring the substitution rate of one ewe for two hoggets may well be applicable. Over the summer season, if good two tooths are to be produced, the hogget must be well fed. The ewe at this time is back to maintenance. One could suggest that over the summer period one ewe may be equal to 0.75 hoggets.

Gross margin analysis for such a problem would require the definition of the period of feed limitation on a particular property and the use then of the appropriate substitution rate. Again it is a matter of accurately

defining the scarce resource, i.e. feed, at a particular time of the year, and using the substitution rate appropriate to that time of the year. Because the above stock policy change is likely to have quite complex effects on farm operation, gross margins analysis is unlikely to yield a satisfactory comparison. Partial or full comparative budgeting would be better methods of comparing the two systems.

Gross margins analysis is sometimes used to compare the returns from a paddock used in growing crop or in carrying livestock. The correct substitution rate to be used in deciding the sheep carrying is not the overall farm position, but the contribution that that particular paddock will make to stock carrying in the feed pinch period, i.e. the time of maximum constraint. For example, if the time of the year which limits increases in carrying capacity is the months of August and September, the correct substitution rate to impose on sheep versus crop is the potential carrying capacity of that paddock in those two months.

It could well be that a farm with an overall carrying capacity of twelve ewes per hectare may be in the position where in August each grass paddock carries 17 ewes. Seventeen ewes then is the substitution rate to be used in comparing the two enterprises, not twelve.

5.1.4 Complementarity and Supplementarity of Operations

Complementary and supplementary relationships are important in planning the most profitable programme in mixed arable farming. Because many enterprises require land for widely differing periods of time, simple gross margin analysis may lead to serious errors. For example, a comparison of gross margins on a property farmed with the following rotation could be made:

Old pasture - kale seed - wheat - specialist white clover - wheat - peas - new grass - grass seed - white clover seed - grazing.

The gross margins for each crop might be:

	Gross Revenue per hectare	Direct Costs per hectare	Gross Margin per hectare
Kale seed	$1000	$300	$700
Wheat	$ 500	$150	$350
White Clover Specialist	$ 600	$250	$350
White Clover Pasture	$ 300	$200	$100
Peas	$ 500	$350	$150
Ryegrass Seed	$ 600	$300	$300
Grazing ewes	-	-	$285

Looking simply at the calculated gross margins one would say that most of the farm should be in kale seed. The true position however is not so clear cut. While over a 10 year period the gross margin for kale could be justified, the price and the yields are extremely variable. Interseasonal variation and risk are very high with this crop. A farmer with all his farm in kale might well go bankrupt waiting for the correct combination of yield and price to give him that bumper year that over a long term gives such a high average gross margin. In addition kale occupies the ground over the period from December to the succeeding January. Because nothing effective can be done with the land before the following crop of wheat is shown in June, land is really tied up for 18 months and the gross margin for the crop, as expressed above, makes no allowance for this time period difference.

The specialist white clover permits the carrying of say, five ewes per hectare from May to November, increasing profitability by about $50 per hectare. The increased nitrogen status of the soil following the white clover crop will also increase the subsequent wheat yield. The white clover in pasture permits the carrying of 15 ewes from February to November, increasing profitability by $200 per hectare. The ryegrass permits ewe grazing from May to October producing an additional $120 per hectare of gross margin. The peas boost the subsequent yield of ryegrass by 100 kilograms per hectare. Therefore an additional $30 per hectare profit is earned from the ryegrass crop, as a result of following peas in the rotation.

Consideration of each enterprise merely on a gross margin basis ignoring the effects of the length of time of land use, availability of stock grazing, carry-over of fertility effect and labour requirement can lead to unsound decision making.

With mixed arable farming it is possible to establish the

revenue earning expectations of the whole rotation over its time period. This may then be compared on a yearly basis with the revenue earning capacity of alternative rotations. Consider for example any rotation 'A', which we assume yields a total gross margin return of $1200 over its six-year time period. Consider also rotation B, which yields a gross margin return of $1440 over its eight-year time period. Clearly, when the total revenue earned is divided by the number of years involved, rotation A returning $200 per annum would appear more profitable than rotation B returning $180 per annum.

By comparing the return from the total rotation, allowance can be made for complementary and supplementary effects. In this way gross margins analysis can provide a guide to the decision-maker. Unfortunately there are usually many factors in comparing alternative systems that cannot adequately be considered in gross margin analysis. A more detailed technique, such as comparative budgeting is usually advisable in these circumstances.

5.1.5 The Allocation between the Variable and Fixed Costs

By definition, the gross margin is the value of production minus the variable (or direct) costs associated with the enterprise. These variable costs are those which increase or decrease proportionately to changes in the scale of the enterprise's production. Such things as veterinary fees or animal health remedies are typical variable costs in animal production.

The fixed costs are those that will stay the same no matter what the pattern of production - for example rates, insurances, accounting fees. However, this raises some problems because in one sense all costs are variable - land and equipment can be bought and sold or labour hired and fired.

Very few farm operations can be reliably considered as individual processes. For example, in a mixed livestock cropping economy, typical conceptual problems that can arise in preparing gross margin analysis between enterprises might be -

(i) To which enterprise should the cost of new grass establishment be charged - to the cropping because it is necessary to restore structure or fertility, or to the livestock that are going to eat it?

(ii) Should the cost of fencing maintenance be a charge against livestock?

(iii) What is the cost of a fallow and where should it be charged?

The difficulty in resolving these sorts of problems reduces the reliance that can be placed on gross margins analysis. The tendency to disregard side effects or to ignore the overall effect of a management change on the property's fixed costs can result in illogical decision making.

5.1.6 Summary

Used for marginal analysis and clearly defined situations in which the results can be interpreted with a good deal of common sense, gross margins analysis provides a quick, easy means to assist in evaluating alternatives. A knowledge of the gross margins of possible enterprises on the farm is an extremely valuable guide for farmers and their advisers when making decisions on the best combination of enterprises.

Where problems are complex, or involve considerations embracing interaction between several enterprises, then the preparation of alternative budgets will give a more reliable guide to the decision-maker. Whatever the technique of analysis employed, the conclusion will only be as accurate as the initial data on which it was based. The successful application of the analysis will depend on the skill of the farmer or his adviser in recognising the limitation of the technique employed.

5.2 GROSS MARGINS

5.2.1 Introduction

Farmers with a range of alternative crops and stocking systems have to choose which crops and stock systems are the most suitable for their situation. A series of production plans and budgets take a lot of time to show which is likely to be the most profitable plan.

An alternative approach is to first work out the profitability of each crop and system that can be undertaken on the farm. Profitability of each enterprise may be measured in terms of a Gross Margin, the difference between Gross Revenue and Gross Costs. Gross Margins are short-cut methods because they ignore fixed costs. These are taken into account later when a farm plan is budgeted, and income and costs for the whole farm are estimated.
When using the G.M. approach to determine a better farm

plan, first list the alternative enterprises and estimate Gross Margins for each. Make sure that the levels of production are relative to each other. Then draw up various rotations taking into account the farmer's preferences and any constraints influenced by soils, climate, capital, etc. The Gross Margin for each enterprise in the rotation (i.e. both crops and stock) will be added together and then averaged per hectare per year. The rotation having the highest G.M. can then be tested by drawing up the whole farm budget to confirm it is a better farm plan.

5.2.2 Examples of Crop and Small Seeds Gross Margins 1983

The rotation used is an example of land use possible on medium soils.

pasture → wheat → wheat → white clover → wheat → greenfeed → peas → ryegrass → white clover → pasture 2 years

i.e. a 9 year rotation.

(i) 1st Wheat Crop (Kopara ex pasture):

Programme:

Cultivation:

The paddock is disced twice in March, ploughed in April, heavy harrowed, grubbed and heavy harrowed in May, drilled in late May along with 125 kg/ha of superphosphate.

Weed and Pest Control:

The crop is sprayed after the 2 leaf stage but before third joint is detectable in the wheat crop, for the control of various weeds and wild oats.

Harvesting:

The crop is headed in January using own machinery, stored in on-farm bulk silos until August. A firebreak is ploughed after the crop is harvested and the stubble is raked up and burned in late January.

Direct Costs (per hectare):

Cultivation: 5 hrs/ha @ $10.15/hr	$50.75
Seed: 130 kg/ha seed @ $430/t plus treating, e.g. Baytan @ $48.65/t (no royalty)	$62.22
Fertiliser: 125 kg/ha super phosphate @ $141.60/t on farm	$17.70
Weed Control: e.g. M.C.P.A. @ 3 litres/ha @ $4.91/litre plus spraying @ .33 hrs/ha @ $10.15/hr	$17.78
Wild oat spray (e.g. Avenge): 5 litre/ha @ $15.62/litre plus spraying @ .33 hrs/ha @ $10.15/hr	$81.15
Rust Control: e.g. Bayleton @ 500 ml/ha @ $50.9/litre spraying @ .33/hr @ $10.15/hr	$28.50
Cartage: from field to silos @ $3/ha	$ 3.00
Raking and Ploughing Firebreak: $10.15/hr	$ 1.51
Heading .75 hrs/ha @ $20.00/hr	$15.00
Cartage: from silo to rail (by contract) @ $5.43/t (8 km distance)	$21.94
TOTAL DIRECT COSTS	$299.55

Gross Revenue:

Yield: 4.03 t/ha Price: $204/t plus storage increment to August 1st of $16.75/t Income: 4.03 x $220.75/t less levy of $1.64/t	$883.00
TOTAL REVENUE	$883.00

Thus it appears that in this example using own machinery, the costs are about $300 and the revenue is $883 leaving a gross margin of $585/ha.

(ii) 2nd Wheat Crop (Kopara ex Wheat):

Programme:

Cultivation:

The paddock receives 2 grubbings in March-April and another grubbing in May. It is drilled in late May, with 125 kg/ha superphosphate.

Weed Control:

As for the first wheat crop, but with M.C.P.B. at a rate of 3.5 litres/ha.

Undersowing:

White clover is sown in August at 3.0 kg/ha with 125 kg/ha of lime reverted superphosphate.

Harvest:

The harvest programme is the same as for the first wheat crop. It is not necessary to bale the straw.

Direct Costs (per hectare):

Cultivation: 2 hrs/ha @ $10.15/hr	$ 20.30
Seed: 130 kg/ha seed @ $430/t plus treating e.g. Baytan @ $48.65/t (no royalty)	$ 62.22
Fertiliser: 125 kg/ha superphosphate @ $141.60/t on farm	$ 17.70
Nitrogen: 40 kg N/ha, e.g. 250 kg/ha Ammonium Sulphate @ $206.05/t	$ 51.51
N.B. Undersowing costs are charged to the white clover gross margin (see later)	
Weed Control: M.C.P.B. @ 3.5 litres/ha @ $4.79/litre spraying @ .33 hrs/ha @ $10.15/ha	$ 19.82
Wild Oat spraying, e.g. Avenge @ 5 litres/ha @ $15.62/litre spraying @ .33 hrs/ha @ $10.15/hr	$ 81.15
Heading: .75 hrs/ha @ $20.00/hr	$ 15.00
Cartage: from field to silo @ $3/ha	$ 3.00
from silo to rail (by contract) @ $5.43/t (8 km)	$ 20.09
TOTAL DIRECT COSTS	$290.99

Gross Revenue:

Yield: 3.7 t/ha
Price: Same calculations as with first wheat crop.
Income: 3.7 x $220.75 less levy of
$1.64/tonne $810.71

TOTAL REVENUE $810.71

In this example the costs are about $291 and the revenue is almost $811/ha, giving a gross margin of about $520/ha.

(iii) White Clover (ex wheat):

Programme:

The seed is oversown into wheat in September. Fertiliser is applied at 250 kg/ha of superphosphate in March.

Grazing:

The paddock is lightly grazed in March and is then consistently grazed over the winter to help spread the straw. Over the spring months, the grazing pressure is about 5 s.u./ha. The paddock is closed in early October and then heavy rolled.

Weed Control:

The paddock is spot sprayed with Asulox in July for dock control. It is sprayed in August with Carbatamex and M.C.P.B. for control of annual grasses, flatweeds and suckling clover. In January, the crop is dessicated with Reglone plus Agral LN wetting agent.

Harvest:

After dessication (5-6 days), the crop is headed. The field dressed seed is then carted to a merchant to be machine dressed. Extra sacks are required for double bagging the M.D. seed (capacity of a sack is 50 kg).

Direct Costs:

Seed: Oversowing of 3 kg/ha @ $4.50/kg $ 13.50
plus 0.6 hr/ha @ $10.15/hr $ 6.09

Fertiliser: 125 kg/ha lime reverted superphosphate $117.20/t on the farm	$ 14.65
250 kg/ha superphosphate @ $125.60/t	$ 31.40
Heavy Rolling: 0.6 hr/ha @ $10.15	$ 6.09
Weed Control: Dock Control, spot spraying	$ 4.00
General weeds: e.g. M.C.P.B. 3.5 litres plus spraying @ .33 hrs/ha @ $10.15/hr	$ 19.82
Grass Removal: e.g. Carbetamix @ $16.28/kg 4 kg/ha, plus spraying	$ 67.33
Dessicating: (a growthy crop) e.g. Reglone @ $12.20/litre 3 litres/ha plus spraying costs	$ 38.81
Mowing: 1.75 hrs/ha @ $10.15/hr	$ 12.57
Heading: 2.5 hrs/ha @ $20.00	$ 50.00
Box hire: 1 box (cartage out and in for dressing)	$ 5.50
Consolidated Dressing and Store Handling Charge: 500 kg/ha F.D. @ 24c/kg	$120.00
Sacks: 14 @ $1.00 (350 kg double sacks @ 50 kg/sack)	$ 14.00
TOTAL DIRECT COSTS	$403.76

Gross Revenue:

Yield: 500 kg/ha F.D.; 30% less on machine dressing; 350 kg/ha M.D. Price: $2.90/kg for 1st Generation seed Income: 350 kg x $2.90/kg	$1,015.00
TOTAL REVENUE	$1,015.00

In this example, the gross margin is about $610/ha with direct costs of about $404/ha and revenue of about $1,015/ha.

To this should be added some return from the winter grazing. A gross margin of $27.78/s.u. can be expected this season (see Sheep Gross Margins, Section 5.2.6) from the consumption of 590 kg D.M. over a 12 month period.

If one hectare produces 1500 kg D.M./ha in the winter-spring period, this represents 254% of the annual requirement of one s.u. Thus the return to be added to the above figure is:

$27.78 x 2.54 = $70.56 which brings the total white clover gross margin to about $680/ha.

(iv) 3rd Wheat Crop (ex white clover):

Programme:

Following the white clover harvest, the tailings are fed to sheep and the paddock cleaned up before the cultivation for wheat. The cultivation is the same as for a wheat crop ex old grass and the only additional cost could be for insect control. The paddock should also be tested for Nitrogen levels in late winter.

Direct Costs (per hectare):

As for 1st wheat crop	$299.55
Insect Control: Systemic aphicide, Bidrin @ 400 ml/ha @ $8.00/litre plus .33 hrs/ha spraying @ $10.15/ha	$ 6.25
TOTAL DIRECT COSTS	$305.80

Gross Revenue:

Yield: 3.7 t/ha Price: $220.75/t including storage increment Income: 3.7 x $220.75/t less levy of $1.64/t	$810.71
TOTAL REVENUE	$810.71

Thus the Gross Margin for this crop (using own harvesting machinery) is about $505/ha.

(v) Greenfeed Oats (ex wheat):

Programme:

After the wheat stubble has been burnt off, the paddock is grubbed 3 times in February and the crop is drilled at the end of February. Amuri oats are used at the rate of 90 kg/ha. Nitrogen superphosphate is applied at 250 kg/ha.
Grazing:

The paddock is grazed during June and July.

Direct Costs:

Cultivation: 2.5 hrs/ha @ $10.15/hr	$ 25.38
Seed: 90 kg/ha @ $360/t	$ 32.40

Fertiliser: 250 kg/ha nitrogen superphosphate @ $169/t on farm	$ 42.25
TOTAL DIRECT COSTS	$100.03

Gross Revenue:

If stock consume 590 kg D.M./year, and one hectare produces 3500 kg D.M./ha it would support 6 s.u.ha.

The revenue contribution of these 6 stock units at $27.78/s.u. is therefore:

$27.78 x 6	$166.68
TOTAL REVENUE	$166.68

Thus the gross margin is about $67/ha.

(vi) Field Peas (Blue Rondo ex Greenfeed Oats):

Programme:

The paddock is disced twice at the end of July and then ploughed, heavy harrowed, vibratillered to mix in Treflan, rolled and drilled at the end of August. 250 kg/ha of peas are sown with 250 kg/ha of Mo superphosphate.

Weed Control:

The paddock is sprayed with Pre-emergence herbicide, e.g. Treflan in July at 2.5 litres/ha.

Harvesting:

The crop is direct headed in February into sacks and then carted to a merchant for machine dressing. The pea straw is raked and baled and sold in the paddock.

Direct Costs (per hectare):

Cultivation: 4 hrs/ha @ $10.15/hr	$ 40.60
Seed: 250 kg/ha Blue Rondo @ $370/t (Contract price includes treating and sacks)	$ 92.50
Fertiliser: 250 kg/ha molybdate super @ $149.80/t	$ 37.45
Weed Control: 2.5 litres/ha Pre-emergence herbicide, e.g. Treflan @ $9.95/litre plus .33 hrs/ha @ $10.15	$ 27.93
Harvesting: 1.75 hrs/ha @ $20.00/hr	$ 35.00

Sacks: 36 sacks/ha (75 kg/sack) @ $1.20	$ 43.20
Cartage: 2.7 tonnes 2.5 boxes to store (own cartage).	$ 2.20
Box hire: 2.5 boxes @ $5.50/box	$ 13.75
Consolidated Dressing & Store Handling Charge: 2.7 tonnes @ $40.25/t	$108.68
Raking pea straw (own machinery): .5 hr/ha @ $10.15/hr	$ 5.08
Baling pea straw (contract): 90 bales/ha @ 50c/bale	$ 45.00
TOTAL DIRECT COSTS	$451.39

Gross Revenue:

Yield: 2.7 t/ha	
Price: contract $260/tonne	
Income: 2.7 t x $260/tonne	$702.00
Pea Straw: 90 bales/ha @ 75c/bale	$ 67.50
TOTAL REVENUE	$769.50

With costs approximating $451/ha and revenue in the vicinity of $770 the gross margin in this example becomes about $320/ha.

(vii) New Grass for Nui Seed (ex peas)

Programme:

Following the pea harvest in February, the paddock receives two grubbings and lime is worked into the soil. To sustain a rotation of this nature, the pH should be brought up to 6.2 at this stage which means 2.47 tonnes of lime per hectare if the pH following peas is about 5.7. Cultivation follows a programme of grub, harrow and roll in sequence three times to achieve effective weed control. New pasture is drilled with a mixture of 23 kg/ha Ariki ryegrass and 3 kg/ha white clover sown with 250 kg/ha of superphosphate.

Grazing:

This new grass is given a light first grazing in May and is lightly grazed over the winter to allow light into the clover seedlings. Then although the paddock is not available for the whole spring period, the equivalent spring grazing rate is 6

s.u./ha. The paddock is closed from grazing in the middle of September and at the end of September receives either 125 kg/ha of urea or 250 kg/ha of sulphate of ammonia.

Harvesting:

In early January the crop is mown and left for 5-6 days before being headed. The field-dressed seed is then carted in sacks to the merchant for dressing and sale.

Direct Costs (per hectare):

Seed Bed Preparation: 6.5 hrs/ha @ $10.15/hr	$ 65.98
Seed: 23 kg/ha Basic Nui ryegrass @ $3.70/kg	$ 85.10
3 kg/ha Huia white clover @ $4.50/kg	$ 13.50
Fertiliser: Lime 2.47 t/ha @ $18.75/t (includes cartage and spreading)	$ 46.31
250 kg/ha superphosphate @ $141.60/tonne	$ 35.40
250 kg/ha sulphate of ammonia at $206.05/tonne	$ 51.51
Harvesting: Mowing 1.5 hrs/ha @ $10.15/hr	$ 15.23
Heading 2.25 hrs/ha @ $20.00/hr	$ 45.00
Sacks: 14 sacks @ $1.20 each	$ 16.80
Box hire: 1.5 boxes @ $5.50	$ 8.25
Consolidated Dressing and Handling Charge: 7.5c/kg F.D. weight x 900 kg/ha	$ 67.50
Raking ryegrass straw (own machinery): 0.3 hr/ha @ $10.15/ha	$ 3.05
Baling ryegrass straw (contract): 100 bales/ha @ 45c/bale	$ 45.00
TOTAL DIRECT COSTS	$498.63

GROSS REVENUE:

YIELD: 900 kg/ha F.D.; 25% loss on machine dressing. Thus yield becomes 675 kg/ha M.D.

Price: 1st Generation Nui @ 90c/kg	
Income: 675 kg x 90c	$607.50
Ryegrass straw: 100 bales/ha sold in the paddock at 70c/bale	$ 70.00
TOTAL REVENUE	$677.50

This example suggests a gross revenue of $678/ha with direct costs of $499/ha, giving a gross margin of $179/ha. Some recognition in terms of income should also be attributed to the grazing provided by the paddock during the winter-spring period.

With an estimated feed production of 2200 kg/ha over the grazing period, representing an annual grazing equivalent of 3.7 s.u./ha, then the gross margin contribution is:
3.7 x $27.78 = $102.79, which brings the G.M. to about $280. Without the liming charge, the gross margin would be about $46/ha extra.

(viii) 2nd Year of New Grass for White Clover Seed:

Programme:

Following the ryegrass harvest, the paddock is grazed consistently until being closed in early October. The autumn application is 250 kg/ha of superphosphate. The programme is very similar to the earlier white clover crop (example (iii)), except that no weed spraying is done and there is more likelihood of a case bearer problem. The crop is dessicated with Reglone 5-6 days prior to mowing.

Direct Costs (per hectare):

Fertiliser: 250 kg/ha superphosphate @ $141.60/tonne	$ 35.40
Heavy Rolling: 0.6 hr/ha @ $10.15/hr	$ 6.09
Pest Control: Case bearer sprayed twice @ $17.09/ha (Bromophos @ $14.88/l plus spraying costs)	$ 34.18
Crop Dessication: Dessicating a growthy crop, e.g. 3 litres Reglone @ $12.20/l plus spraying	$ 39.65
Heading and Mowing: as before	$ 62.57
Box hire: 1 box (cartage in and out)	$ 5.50
Consolidated Dressing and Store Handling Charge:	
9 @ $1.00 (double sacks)	$ 9.00
24c/kg F.D. weight x 340 kg/ha	$ 81.60
TOTAL DIRECT COSTS	$273.99

Gross Revenue:

Yield: 340 kg/ha F.D. (4-5 sacks/ha);

30% loss on machine dressing
Thus yield becomes 238 kg/ha M.D.
Price: White clover @ $2.90/ha

Income: 238 kg/ha x $2.90/kg	$690.20
TOTAL REVENUE	$690.20

Thus with gross revenue of $690/ha and direct costs of about $274/ha, the gross margin becomes about $415/ha. Again the grazing contribution should be added to this figure. The estimated feed produced over the grazing period is 2700 kg/ha or an annual grazing equivalent of 4.6 s.u./ha which means a gross margin contribution of:
4.6 x 27.78 = $127.79

Thus the white clover gross margin now becomes about $545/ha.

(ix) Pasture (2 years grazing):

Programme:

The pasture is grazed, and hay is made in the summer. Fertiliser is applied in the autumn.

Direct Costs (per hectare):

Fertiliser: 250 kg/ha superphosphate @ $125.60/tonne	$ 31.40
Hay making: Mowing and raking @ 1 hr/ha @ $10.15/hr x 0.2	$ 2.03
Baling: 140 bales/ha @ 45c/bale x 0.2 (contract rates)	$ 12.60
Cartage: 140 bales/ha @ 45c/bale x 0.2 (contract rates)	$ 12.60
TOTAL DIRECT COSTS	$ 58.63

Gross Revenue:

The estimated utilised feed during the grazing period is 8250 kg/ha D.M., which at 590 kg D.M./s.u. means a stocking rate of 14 s.u./ha. At $27.78/s.u. the gross revenue becomes 14 x $27.78.

TOTAL REVENUE	$388.92

NOTE: Regarding the haymaking charges, the cost has been assessed as that of providing the 14 s.u./ha with 2 bales of hay per s.u. for wintering,

i.e. 28 bales/ha required. This represents 20% of the normal hay crop of 140 bales/ha.

Thus with gross revenue of about $389 and direct costs of about $59/ha the gross margin for pasture is about $330/ha.

Summary

The gross margin per hectare has been assessed for each crop in the rotation given one set of parameters. Certain anomalies exist, such as the liming charge in the Nui ryegrass direct costs, which, in actual fact should be shared by each crop. Similarly, the seed and cultivation charges for the ryegrass crop should be apportioned over the pasture's life for a more accurate picture of the individual crop's contribution. Given that such anomalies exist, a summary of gross margins for the chosen rotation is presented below:

Year	Crop	Gross Margin $/ha
1	Wheat	585
2	Wheat	520
3	White Clover (sp.)	680
4	Wheat	505
5	Oats, greenfeed	67
	Field Peas	320
6	Nui Ryegrass	280
7	White Clover	545
8	Pasture	330
9	Pasture	330
Total for 9 years		4,160

The average annual gross margin is therefore $460/ha/year.
Following this procedure and by comparing various rotations, a best rotation can be established, which then enables the formulation of a better farm plan.

The above analysis can be carried a stage further to the annual budget where fixed costs are then deducted from the gross margin total for the farm.

An illustration of the effect of varying a critical parameter, is given below:

Enterprise	Yield/ ha	Price	Gross Revenue	Direct Costs	Gross Margin
Wheat	4.0 t	215	860	200	660
	5.0 t	215	1,075	205	870
Barley	4.5 t	140	630	170	460
	4.5 t	185	832	170	662
	5.5 t	150	825	185	640
	5.5 t	200	1,100	185	915
Field Peas	2.7 t	250*	720	400	320
	2.7 t	325*	925	400	525
Vining Peas	3.5 t	180*	630	260	370
	5.0 t	180*	900	260	640
Garden Peas	2.0 t	250*	500	280	220
	3.0 t	250*	750	290	460
White Clover	350 kg	2.00	700	370	330
	550 kg	3.00	1,650	435	1,215
Ryegrass	675 kg	1.00	675	440	235
	550 kg	1.50	825	430	395
	800 kg	1.50	1,200	460	740
Cocksfoot	340	2.00	680	340	340
	340	3.00	1,020	340	680
	240	3.00	720	300	420
	240	3.50	840	300	540
Pasture	14SU	$15 GM			210
	14SU	$20 GM			280
	18SU	$25 GM			450

* plus hay/straw

5.2.3 Other Selected Examples of Crop Gross Margins for 1983:

(i) Vining Peas:

Direct Costs (per hectare):

Cultivation: 6 hrs @ $10.15/hr	$ 60.90
Seed: 300 kg/ha @ 28c/kg	$ 84.00
Fertiliser: 250 kg/ha. Potash molybdate super @ $172.15/tonne	$ 43.04
Spraying: 5 litres weed spray applied; pre-emergence Treflan @ $9.95/l plus spraying	$ 51.96
Irrigation: 2 irrigations @ $15/ha/ irrigation	$ 30.00
Baling: 45 bales @ 45c/bale (contract)	$ 20.25
TOTAL DIRECT COSTS	$290.15

Gross Revenue:

Yield: 5.0 t/ha	
Price: 18c/kg @ average tenderometer reading of 110 ($180 per tonne).	
Income: 5 x $180	$900.00
Plus 45 bales pea straw @ $2.50/bale	$112.50
TOTAL REVENUE	$1,012.50
GROSS MARGIN (approximately)	$720/ha

(ii) Garden Peas (William Massey contract):

Direct Costs: (per hectare)

Cultivation: 5.5 hrs @ $10.15/hr	$ 55.83
Seed: 270 kg/ha @ $400/tonne	$108.00
Fertiliser: 250 kg/ha Mo superphosphate @ $149.80	$ 37.45
Spraying: M.C.P.B. @ 4.5 litres/ha	$ 23.77
Heading: 2.25 hrs @ $20.00/hr	$ 45.00
Irrigation: 2 irrigations @ $15.00/ha/irrigation	$ 30.00
Cartage: 3 boxes out and in. Own truck	$ 12.00
Box Hire: $5.50/box	$ 16.50
TOTAL DIRECT COSTS	$328.55

Gross Revenue:

Yield: 3.0 t/ha	
Price: $300/tonne (in boxes)	
Income: 3.0 t x $300	$900.00
Plus 86 bales of pea straw @ 75c/bale	$ 64.50
TOTAL REVENUE	$964.50
GROSS MARGIN (approximately)	$635/ha

(iii) Spring Wheat (Oroua)

Direct Costs (per hectare):

Cultivation: 6.5 hrs @ $10.15/hr	$ 65.98
Seed: 170 kg/ha Certified 1st Generation @ $356/t plus royalty $25/t plus treating, e.g. Baytan @ $48.65/t	$ 73.00

Fertiliser: 200 kg/ha superphosphate @ $141.60/t applied	$ 28.32
Heading: .75 hrs/ha @ $20.00/hr	$ 15.00
Raking and Ploughing Firebreak:	$ .31
Cartage: from field to silos @ $2/ha	$ 2.00
from silo to rail @ $5.43/t	$ 21.72
TOTAL DIRECT COSTS	$206.33

Gross Revenue:

Yield: 4.0 t/ha	
Price: $204 plus storage (Aug.)	
$16.75 less levies $1.64/tonne	
Income: 4.0 t x $219.11	$876.44
TOTAL REVENUE	$876.44
GROSS MARGIN (approximately)	$670/ha

(iv) Barley (malting):

Direct Costs (per hectare):

Cultivation: 6.5 hrs @ $10.15/hr	$ 65.98
Seed: 130 kg/ha @ $360/t	$ 46.80
Fertiliser: 200 kg/ha superphosphate @ $141.60/t	$ 28.32
Weed Spray: M.C.P.A. applied	$ 16.94
Heading: 1.25 hrs/ha @ $20.00/hr	$ 25.00
Cartage: 4.5 t, 20 km	$ 7.86
Firebreak:	$ .38
TOTAL DIRECT COSTS	$191.28

Gross Revenue:

Yield: 4.5 t/ha	
Price: $185/tonne (South Island)	
Income: 4.5 t x $185	$832.50
TOTAL REVENUE	$832.50
GROSS MARGIN (approximately)	$640.00

(v) Lucerne:

Establishment Costs (per hectare):

Cultivation: 13 hrs/ha @ $10.15	$131.95
Seed: 5 kg/ha @ $6.50/kg	$ 32.50

Fertiliser: 250 kg/ha lime reverted superphosphate @ $133.50/t (including cartage and spreading)	$ 33.37
Lime: 2.5 t/ha @ $18.75/t on the ground	$ 46.87
Seed Innoculation: 5 kg @ 90c/kg	$ 4.50
TOTAL ESTABLISHMENT COSTS	$249.19

Dryland - Stand life = 9 years Therefore Annual Establishment Costs =	$ 27.69
Annual Costs:	
Fertiliser: 250 kg/ha lucerne fertiliser @ $159.40/t (including cartage and spreading)	$ 39.85
Heavy Roll: 0.6 hr/ha @ $10.15/hr	$ 6.09
Weed Spray: 2, 4-DB @ 4 litres/ha @ $5.60/litre	$ 22.40
plus .33 hr/ha @ $10.15/hr (spraying)	$ 3.05
TOTAL ANNUAL COSTS (including establishment)	$ 99.08
Annual Revenue:	
Yield: 6000 kg/D.M./ha/year = 11.54 s.u./ha	
Income: $27.78/s.u. x 11.54 s.u./ha	$320.58
TOTAL ANNUAL REVENUE	$320.58
GROSS MARGIN (approximately)	$220/ha

(vi) Cocksfoot Seed:

Direct Costs (per hectare):

Average Renewal/hectare	$ 40.00
Fertiliser: 375 kg/ha sulphate of ammonia @ $224/t (including cartage and spreading)	$ 84.00
Windrowing: $50/ha (contract)	$ 50.00
Heading: 1.25 hrs/ha @ $20.00/hr	$ 25.00
Sacks: 10 sacks @ $1.45 each	$ 14.50
Cartage: Box hire plus cartage out and in	$ 7.50
Consolidated Dressing and Handling Charge: 450 kg F.D. @ 25c/kg	$112.50

TOTAL DIRECT COSTS	$333.90

Gross Revenue:

Yield: 450 kg/ha F.D.; 25% dressing loss; 340 kg/ha M.D. Price: $2.50/kg M.D. Income: 340 kg x $2.50/kg	$850.00
TOTAL REVENUE	$850.00
GROSS MARGIN (approximately)	$520.00

(vii) Lupins:

Direct Costs:

Cultivation: 4 hrs @ $10.15/hr	$ 40.60
Seed: 100 kg/ha (Uniharvest) @ $420/tonne	$ 42.00
Fertiliser: 125 kg/ha reverted superphosphate @ $133.50/t	$ 16.69
Weed Control: e.g. M.C.P.B. @ 5.6 litres/ha @ $4.79/litre plus .33 hr/ha spraying @ $10.15/hr	$ 29.87
Pest Control: e.g. Metasystox 25 EC (demeton-S-methyl 25% a.i.) 2 litres/ha @ $15.95/litre (including spraying)	$ 32.74
Irrigation: 2 irrigations @ $15/ha/ irrigation	$ 30.00
Heading: 2.5 hrs/ha @ $20.00/hr	$ 50.00
Box Hire: 2.04 boxes (1.225 tonnes/ box) @ 5.50/box	$ 11.22
Cartage: Own truck	$ 12.00
TOTAL DIRECT COSTS	$265.12

Gross Revenue:

2.5 tonnes/ha @ $250/tonne	$625.00
TOTAL REVENUE	$625.00

With gross revenue of approximately $625 and direct costs of approximately $265 the gross margin of this crop is about $360/ha.

(viii) Main Crop Potatoes:

Revenue:

3 t seed @ $ 95/t	$ 285.00
27 t table @ $120/t	$3,240.00
30 t TOTAL	$3,525.00

Expenditure:

Cultivation: 10 hours @ $10.15/hr	$ 101.50
Seed: 2.5 tonnes @ $220/t	$ 550.00
Cutting and dipping: 2.5 t @ $5/t	$ 12.50
Planting: 3.5 hours/ha @ $25/hour (contract)	$ 87.50
Fertiliser: 125 kg/ha Nitrophoska @ $462/t plus application, $4.32/ha	$ 62.07
Weed Control: e.g. Metrabusin 1 kg/ha @ $65.95/kg plus application $4.32/ha	$ 70.27
Light harrowing: 2 ha/hr @ $10.15/hr	$ 20.30
2 interrow grubbings 1.5 ha/hr @ $10.15/hr	$ 10.77
Moulding (ridging): 3 hrs/ha @ $10.15/hr	$ 30.45
Pest Control: Aphids (e.g. Metasystox) 200 mls/ha @ $15.95/l plus applications @ $4.32/ha	$ 7.51
Blight (e.g. Bravo 500 f) 2 l/ha @ $97.50/5l plus application @ $4.32/ha	$ 43.32
Roguing: $28/ha (contract)	$ 28.00
Haulm Destruction: (e.g. Reglone) 1.5 l/ha @ $12.20/l plus spraying costs	$ 21.98
Digging and Picking: 85c/bag (contract) 14 bags/t (30t)	$ 357.00

Grading: (table only) 27 t - 378 bags (14 bags/t) 65c/bag	$ 245.70
Sacks: 420 x $1.20	$ 504.00
Cartage: 420 sacks 32 km @ 76c/sack	$ 319.20
Registration: $8/ha	$ 8.00
Levies: 90c/t (table only)	$ 24.30
TOTAL EXPENDITURE	$2,504.37

Dryland - Gross Margin = about $1,020/ha

5.2.4 Horticultural Crop Gross Margins

(i) Beans

Gross Returns:		
3t/ha @ $1.76/kg (average)		5,280
Variable Production Costs:		
Cultivation 6 hours @ $6.70/hr	40	
Seed: 60 kg/ha @ $4.92/kg	295	
Sowing and weeding: 6 hours @ $6.70/hr	41	
Spraying, treflan 2.8 l/ha @ $9.95/l	28	
Application and incorporation 2 x operations @ 2 hours/ operation @ $16.85/hour	67	
Fertiliser, 380 kg/ha bean mix @ $125 per tonne	48	
Application 2 hours/ha @ $16.85	34	
Steerage hoe (2 x) 3 hours/ha @ $16.85	101	
Irrigations	150	
Total Variable Production Costs:		804
Variable Marketing and Harvesting Costs:		
170 x 18 kg cases @ $2/case	340	
Freight: 3 trips @ $1.11/km (45 km)	150	
Commission @ 10%	528	
Total Variable Marketing and Harvesting Costs:		1,018
TOTAL COSTS		1,822
Gross Margin		3,458

(ii) Brussel Sprouts

Assumptions:
Transplating December, harvest June/July
Variety Jade Cross 'G'
Medium to light soil type
Labour costing $6.70 per hour, tractor at $10.15/hour
Plant spacing 75 cm between rows, 57 cm in rows (plant population of 2 plants/sq. metre wanted)
Spraying volumes 1200 litres per ha @ 200 p.s.i.

Gross Returns:		
8.59 t/ha @ 59c/kg (average)		5,068
Direct Costs - materials:		
Seed: 175 gm @ $246.07 per 500 gm	86	
Fertiliser:		
Seedbed: 250 kg serpentine super @ $141.50/t	35	
34 kg borax @ $35/50 kg	24	
700 kg sodium molybdate @ $145.9/t	102	
Transplants: 500 kg serpentine super @ $141.15/t	71	
400 kg muriate of potash @ $216/4/t	87	
34 kg borax @ $35/50 kg	24	
700 kg sodium molybdate @ $145.9/t	102	
Sidedressing: 2 x 250 kg urea @ $449.5/tonne	225	
Herbicides:		
Treflan 2 litre @ $9.95	20	
BP Alachlor 3 litres @ $56/5 litres	34	
Fungicides:		
Benlate (x 3) 0.3 kg @ $34.5/kg	31	
Copper oxychloride (x 3) 2 kg @ $5	30	
Summer oil (x 2) 12 litres @ $2.1/l	51	
Insecticides: DDT (x 1) 0.5 kg @ $5.99/kg	3	
Pirimor (x 2) 1 kg @ $31.95/kg	64	
Phosdrin (x 3) 0.3 litres @ $21.06/l	19	
Metasystox (x 4) 0.5 litres @ $14.75/l	30	
Tamaron (x 2) 1.3 litres @ $19.8/l	52	

Spreaders: Citowett (x 12)		
120 mls @ $5.5/l	8	
		1,098
Labour and machinery:		
Seedbed preparation: 4 hours/ha @ $16.85/hour	68	
Transplant preparation: 6 hours/ha @ $16.85/hour	101	
Drilling seedbed: 2 hours/ha @ $16.85/hour	34	
Transplanting: 20,000 plants/ha (mid-December)		
pulling, 3 men x 5 hrs/ha @ $6.70/hr	101	
transplanting, 3 men x 5 hrs/ha @ $8.96/hr	135	
gapping, 2 men, x 5 hrs/ha @ $6.70/hr	67	
Fertiliser application:		
Sidedressing 2 x 250 kg urea @ $449.5/t		
2 x 2 hrs/ha @ $16.85/hr	258	
Base dressing 1.5 hrs/ha @ $16.85/hr	26	
Spray application		
Tractor rig (10 x) 1 hr/ha @ $16.85/hr	170	
Helicopter (4 x) @ $26.7/ application	107	
Irrigation (x 6): 2.5 cm per irrigation @ $50.55 per irrigated ha	304	
Inter-row cultivation (3 x) 1 hr/ha @ $16/85/hr	51	
		1,422
Harvesting:		
Stopping (10 weeks pre harvest) 13.75 hrs/ha @ $6.70 per hour	92	
Deleafing - by hand 30 hours/ha @ $6.70/hour	201	
Cutting/loading:		
1 man cutting, 5.5 hrs/ha @ $6.70/hr	37	
2 men + 2 tractors 5.5 hrs/ha @ $33.70/ha	186	
2 men loading 5.5 hrs/ha @ $13.40/hr	74	
Cartage - contract: 100 bins @ $5.20/bin	520	
Bin handling: 70c/bin	70	

Commission 10%	507	
		1,687
TOTAL DIRECT COSTS		4,207
Gross Margin:		$1,861

(iii) Buttercup Squash

Gross Returns:		
14t @ $280/t		3,920
Variable Production Costs:		
Seed: 1.8 kg/ha @ $130/t		234
Fertiliser: 13.9.8 750 kg per ha @ $440/t	330	
Urea: 100 kg/ha @ $470/t	47	
		377
Lime: 5t/ha $8 per tonne		40
Sprays: Herbicide and insecticide		178
Cultivation, fertiliser application weed control and sowing, 5 hours @ $16.85/hr		84
Contract: - harvesting $4.50/ha	450	
- other (weed control)	230	
		680
TOTAL COSTS		1,593
Gross Margin:		2,327

For Gross Margin variation with price and yield changes see page 5-51.

(iv) Cabbage

Assumptions:
Cutting autumn/early winter.
Variety wintercross hybrid.
Light to medium soil type.
Labour costing at $6.70 per hour; tractor $10.15 per hour.

Gross returns:		
16,800 cabbages packed per hectare @ $2.95/bag (average) (8/bag)		6,195
Direct Costs: materials		
Seed: 300 gm @ $163.82/500 gm	99	

Fertiliser: 800 kg sulphate of ammonia @ $223.6/t	179	
500 kg serpentine super @ $141.5/t	71	
450 kg muriate of potash @ $216.4/t	98	
Herbicides: Treflan 2.8 litres @ $9.95/l	28	
Insecticides: Lannate (x 2) 500 gm/ha @ $10.5/kg	11	
Metasystox (3 x) 0.5 litres @ $14.75/l	23	
Lindane (x 1) 800 gm @ $10.5/kg	9	
Thiodan (x 2) 2 litres @ $13.94/l	56	
Spreader: Citowett (x 5) 120 ml @ $5.5/l	4	
		578
Labour and machinery:		
Seedbed preparation and drilling 4 hours @ $16.85/hr	68	
Transplant preparation 6 hours @ $16.85/hr	101	
Transplanting: 24,000 plants per hectare - pulling 16 hrs/ha @ $6.70/hr	107	
transplanting 12 hrs/ha @ $16.85/hr	203	
Fertiliser application 1.25 hrs @ $16.85/hr	21	
Spraying application (7 x) 0.75 hrs @ $16.85/hr	89	
Irrigation (power and labour) (x 2) @ $50.55/ha	101	
Inter-row cultivation (x 3) 2 hrs/ha @ $16.85/hr	101	
		791
Harvesting:		
Cutting, trimming and bagging, 12 bags (96 heads)/hr/man @ $8.84/hr	1,547	
Bags, 2,100 bags @ $15/100 net	315	
Cartage, $19.75/t (40 km trip) - 20 t/ha yield	395	
Commission (10% of gross returns)	620	
		2,877
TOTAL DIRECT COSTS		4,246

Gross Margin		$1,949

(v) Carrots

Assumptions:
Direct seeding November, harvest autumn (March-April).
Variety Manchester Table.
Medium to light soil type.
Sowing four double rows per tractor bed, 10 cm between rows, 2 cm between seeds.
Labour costed at $6.70 per hour, tractor at $10.15 per hour.

Gross Returns:		
38 t/ha (packed) @ ($4.48/20 kg bag) $224/t (average)		8,512
Direct Costs - materials:		
Seed: 2.5 kg/ha @ $21/500 gm	105	
Seed pelleting @ $17.28/500 gm	87	
Fertiliser: 600 kg sulphate of ammonia @ $223.6/t	135	
800 kg serpentine super @ $141.5/t	113	
400 kg muriate of potash @ $216.4/t	87	
Herbicides: Preglone (1 x) 3 l/ha @ $62/5 l	38	
Linuron (2 x) 450 gm/ha @ $17.04/kg	16	
Gesagard (2 x) 450 gm/ha @ $17.42	16	
Fungicides: nil		
Insecticides: Metasystox (2 x) 0.5 l @ $14.75/l	15	
		507
Labour and Machinery:		
Soil preparation 9 hours @ $10.15/tractor hour plus $6.70/man hour	151	
Drilling: 4 hours @ $16.75/ha	67	
Fertiliser application: 1.2 hours @ $16.75/hr	17	
Spray application: 0.75 hrs @ $16.75/hr	13	
Irrigation	150	
		398

Harvesting:		
Topping (machine) 2 hrs/ha @ $10.15/hr	21	
Lifting and bagging (unwashed) 1,357 bags @ 10 bags/hr (28 kg bags) @ $9.24/hr (man and quarter tractor)	1,254	
Picking up: 1,357 bags @ 28 kg 45/hr/2 men and tractor @ $15.94/hr	478	
Washing, rebagging and tying 12 bags @ 18 kg/hr/man @ $6.70/hr	126	
Ties: 2c each	28	
Cartage: 38 tonne @ $19.75/t (45 km trip)	750	
Bags: 1,400 bags @ 28 kg 55 c net/bag	770	
Commission: 10% gross return	851	
		4,283
TOTAL DIRECT COSTS		5,188
Gross Margin		$3,324

(vi) Cauliflowers

Assumptions:
Cutting autumn/early winter.
Variety grown - Whiteacre (matures in five and a half months).
Light to medium soil type.
labour costing at $6.70 per hour.

Gross Returns:		
16,800 cauliflowers packed per hectare @ $4.23/bag (average) (8 per bag)		8,883
Direct Costs - Materials:		
Seed: 300 gm (producing 24,000 transplants) @ $463/500g	278	
Fertiliser: 800 kg sulphate of ammonia @ $223.6/t	179	
1,000 kg serpentine super @ $141.15/t	142	
250 kg muriate of potash @ $216.4/t	54	
40 kg borax @ $35/50 kg	28	
Herbicides: Treflan 2.8 litres @ $10.5/l	30	

Insecticides: Lannate (x 2) 500 gm/ha @ $11/kg	11	
Metasystox (x 3) 0.5 litres @ $14.75/litre	22	
Lindane (x 1) 800 gm @ $14.5/kg	12	
Thiodan (x 2) 2 litres @ $13.94/l	56	
Spreader: Citowett (x 5) 120 ml @ $5.5/litre	4	
		816
Labour and machinery:		
Seedbed preparation and drilling 4 hours @ $16.85/hr	68	
Transplant preparation: 6 hours @ $16.85/hr	101	
Transplanting (24,000 plants per ha) - pulling 16 hrs/ha @ $6.70/hr	107	
transplanting 12 hrs/ha @ $16.85/hr	202	
Fertiliser application: 1.25 hrs @ $16.85/hr	21	
Spraying: (7 x) 0.75 hrs @ $16.85/hr	86	
Irrigation application: (2 x) @ $50.55/ha (power and labour)	101	
Inter-row cultivation (3 x) 2 hrs @ $16.85/ha	101	
		787
Harvesting:		
Cutting, trimming and bagging: 8 bags (64 heads)/hr/man @ $8.84/hr	2,320	
Bags, 2,100 bags @ $15/100 net	315	
Cartage, $19.75/t (40 km trip) - 24 t/ha	474	
Commission: 10% gross returns	889	
		3,998
TOTAL DIRECT COSTS		5,601
Gross Margin:		$3,282

For gross margin variation with price and yield changes see page 5-52.

(vii) Celery

Assumptions:
Cutting autumn/early winter.
Winter variety Utah 52-70, spacing 30 cm x 30 cm.
Light to medium soil type.
labour costed at $6.70 per hour; tractor at $10.15 per hour.

Gross Returns:		
25,000 plants @ $4.89/12 plants (average)		10,187
Direct Costs - Materials:		
Seed: 150 gm (for 30,000 plants) @ $23.43/100 gm	35	
Fertiliser: 2 t/ha blood and bone @ $307.2/t	615	
400 kg nitrolime @ $13/50 kg	104	
400 kg muriate of potash @ $216.4/t	130	
40 kg borax @ $35/50 kg	28	
10 t fowl manure	25	
Herbicides: Linuron (x 2) 0.4 kg @ $17.04/kg	14	
Gesagard (x 2) 0.4 kg @ $17.42/kg	14	
Fungicides: Captafol (x 8) 2 kg/ha @ $13.0/kg	208	
Copper oxychloride (x 3) 2 kg/ha @ $5/kg	30	
summer oil (x 3) 7.5 litres @ $2.1/l	47	
Insecticides - nil		
Spreader, Citowett (x 8) 120 mls/ha @ $5.5/l	5	
		1,255
Labour and machinery:		
Seedbed preparation and sowing 3 hours @ $16.85/hr	51	
Land cultivation 4 hours @ $16.85/hr	67	
Fertiliser spreading 1.5 @ $16.85/hr	25	
Spray application (x 12) 0.75 hrs @ $16.85/hr	152	
Irrigation (x 8) @ $50.55 per irrigated hectare	404	
Pulling and transplanting - 120 hours @ $6.70/hr (4 hours per 1,000 plants)	804	
		1,503

Harvesting costs:		
Cutting, trimming and packing 143 hours @ $8.84/hr (4 hrs/man/700 sticks)	1,264	
Carton and liner (cost 60c, return of 34c) 12 sticks/carton, 2083 cartons @ 26c/carton net	542	
Commission (10% of gross returns)	1,019	
Cartage, @ $19.75/t (40 km trip) (40 tonne yield)	790	
		3,615
TOTAL DIRECT COSTS		6,373
Gross Margin		$3,814

(viii) Garlic

Gross Returns:		
7 t/ha @ 50c/100 gm (average)		35,000
Variable production Costs:		
Cultivation: Rotary hoe 4 hours @ $16.85/hr	68	
Rotatill 2.5 hrs @ $16.85/hr	42	
Seed: 1 t/ha @ $5,600/t	5,600	
Fertiliser: Urea (3 x) 240 kg/ha @ $449.5/t	324	
15% Potassic Serpentine Super 3.5 t/ha @ $141.5/t	495	
Lime: 7t/ha @ $14/t	98	
Sprays: Treflan 2 kg @ $9.95/kg	20	
Preglone 1.5 litres @ $62/5 l	19	
Totrill 2.5 l/ha (2-3 x) @ $24.14/l	151	
Spray and Fertiliser application:		
Spraying (5 x) .75 hrs/ha @ $16.85/hr	64	
Fertiliser (3 x) 1.5 hrs/ha @ $16.85/hr	76	
Row making 3 hrs/ha @ $16.85/hr	51	
Planting: 50 hrs @ $6.70/hr	335	
Clove division: 150 hrs @ $6.70/hr	1,005	
Weeding: 40 hrs @ $6.70/hr	268	
Irrigation	150	
		8,776

Variable Harvesting and Marketing Costs:		
Undercutting 10 hrs @ $16.85/hr	169	
Rotary Hoe 6 hrs @ $16.85/hr	101	
Pulling/windrowing 112 hrs @ $6.70/hr	751	
Topping, tailing, picking, grading and bagging 495 hrs @ $6.70/hr	3,317	
Bags (3 kg) 2,334 bags @ 15c ea.	350	
Cartage 7t @ $19.75/t (45 km)	138	
Commission: 10% gross returns	3,500	
		8,326
TOTAL VARIABLE COSTS		17,102
Gross Margin per hectare:		$17,898

(ix) Lettuce

Assumptions:
Medium to light soil type.
18,000 lettuce plants packed per hectare (8 per case)
Selling on local market.
Direct seeded early spring, variety Great lakes.
4 rows per bed (7.5 cm between seeds).
36,000 plants per hectare, 50% harvest taken.
labour costed at $6.70 per hour, tractor at $10.15/hour.

Gross Returns:		
2,250 cases (8 per case) @ $3.60/case (average) (45c per lettuce)		8,100
Direct Costs - materials:		
Seed, 2 kg per hectare @ $25/500 gms	100	
Fertiliser, 300 kg nitrolime @ $13 per 50 kg	78	
450 kg serpentine super @ $141.15/t	64	
250 kg muriate of potash @ $216.40/t	54	
Herbicides, Kerb (1 x) 3 kg/ha @ $38.66/kg	110	
Preglone (1 x) 3 l/ha @ $12.40/l	37	

Fungicides, Captafol (6 x)		
2 kg/ha @ $13.00/kg	156	
e.g. Difolatan SF		
Insecticides, Metasystox (3 x)		
0.5 l @ $14.75/l	22	
Lannate (3 x) 500 gm @ $10.50/kg	16	
Spreader, Citowett (6 x) 120 ml/ha		
@ $5.5/l	4	
		641
Labour and machinery:		
Seedbed preparation 7 hrs @		
$16.85/hr	118	
Drilling (4 row planett drill)		
2.5 hrs @ $16.85/hr	42	
Fertiliser application 1.25 hrs		
@ $16.85/hr	21	
Spray application (7 x) 0.75 hrs		
@ $16.85/hr	89	
Irrigation costs (3 x) @ $50.00		
per irrigated hectare	150	
Hand weeding and thinning		
50 hrs/ha @ $6.70/hr	335	
		755
Harvesting:		
Cutting, trimming and packing		
50 heads/hr/man @ $6.70/hr		
(i.e. 360 hrs)	2,412	
Washing lettuces (in cases)		
120 cases/hr/man @ $6.70/hr	126	
Cases, 2,250 cases @ 15c net	338	
Cartage, 20 tonne @ $19.75/t		
(45 km trip)	395	
Commission (10% gross returns)	810	
		4,081
TOTAL DIRECT COSTS		5,477
Gross Margin		$2,623

(x) Winter Lettuce

Gross Returns:	
July 93 cases @ $5.65 per case	
(average)	525
August 366 cases @ $6.90 per	
case (average)	2,525
September 2,055 cases @ $8.50	
per case (average)	17,468

October 2,182 cases @ $4.90 per case (average)	10,692	
		31,210
Variable Production Costs:		
Seedbed preparation: plough, roll, disc, and harrow, roll, rollatil 19.5 hrs @ $8 per hour	156	
Pre-emergence spraying: Chloroprophan @ 2 litres per ha @ $47.50 per 5 litre $19 plus application 1 hour @ $8 per hour	27	
Fertiliser:		
Base dressing, calcium ammonium nitrate 300 kg/ha $20.79/50 kg	124.74	
Serpentine superphosphate 350 kg/ha @ $8.13/kg	56.91	
Muriate of Potash 250 kg/ha @ $13/50 kg	65.00	
Side dressing: Urea 120 kg/ha @ $595.71/t	71.50	
		318
Planting:		
Seed: 3.5 kg/ha 'Triumph' @ $39.11/500 g	273.77	
Contract drilling @ $30.60/ha	30.60	
		304
Sprays:		
Metasystox 1.5 l/ha @ $13.75/l	20.60	
Captan (x 9) (100g/100 l) 2.7 kg @ $19.40/kg	52.38	
Copper oxychloride (x 9) (300 g/100 l) 8.1 kg @ $3.70/kg	30.00	
Labour: 10 hrs @ $4/hr	40.00	
		143
Weeding: (Using tractor) labour and machinery - 15 hrs		135
Harvest Costs:		
Labour - cut and pack 25 cases/hr 4,600 cases - 184 hrs @ $4/hr	736	

Case losses	100	
		836
Levies: 10.54% of $31,210		3,289
TOTAL VARIABLE COSTS		5,208
Gross Margin:		26,002

(xi) Onions

Assumptions:
25 tonne per hectare of main crop.
Pukekohe longkeeper onions for market.
Medium to light land.

Gross Returns:		
25 t/ha @ $3.70/20 kg (average)		4,625
Direct costs - materials:		
Seed 4 kg/ha @ $32/500 g	256	
Fertiliser 700 kg/ha (KP 6-5-5 mix) @ $157.05/t	110	
Herbicides: Preglone (1 x) 3 litres/ha @ $12.40/l	37	
Totril (2 x) 3 l/ha @ $24.14/l	145	
Linuron (2 x) 450 gm/ha @ $17.04/kg	15	
Gesagard (2 x) 450 gm/ha @ @ $17.42/kg	35	
Insecticides: Thiodan (3 x) 3 l/ha @ $13.94/l	84	
Fungicides: Mancozeb 1.7 kg/ha @ $5.31/kg (2 x)	18	
Spreader, Citowett (3 x) 500 ml/ 2 litres @ $5.5/l	9	
Regulator: MH40 8.4 litres/ha @ $6.7/l	57	
		830
Labour and machinery:		
Seedbed preparation 11 hrs/ha @ $16.85/hr	185	
Planting, 4 hrs/ha @ $16.85/hr	68	
Fertiliser application, 2 hrs/ha @ $16.85/hr	34	
Spraying 9 applications @ 0.75 hrs/ha	114	
3 x irrigations @ $50.55/ irrigation/ha	152	
		553

Harvesting:		
Lifting 2 hrs/ha @ $16.85/hr	34	
Windrowing @ $16/85/hr	34	
Picking up 10 hrs @ $16.85	169	
Cartage $19.75/t (at 40 km)	494	
Sorting, topping and bagging 6 hrs/t @ $6.7/hr	40	
Commission (10% gross returns)	463	
Bags	150	
		1,384
TOTAL DIRECT COSTS		2,767
Gross Margin:		$1,858

(xii) Peas (Fresh market)

Gross Revenue:		
8.5 tonne @ $700 per tonne		5,950
Variable Costs:		
Cultivation and spraying:	68.23	
Seed: (100 g @ $275/t)	27.50	
Fertiliser:		
Lime:		
Chemicals: (weed and insect control)	14.60	
Irrigation:	76.00	
Contract work: (hand harvest) $2.15/case	2,005.50	
Cartage:	85.00	
Packaging:	170.00	
		2,447
Gross Margin:		$3,503

For gross margin variation with price and yield changes see page 5-51.

(xiii) Crown Pumpkins:

Gross Returns:		
20 tonnes per hectare @ 31.75c/kg (average)		6,350
Direct costs - materials:		
Seed 3 kg/ha @ $20.05/500 g	120	
Fertiliser 250 kg KP (6-5-5) cropmix @ $157.05/t	40	
Herbicides - nil		

Insecticides (1 x) Metasystox .5 l/ha @ $14.75/l	7	
Fungicides: (1 x) Mancozeb 1.7 kg/ha @ $5.31/kg	9	
Dip (2 x) Copper oxychloride 4 gm/l @ $5/kg	17	
Labour and machinery:		
Seedbed preparation 4 hrs/ha @ $6.70/hr	27	
Seeding 1.5 hrs/ha @ $6.70/hr	10	
Fertiliser application 1.25 hrs/ha @ $6.70/ha	9	
Spraying (2 x) 0.75 hrs/ha @ $6.70/hr	10	
Dipping and stacking 2 t/hr @ $5.00/hr	50	
Interrow cultivation 1.5 hrs/ha @ $6.70/hr	20	
Harvesting:		
Cutting and picking up 3 t/hr (man and machine) @ $7/hr	47	
Cartage @ $19.75/t (40 km trip)	395	
Bagging 1 t/hr @ $5/hr	100	
Bags 800 (25 kg) @ $15/100 bags net	120	
Commission, 10% of gross revenue	635	
TOTAL DIRECT COSTS		1,616
Gross margin:		$4,734

(xiv) Silverbeet

Assumptions:
Direct seeded January, harvesting whole plants over winter/spring.
Variety Fordhook slow bolting.
spacing 4 rows per bed: 7.5 cm between seeds.
Medium to light soils.
Labour costed at $6.70 per hour, tractor at $10.15 per hour.

Gross Returns:	
6,300 cases (5 kg) per case @ $4.40/case (average)	27,720
Direct costs - materials:	
Seed, 5 kg/ha @ $2/25 gm	400
Fertiliser, 200 kg sulphate of ammonia @ $223.6/t	45

300 kg serpentine superphosphate @ $141.15/t	43	
200 kg muriate of potash @ $216.4/t	44	
200 kg sulphate of ammonia (spring sidedressing) @ $223.6/t	45	
Herbicides, (1 x) Betanal (post-emergence) 8 l @ $21.45/l	172	
Insecticides		
Fungicides (2 x) Mancozeb 1.7 kg @ $5.31/kg	18	
Spreader, (2 x) Citowett 120 mls @ $5.5/l	2	
		769
Labour and machinery:		
Seedbed preparation 6 hrs/ha @ $16.85/hr	101	
Seeding, 2.5 hrs @ $16.85/hr	42	
Fertiliser application, 1.5 hrs @ $16.85/hr	26	
Spray application (3 x) 0.75 hrs @ $16.85/hr	38	
Irrigation (1 x) @ $50.55/ irrigated hectare	51	
Power and labour:		
Interrow cultivation (3 x) 1.0 hrs/ha @ $16.85/hr	51	
		309
Harvesting:		
Cutting, trimming and packing winter 12 cases/hr/man, 600 cases @ $6.70/hr	335	
Spring 25 cases/hr/man, 1150 cases @ $6.70/hr	308	
Loading, 100 cases/hr @ $6.70/hr	118	
Cases, 1750 cases @ 26c net/case	455	
Cartage, $19.75/t (31.5 t) (40 km trip)	622	
Commission 10% gross returns	2,772	
		4,610
TOTAL DIRECT COSTS		5,688
Gross Margin		$22,032

(xv) Sprouting Broccoli

Assumptions:
Direct seeded mid January, harvest March.
Variety 'Green duke'.
Light to medium soil type.
Labour costing $6.70/hr, tractor costed @ $10.15/hr.
Plant spacing, 5 rows per tractor bed: 25 cm x 20 cm.

Gross Returns:		
4 t/ha @ $1.55/kg (average)		6,200
Direct costs - materials:		
Seed, 1 kg/ha @ $255.88/500 gms	512	
Fertiliser, 300 kg nitrophoska blue @ $20.32/25 kg	244	
35 kg borax @ $35/50 kg	25	
700 kg sodium molybdate @ $145.9/t	102	
250 kg urea sidedressing @ $449.5/t	112	
Herbicides, 2 l Treflan @ $9.95/l	20	
3 l BP Alachlor @ $56/5 l	34	
Fungicides, nil		
Insecticides, 700 gm Lindane @ $10.5/kg	8	
0.5 l Metasystox (1x) @ $14.75/l	15	
1.3 l Tamaron (2 x) @ $19.8/l	26	
0.3 l Phosdrin (2 x) @ $21.06/l	13	
Spreader, 120 mls Citowett (5 x) @ $5.5/l	4	
		1,115
Labour and machinery:		
Seedbed preparation 7 hrs @ $16.85/hr	118	
Drilling, 5 hrs @ $16.85/hr	85	
Fertiliser application 1.5 hrs @ $16.85/hr	26	
Spraying application (6 x) 1 hr @ $16.85/hr	102	
Irrigation (6 x) @ $50.55 per irrigated hectare	304	
Steerage hoe (1 x) 1.75 hrs @ $16.85/hr	30	
		665

Harvesting and marketing:		
Cutting and trimming 290 hrs @ $6.70/hr	1,943	
Packaging	350	
Cartage 4 t @ $19.75/t (45 km trip)	79	
Commission (10% gross returns)	620	
		2,992
TOTAL COSTS		4,772
Gross margin per hectare		$1,428

(xvi) Outdoor Staked Tomatoes

Assumptions:
Harvesting January till late April.
Variety Moncross; spacing 30 cm x 120 cm.
Plants 20,000 per hectare.
Production 2.8 kg per plant.
Market prices average 76c/kg
Labour costs at $6.70 per hour, tractor at $10.15/hr.

Gross Returns:		
11,200 cases (5 kg cases) @ $3.80/case (average) - 56 t/ha		42,560
Direct costs - materials:		
Plants (brought in) @ $1/12	1,667	
plus moncross seedling @ .5c/seedling	1,000	
Fertiliser, 600 kg sulphate of ammonia @ $223.6/t	135	
500 kg serpentine super @ $141.15/t	71	
700 kg muriate of potash @ $216.4/t	152	
100 kg nitrophoska blue (sidedressing) @ $20.32/25 kg	82	
Herbicides, nil		
Fungicides, Captan (2 x) 3 kg/ha @ $31.20/2.5 kg	75	
Copper oxychloride (2 x) 2 kg @ $5/kg	20	
Mancozeb (3 x) 1.7 kg @ $5.31/kg	27	
Insecticides, Metasystox (2 x) 0.5 litres @ $14.75/l	15	

Lindane (1 x) 800 gm @ $10.5/kg	9	
Carbaryl (3 x) 1.5 kg @ $8.45/kg	38	
Foliar feed, Wuxal (6 x) 2.5 litre @ $17.40/5 l	53	
Spreader, Citowett (8 x) 120 ml @ $5.5/l	6	
Growth regulator, ethrel (x 3) 2 litre @ $1.38/l	9	
		3,359
Labour and machinery:		
Cultivation 6 hrs/ha @ $16.85	101	
Fence erection - posts and bottom wire, 48 hrs/ha @ $8.84/hr	425	
- other wires (7) 7 x 4 hrs/ha @ $6.70/hr	188	
Transplanting, 1500/day/man @ $6.70/hr	715	
Training, delateraling, 2 x 8 hrs/ha @ $6.70/ha	107	
tying up, 3 x 6 hrs/ha @ $6.70/hr	121	
Interrow cultivation, 2 x 3 hrs/ha @ $16.85/hr	101	
Irrigation (x 3) @ $50.55 per irrigated hectare	152	
		1,910
Harvesting:		
Picking and packing (4 month harvest)		
6 pickers, 16 hrs/week for 2 months @ $6.70/hr	5,146	
4 pickers 12 hrs/week for 2 mths @ $$6.70/hr	2,573	
Cases, 11,200 @ 26c per case (net)	2,912	
Cartage, $19.75/t @ 56 t/ha (40 km trip)	1,106	
Commission, 10% gross returns	4,256	
		16,003
TOTAL DIRECT COSTS		21,272
Gross Margin:		$21,288

(xvii) Sweet Corn

Gross Returns:	
25,000 cobs @ $0.10	2,500

Variable Production Costs:		
Seed: 10 kg/ha @ $4/kg	10	
Fertiliser: base and side dressings	47	
Sprays: pesticide and fungicide x 2 applications	20	
Cultivation, sowing, fertiliser application: tractor hours = 2 hours @ $16.85/hour	34	
Weeding and cultivation: tractor hours = 2 hours @ $16.85/hr	34	
Total Variable Production Costs:		148
Variable Marketing and Harvesting Costs:		
170 x 18 kg apple cases @ $1.50	250	
Freight @ $0.60c/km, 3 trips	100	
Commission - 10%	250	
Total Variable Marketing and Harvesting Costs		600
TOTAL COSTS		720
Gross Margin:		1,752

(xiii) Freesias (43m^2, no heating)

Gross returns:		
8,600 bunches		
4,300 export @ $1.80	7,740	
4,300 local market @ .80c	3,440	
		11,180
Variable production costs:		
Seed, 580 g @ $66/100 g	382	
Sterilisation, Chlorpicoran	120	
Labour to preplant, cultivate and sterilise, 43 hrs @ $4	173	
Planting, 4,300 seedlings, 55 hrs @ $4	220	
Mulch @ $1/m^2 bark	430	
Fertiliser KNO_3 34 kg @ $4.60/5 kg	32	
Urea 39 kg @ $435/t	17	
Labour to mix feed, 6 hrs @ $4	24	
Pest and diseases, Attack @ 125 ml/ fortnight over 16 wks = 1 litre @ $32/l	32	
Labour, 10 hrs @ $4	40	

Netting for support, 24m/house x 2 levers = 48 x 10 houses = 480 m @ $35/100 m x 1.5m	150	
Labour, 6 hrs @ $4	24	
Lifting corms and cleaning houses 40 hrs @ $4	160	
Irrigation @ $2/m - 2,800 m	5,600	
Hours to lay, 6 @ $4	24	
		7,428
Variable harvesting and marketing costs:		
Picking - estimate 2 stems/plant = 43,000 x 2 = 86,000 @ 410 stems/hr = 209 hrs @ $400	836	
Bunching 10 stems/bunch @ 500 stems/hr = 172 hrs @ $4	688	
Sleeves for packing @ $55/1000 require 4,300 (export only)	236	
		1,760
TOTAL COSTS		9,188
Gross margin		$1,992

5.2.5 Horticultural Gross Margin Variations With Yield and Price Changes

(i) Buttercup Squash

	YIELD				
Price	11.20	12.60	14.00	15.40	16.80
224.00	958.55	1272.15	1585.75	1899.35	2212.95
252.00	1272.15	1624.95	1977.75	2330.55	2683.35
280.00	1585.75	1977.75	2369.75	2761.75	3153.75
308.00	1899.35	2330.55	2761.75	3192.95	3624.15
336.00	2212.95	2683.35	3153.75	3624.15	4094.55

(ii) Peas (Fresh Market)

	YIELD				
Price	6.80	7.65	8.50	9.35	10.20
560.00	1777.67	2045.42	2313.17	2580.92	2818.67
630.00	2253.67	2580.92	2908.17	3235.42	3562.67
700.00	2729.67	3116.42	3503.17	3889.92	4276.67
770.00	3205.67	3651.92	4098.17	4544.42	4990.67
840.00	3681.67	4187.42	4693.17	5198.92	5704.67

(iii) Cabbage (Fresh Market)

Price	YIELD 30.00	33.75	37.50	41.25	45.00
133.20	1419.52	1791.52	2163.52	2535.52	2907.52
149.85	1919.02	2353.45	2787.89	3222.33	3636.77
166.50	2418.52	2915.39	3412.27	3909.14	4406.02
183.15	2918.02	3477.33	4036.64	4595.95	5155.27
199.80	3417.52	4039.27	4661.02	5282.77	5904.52

(iv) Cauliflower (Fresh Market)

Price	YIELD 21.60	24.30	27.00	29.70	32.40
233.60	2446.58	2963.90	3481.22	3998.54	4515.86
262.80	3077.30	3673.46	4269.62	4865.78	5461.94
292.00	3708.02	4383.02	5058.02	5733.02	6408.02
321.20	4338.74	5092.58	5846.42	6600.26	7354.10
350.40	4969.46	5802.14	6634.82	7467.50	8300.18

(v) Broccoli (Fresh Market)

Price	YIELD 3.00	3.38	3.75	4.13	4.50
800.00	860.52	1151.14	1441.77	1732.39	2023.02
900.00	1160.52	1488.64	1816.77	2144.89	2473.02
1000.00	1460.52	1826.14	2191.77	2557.39	2923.02
1100.00	1760.52	2163.64	2566.77	2969.89	3373.02
1200.00	2060.52	2501.14	2941.77	3382.39	3823.02

5.2.6 Sheep Gross Margins
(Prepared by M.J. McGregor, February 1983)

Introduction
The following two examples show relativity between the same breed of sheep (Corriedale) but under different management policies. It must be stressed that the prices and costs used approximate those ruling at 11 February 1983.

The gross margins should therefore be adjusted as policies, prices and cost parameters, change.

Note: Gross margins are calculated for 1000 ewes. This allows flock composition, deaths, sales and purchases to be shown as whole numbers. The gross margins calculated only apply to small changes in stock numbers as changes in the order of 1000 ewes would require additional labour, feed, etc.

Example 1.

This example gross margin is for a Corriedale 2 year flock system, buying 5 year old ewes annually, which are all mated to an export lamb sire.

Production Parameters:
110% lambing (survival to sale); 10% first year ewes culled; death rate 6%; ewes clip 4.0 kg wool per head; lambs not shorn.

Sheep Reconciliation:

SHEEP RECONCILIATION

Stock Units Opening 1/7/81	Rate	Class of Stock Breed	Opening Nos. @ 1/7/81	Nat. Incr.	Killed	Deaths and Losses	Sales	Purch-ases	Closing Nos. @ 30/6/82	Class of Stock	Closing s.u.'s 30/6/82
	Ewes										
		Lambs		550							
0		Unmated Hgts	0				550		0	Unmated Hgts	0
		Mated Hgts								Mated Hgts	
		Ewes: 2th								Ewes: 2th	
		4th								4th	
		6th								6th	
		4yr								4yr	
543	1.0	5yr	543					543	543	5yr	543
457	1.0	6yr	457		10	32	32		457	6yr	457
		Aged				27	420		0	Aged	
1000	1.0	TOTAL EWES	1000						1000	TOTAL EWES	1000
	Wethers - m.s.	and wether Lambs		550	10		530				
6	0.6	Hgts	10		10				10	Hgts	6
		2th							0	2th	
		Aged								Aged	
6	0.6	TOTAL WETHERS	10						10	TOTAL WETHERS	6
	Rams										
		Lambs									
		Hgts								Hgts	
4	0.8	2ths	5					5	5	2ths	4
12	0.8	Aged	15		4	1			15	M.Age	12
16	0.8	TOTAL RAMS	20						20	TOTAL RAMS	16
1022		TOTAL SHEEP	1030	1100	34	60	1554	548	1030	TOTAL SHEEP	1022
			(a)	(b)	(c)	(d)	(e)	(f)	(g)		

LAMBING PERFORMANCE (Based on Ewes to Ram)
Tailing = NA % Survival to Sale = 110 %

DEATH RATES
Ewes = 6 % Hgts = NA% Lambs = NA Rams = 5 %

CULLING RATES
Ewes = 10% Rams = 25%

RECONCILIATION
(1) Totals a + b + f = 2678
(2) Totals c + d + e + g = 2678
Total (1) must = Total (2)

Gross Revenue (per 1000 ewes):	$ c
Lamb sales - 1,080 prime lambs @ $21.85 (13.5 kg lamb meat @ 146c/kg = $19.71 plus skin and 0.75 kg woolpull @ $2.35 minus 21c levies)	23598.00
Cull ewe sales - 474 cull ewes to works @ $12.77 (22.5 kg ewe meat @ 51c/kg = $11.48 plus skin and 0.5 kg woolpull @ $1.59 minus 30c levies)	6052.98
Wool sales - 4000 kg @ $2.87 per kg net (1000 sheep @ 4.0 kg allowing for deaths. Wool price is gross less 33c/kg)	11480.00
GROSS REVENUE	$41130.98
Direct Costs (per 1000 ewes):	
Replacement purchase - 543 @ $14.00	7602.00
Shearing (shearers only) - 1000 sheep @ $75/100	750.00
Tup crutch - 457 sheep @ $23/100	105.11
Main crutch - 1015 sheep @ $32/100	324.80
Drenching - 2 drenches @ 13c/dose for 1015 Sheep (ewes are drenched once before tupping and again before lambing)	263.90
- 1100 lambs : 50% drenched once, 30% drenched twice, lamb drench 6.46c/dose	56.85
Vaccination - triple vaccine, 980 ewes @ 14.57 c/sheep	142.79
Eartags, footrot and docking	475.00
Dipping - purchased ewes have been dipped, 457 ewes @ 27c/sheep	123.39
Woolshed expenses - including woolpacks, twine, glue, emery paper and shearing plant expenses approximate cost = 30c/head	300.00
Ram costs - 2 per 100, 4 year life, 5 @ $150/ram	750.00
Cartage - prime lambs to works, 1080 @ $0.60 each	648.00
- cull ewes to works, 474 @ $0.75 each	355.50
- replacement ewes from North Canterbury, 543 @ $1.37 each	743.91
- wool, 4000 kg @ 2.4c/kg	96.00
(Note: All cartage based on 32 km travel except for replacement ewes, 80 km)	
TOTAL DIRECT COSTS	$12737.25
GROSS MARGIN PER 1000 EWES	$28393.73
GROSS MARGIN PER EWES (÷ 1000)	$28.39
GROSS MARGIN PER STOCK UNIT (÷ 1022)	$27.78

Summary:

With a gross revenue of approximately $41.00 per ewe and expenses of about $12.75 per ewe, the gross margin is in the vicinity of $28.25 per ewe for a prime lamb 2 year flock system. The direct costs per ewe (excluding replacement cost) are approximately $5.15.

The gross margin per stock unit is calculated by dividing the gross margin (per 1000 ewes) by the total stock units (1022 stock units). This gives a value of $27.78 per stock unit.

Example 2.

This example gross margin is for a Corriedale flock, selling genuine 5 year old ewes and breeding own replacements. Ewes are on hand for 4 lambings. All ewes are mated to a Corriedale ram. Hoggets are culled as two tooths (20%). Surplus ewe lambs are sold store. 80% of the wether lambs are sold prime for export, the remainder (20%) being sold as stores. Lambs are not shorn but hoggets are.

Production parameters:-
93% lambing; 5% ewe culling; 20% two tooth culling; death rate 4%; ewes clip 4.1 kg of wool as do the hoggets.

Sheep Reconciliation:-

SHEEP RECONCILIATION

Stock Units Opening Rate 1/7/81		Class of Stock Breed	Opening Nos. @ 1/7/81	Nat. Incr.	Killed	Deaths and Losses	Sales	Purch-ases	Closing Nos. @ 30/6/82	Class of Stock	Closing s.u.'s 30/6/82
	Ewes										
		Lambs		465			89		376	Unmated Hgts	226
226	0.6	Unmated Hgts	376								
		Mated Hgts				15	75			Mated Hgts	
286	1.0	Ewes: 2th	286			11	14		286	Ewes: 2th	286
261	1.0	4th	261			11	13		261	4th	261
237	1.0	6th	237			9	12		237	6th	237
216	1.0	4yr	216		7	9	200		216	4yr	216
0	1.0	5yr	0						0	5yr	0
		6yr								6yr	
		Aged								Aged	
1000		TOTAL EWES	1000						1000	TOTAL EWES	1000
	Wethers - m.s.										
		and wether Lambs		465			455		10	Hgts	6
6	0.6	Hgts	10		10				0	2th	
0	0.8	2th	0								
		Aged								Aged	
6		TOTAL WETHERS	10						10	TOTAL WETHERS	6
	Rams										
		Lambs									
		Hgts								Hgts	
4	0.8	2ths	5					5	5	2ths	4
12	0.8	Aged	15		4	1			15	M.Age	12
16		TOTAL RAMS	20						20	TOTAL RAMS	16
1248		TOTAL SHEEP	1406	930	21	56	858	5	1406	TOTAL SHEEP	1248
			(a)	(b)	(c)	(d)	(e)	(f)	(g)		

LAMBING PERFORMANCE (Based on Ewes to Ram)
Tailing = NA % Survival to Sale = 93 %

RECONCILIATION
(1) Totals a + b + f = 2341
(2) Totals c + d + e + g = 2341
Total (1) must = Total (2)

DEATH RATES
Ewes = 4 % Hgts = 4 % Lambs = NA % Rams = 5 %

CULLING RATES
Ewes= 5% Hgts = 20% Lambs = NA% Rams =25%

Gross Revenue (per 1000 ewes):-	$ c
Lamb sales - 364 prime lambs @ $21.85 (13.5 kg lamb meat @ 146c/kg = $19.71 plus skin and 0.75 kg woolpull @ $2.35 minus 21c levies)	7953.40
- 180 store lambs @ $11.00	1980.00
Cull ewe sales - 75 two tooths @ $28.00	2100.00
- 189 five year olds in yards @ $14.00	2646.00
- 50 cull ewes to works @ $12.77 (22.5 kg ewe meat @ 51c/kg = $11.48 plus skin and 0.5 kg woolpull @ $1.59 minus 30c levies)	638.50
Wool sales - 4100 kg @ $2.87 per kg net (1000 sheep @ 4.1 kg allowing for deaths. Wool price is gross less 33c/kg)	11767.00
- 1558 kg @ $2.87 per kg net (380 hoggets @ 4.1 kg allowing for deaths)	4471.46
GROSS REVENUE	$31556.36

Direct Costs (per 1000 ewes):-	
Shearing (shearers only) - 1000 sheep @ $75/100	750.00
- 380 hoggets @ "	285.00
Tup crutch - 990 ewes @ $23/100	227.70
Main crutch - 990 ewes @ $32/100	316.80
Drenching - 2 drenches @ 13c/dose for 1015 sheep (ewes are drenched once before tupping and again before lambing)	263.90
- lambs, 1850 doses @ 6.46c/dose (replacements drenched 3 times, stores twice, and primes once)	119.51
Vaccination - triple vaccine, 980 ewes @ 14.57c/sheep	142.79
- triple vaccine, 370 hoggets @ 14.57c/sheep	53.91
Eartags, footrot and docking	475.00
Dipping - 990 ewes @ 27c/head	267.30
- 376 hoggets @ 27c/head	101.52
- 660 lambs @ 27c/head	178.20
Woolshed expenses - including woolpacks, twine, glue, emery paper and shearing plant expenses, approximate cost = 30c/ewe and 17c/hogget	364.60
Ram costs - 2 per 100, 4 year life, 5 @ $150/ram	750.00

Cartage	- prime lambs to works, 364 @ $1.08 ea.	393.12
	- store lambs to yards, 180 @ $0.98 ea.	176.40
	- cull two tooths and five year old to yards, 264 @ $1.57 each	414.48
	- cull ewes to works, 50 @ $1.57 ea.	78.50
	- wool, 5658 kg @ 4.8c/kg	271.58

(Note: All cartage rates are based on 97 km travel, the distance from North Canterbury to Christchurch.)

Selling charges	- Yard fees, 444 sheep @ 26c/sheep	115.44
	- Commission, $6726 @ 4.75%	319.49
TOTAL DIRECT COSTS		$6065.24
GROSS MARGIN PER 1000 EWES		$25491.12
GROSS MARGIN PER EWE (÷ 1000)		$25.49
GROSS MARGIN PER STOCK UNIT (÷ 1248)		$20.43

Summary:

The gross margin per stock unit for a breeding own replacement flock is $7.35 less than that of an export lamb policy. The factors having the greatest effect on the two examples presented are:

(i) Lambing percentage
(ii) Lamb sale price
(iii) Wool clip per head
(iv) Wool price
(v) Cull ewe price (both at yards and at works)

It is stressed that the example gross margins use one set of price and production parameters and when used in practice some account must be taken of likely variations to give a range of expectations.

It is interesting to note the comparison with past years:

Gross Margin Per Stock Unit

	1980/81	1981/82	1982/83	% Change (from last year)
Two year flock	19.40	25.07	27.78	+ 10.8%
Breed own replacements	18.85	21.80	20.43	- 6.3%

The breeding own replacements policy shows wider fluctuations in the gross margin than the two year flock policy. The two year flock farmer is able to work on a margin for purchase and sale of ewes where as the store sheep farmer has no such margin available.

Again, it must be stressed that these gross margins are examples only. As the price, cost, and production parameters change throughout the season, the gross margins must be revised.

5.2.7 Beef Cattle Gross Margins

(i) Introduction:

The livestock market in New Zealand is divided into three main sections. These are:

(a) Store sales between farmers of breeding and fattening stock,

(b) Schedule sales of stock to freezing companies for export to world markets, and;

(c) Local trade sales of prime quality stock to butchers for sale to New Zealand consumers.

Each of these main markets, though operating on different supply and demand schedules, is related to the other and tends, even if for only short periods, to be influenced by demand from the other sections of the market.

(ii) Factors Influencing Store Sales:

Though sale values fluctuate from sale to sale and between districts for the same class of stock, in general values tend to follow broad trends over periods of 2-3 years. Factors influencing prices paid are:

(a) General profitability of finishing or breeding from the class of stock concerned at the current schedule or local trade price levels. In cases of forward stock, export schedule values can virtually under-write the sale, setting minimum price levels.

(b) Trend of schedule or local trade prices and the effect of probable changes on forecasting profit margins.

(c) Availability of feed, and effect of climatic conditions on feed. Generally New Zealand does not experience prolonged periods of drought or feed shortage, and depression of stock prices tends to be transitory frequently affecting sale values for only a part of the season.

(d) Availability of finance and credit.

(e) The level of confidence for say beef, sheep or dairying by the farming community and the people who service agriculture.

(iii) Factors Influencing Schedule Values:

Schedule prices are assessed by exporters who sell to world wholesale markets. These companies follow world market prices, particularly U.K., U.S.A., Japan and the Middle East (Iran and Iraq) and assess the level at which they can set their prices to attract prime stock from farmers, meet all costs and attain a profit. Factors which influence price levels are:

(a) World Market conditions - supply and demand and price trends.

(b) Tariffs and quotas.

(c) Shipping and killing charges.

(d) Time and place of sale.

(e) Industrial unrest and effect of stoppages.

(f) To a limited extent competition between local trade and exporters for prime stock may for short periods inflate schedule values. In general during the winter and early spring little or no prime cattle are sold for export.

(g) The Supplementary Minimum Prices (S.M.P.) guaranteed by the government.

At times, local trade may purchase prime sheep and cattle through the yards at below schedule value due to the inability of exporters to process certain classes of stock because of industrial unrest or limited works capacity.

(iv) Factors Influencing Local Trade Values:

Approximately 30% of all beef slaughtered is consumed in New Zealand. In the South Island, because of the lower cattle population relative to people, about 50% of all cattle slaughtered are used for local trade. It is suggested, however, that up to 60% of all prime beef is consumed within New Zealand. Most of this stock is bought by buyers for butchers either on the farm or in the prime pens at sale yards, i.e. about 50% of the Christchurch beef requirement is bought through Addington with the remainder bought privately on farms or supplied to the Freezing Company.

In some instances, exporting companies buy stock for wholesale to butchers. In periods of shortage of prime cattle, practically all prime quality beef is bought for local consumption at values above export schedule. Thus the supply demand schedule for local trade works independent to the export schedule. Practically all prime stock in winter and early spring are bought for the local trade with peak prices usually in October. Once feed supplies ease and most farmers are able to produce prime stock, the supply exceeds local trade requirements and price levels fall to export schedule values.

The influence of local trade buying is greatly affected by seasonal conditions. In general, local trade begins to have an effect on prime stock prices in May, but in periods of shortage may begin in March or conversely as late as July. October appears to be the peak month with demand influence falling rapidly in November and December. Local trade values usually range from 10 cents/kilogram of carcase above schedule for winter months to 15-20 cents/kilogram above schedule in September-October. Usually stock are bought by eye assessment of weight and it is an advantage to know actual live weight when selling in the paddock. A further point to note is that abattoir weights are taken when the carcase is hot, and includes the channel fats which can increase the killing out percentage by 2% over export weight.

Prices for beef in the 1982 season have varied considerably as indicated by Table 1 which provides a summary of the monthly trends. The influence of the Supplementary Minimum Price can be clearly seen. The SMPs became operative from 1st October

1981.

(v) Forecasting of Future Beef Cattle Values for Budgetary Purposes:

Forecasting the future outcome of events still to occur must be undertaken with reservation. However, for those who trade goods or livestock, the future course of prices is of paramount interest. For budgetary purposes, conservative prices with high probability of realisation are usually adopted. The purpose of the following illustrations is to endeavour to assist in a greater understanding to the influence of changing export schedule values upon cattle prices at various stages of livestock production.

Table 1

SCHEDULE MOVEMENTS IN THE SOUTH ISLAND
Steer P1 220.5 - 270 kg (220.5 - 245 kg in 1979 and 270.5-29 kg in 1982)
(cents/kilogram)

	1975	1976	1977	1978	1979	1980	1981	1982
January	29	55	62	57	105	127	120	150
February	29	55	67	59.5	111.5	133	120.5	150
March	29	55	63	60.5	131.5	114.5	120.5	142
April	39	55	59	69.5	144.5	109	120	140
May	39	55	59	69.5	134.5	108	120	142
June	-	55	57.5	74.5	127.5	109	120	142
July	-	55	57.5	79.5	106.5	109	120	142
August	-	55	57.5	79.5	111.5	125	120	142
September	-	55	57.5	84.5	121.5	125	120	142
October	55	55	57	87.5	126.5	120	143	147
November	55	55	57	87.5	136.5	127	143	147
December	55	56	57	95.0	141.5	127	143	147

A brief examination of the price movement for the P1 grade steer over the last four years indicates changes from 105c to 147c per kg of carcase, with substantial movement within each year. Such major changes in the schedule have a significant effect upon the value of store cattle, and buyers need to take these changes into account when assessing cattle for purchase.

One technique which can be used to study the effect of changing schedules in the "schedule equivalent" approach. This assumes that the assessed carcase

weight of an animal at various stages of growth is worth a particular schedule price which gives an indication of the value of the animal at that stage, and the margin in values between stages.

Table 2 illustrates this technique using four assumed schedule levels ranging from $50 to $200 per 100 kg and expressing the effect of this on the value of a beast as a weaner, yearling and at final slaughter at 20 months. Killing out percentage is assured to be 50% for weaner and yearlings, and 53% at 20 months.

Table 2

The Effect of Four Different Schedule Levels on the Value Margin of a Steer using the Schedule Equivalent approach (S.E.)

	S.E. Value of Animal			Margin Between Stages		
Schedule Value per 100 kg	Weaner L.W. 200 kg C.W. 100	Yearling L.W. 300 kg C.W. 150	20 mth L.W. 434 kg C.W. 230	Weaner to Yearling	Yearling to 20 mth	Weaner to 20 mth
$50	50	75	115	25	40	65
100	100	150	230	50	80	130
150	150	225	345	75	120	195
200	200	300	460	100	160	260

In practice however, the schedule equivalent approach needs to consider the effect of Market premium, discount, Market appreciation and depreciation.

1. Market premium, occurs where buyers, particularly in years of high demand, pay more than the schedule equivalent price to breeders for weaners and yearlings in order to obtain stock. This premium varies from year to year as indicated in tables 3 to 6, with premiums of up to one third of the assessed margin using the schedule equivalent, i.e. a purchaser operating on a $100 schedule with a schedule equivalent margin from weaner to 20 months of $130 per head, may pay one third of this margin or approximately $40 as a premium for weaners, pay $140 per head or 140c per kg of carcase.

2. Market discount is the reverse of the premium. This occurs as a result of poor trading due to lack of demand or where farmers have a pessimistic outlook for prime cattle prices, and buyers pay less than Market

schedule.

3. Market appreciation occurs when the schedule moves above the purchase price, and a bonus return is received, i.e. where cattle are bought for $100 per 100 kg and sold for $130, a bonus of $30 per 100 kg on the original weight is achieved.

4. Market depreciation applies when the schedule falls below the purchase price, on a kg basis. This also applies when a market premium has been paid, i.e. when a weaner on a $100 schedule is bought for $140 or 40c per kg above the schedule of final sale. This loss can only be offset from the income earned by adding carcase weight to the animal.

The questions which a forecaster will ask himself are:

1. What is the likely schedule value for the season, and what does the average buyer expect it to be?

2. How much profit did cattle finishers make last year, and what will they expect this coming year?

3. Will the S.M.P. remain in force, and what is the guaranteed S.M.P. for next season.

A useful indication can be obtained by following sales and calculating the value per kg of carcase actually paid by purchasers.

To assess likely prices for store cattle, one needs to consider both the effect of schedule prices and the likelihood of the sharing of the growth increment. For 1983 the position is likely to be as follows:

(a)	Value of weaner 100 kg carcase @ $1.47	$147.00
	Growth Increment range Nil - $40 say	30.00
	Price for Average Weaner Steer (200 kg L.W.) = 88.5c kg L.W. or 177c kg carcase	$177.00
(b)	Value of yearling 160 kg carcase @ $1.47	$235.80
	Growth Increment - range nil $40 say	$ 20.00
	Price for Average yearling 320 kg L.W. = 79.69c kg L.W. or 159.38c kg carcase	$255.00
(c)	Value of 20 month steer 230 kg carcase @ $1.47	$338.10

Summary:		Margin:
Price to store breeder	$177.00	$78 for winter
Price as yearling	$338.00	$83 for summer

NOTE
I have assumed the S.M.P. will maintain the schedule price at $1.47/kg.

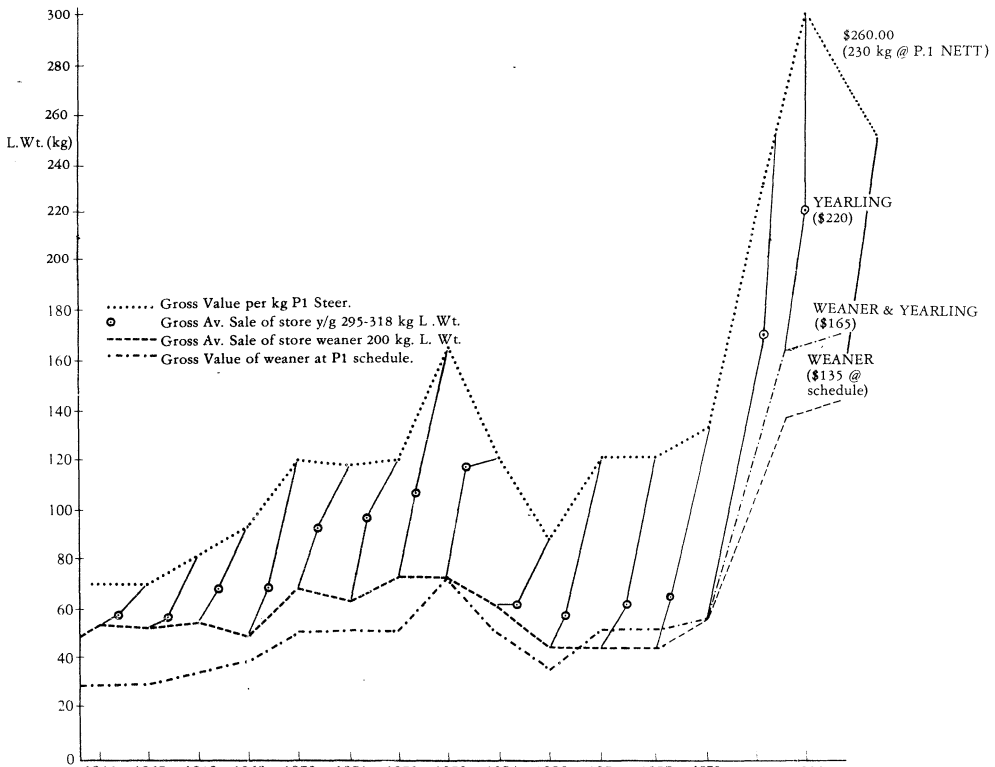


Fig 3. THE GENERALIZED HISTORICAL TREND OF GROWTH INCOME FOR AVERAGE WEANER STEERS TO SUBSEQUENT SLAUGHTER ON SCHEDULE P1 GRADE AT 20 MONTHS AS SHARED BETWEEN BREEDERS, WINTERERS AND SUMMER FATTENERS.

STORE CATTLE VALUES AT ADDINGTON SALEYARDS

Table 3 Weaner Steers (April)

Year	Good $/head	Medium $/head	Small $/head	Av. Price Per Carcase kg	Differential to PI Schedule
1967	58	-	48	41c	+$12 (31.90)
1968	64	-	50	67c	+$10 (37.40)
1969	58	-	44	41c	+$ 6 (41.80)
1970	80	70	50	67c	+$16 (54.30)
1971	75	65	54	61c	+$ 9 (54.00)
1972	90	75	60	75c	+$22 (53.00)
1973	90	75	60	79c	+$ 0 (74.80)
1974	75	63	40	60c	+$ 9 (54.00)
1975	55	45	30	43c	Chiller Grade +$ 6 (39.00)
1976	55	45	30	43c	Chiller Grade -$12 (55.00)
1977	55	40	25	40c	P1 -$17.50 (57.50)
1978	65	55	30	50c	-$12.50 (67.50)
1979	190	160	120	160c	+$50 (110.00)
1980	200	165	120	165c	+$56 (109.00)
1981	120	120	80	120c	$ 0 (120.00)
1982	160	130	105	141c	+$ 1 (140.00)

NOTE: Figures shown in brackets are differential values in cents/kg. The Differential is based on 200 kg L.W. with carcase at 50%. The 1978, 1981 and 1982 differential shows the effect of the serious autumn drought in Canterbury in these years.

Table 4 Weaner Heifers (April)

Year	Good $/head	Medium $/head	Small $/head	Av. Price per Carcase kg	Differential to PI Schedule
1967	43	-	35	37c	+$ 5
1968	57	-	46	42c	+$ 4
1969	45	-	33	36c	-$ 6
1970	65	55	35	53c	Nil
1971	67	57	42	57c	+$ 4
1972	80	70	50	68c	+$18
1973	75	60	45	66c	+$ 6
1974	60	50	35	53c	-$ 2
					Chiller Grade
1975	40	30	15	31c	-$ 8
					Chiller Grade
1976	40	30	15	31c	-$14
					P1 Grade
1977	40	25	15	31c	-$14
1978	50	30	15	31c	-$22
1979	165	140	104	147c	+$42
1980	160	125	90	125c	+$17
1981	120	100	80	105c	-$12 (118)
1982	140	105	90	140c	$ 0

NOTE: The differential is based on 190 kg L.W. with carcase at 50%.

Table 5 Yearling Steers (October)

Year	Good $/head	Medium $/head	Small $/head	Av. Price per Carcase kg	Differential to PI Schedule
1967	65	-	50	37c	+$17 (28.00)
1968	90	70	65	50c	+$15 (40.00)
1969	82	-	60	48c	Nil (48.00)
1970	120	95	80	64c	+$22 (49.00)
1971	120	100	85	68c	+$23 (53.00)
1972	125	110	95	70c	+$23 (56.00)
1973	140	120	100	82c	+$ 9 (76.00)
1974	85	67	45	43c	+$ 6 (38.00) Chiller Grade
1975	75	60	40	39c	-$15 (55.00) Chiller Grade
1976	80	60	40	39c	-$15 (55.00) P1 grade
1977	85	65	45	42c	-$23 (57.00)
1978	170	145	120	93c	+$10 (87.50)
1979	250	220	180	142c	+$34 (120.00)
1980	210	165	140	106c	-$ 4 (109.00)
1981	240	220	180	143	+$ 0 (143.00) SMP
1982	220	180	140	140	-$11 (147.00)

NOTE: The differential is based on 310 kg L.W. with carcase at 50%. Figures shown in brackets are differential values in cents/kilogram.

Table 6 Yearling Heifers (October)

Year	Good $/head	Medium $/head	Small $/head	Av. Price per Carcase kg	Differential to PI Schedule
1967	55	-	47	40c	+$18
1968	64	-	52	44c	+$ 5
1969	66	-	53	46c	-$ 2
1970	110	100	75	75c	+$35
1971	111	100	77	75c	+$30
1972	110	95	70	70c	+$24
1973	110	90	60	69c	+$ 6
1974	55	45	35	35c	+$ 2
1975	55	40	30	31c	-$31
1976	70	50	40	38c	-$12
1977	70	50	40	38c	-$22
1978	140	110	70	84c	+$ 4
1979	220	180	160	116c	+$ 6
1980	190	140	95	107c	-$ 2
1981	220	190	120	140c	-$ 4
1982	200	135	95	130c	-$22

NOTE: The differential is based on 260kg L.W. with carcase at 50%.

Table 7 Range of Values for Heifers and Cows

	Unmated Heifers		Cows	
	18 mth (April)	2 Yr (Oct)	April	Oct.
	$	$	$	$
1967	60- 70	69- 74	60- 77	75- 80
1968	67- 74	70-106	78- 92	- 82
1969	54- 62	84-110	58- 70	- 71
1970	80- 85	85-110	84-117	-110
1971	80- 90	110-150	85-130	100-130
1972	80- 90	90-145	90-140	116-120
1973	100-140	120-165	110-180	120-150
1974	65-120	60-110	65-140	50- 90
1975	55- 65	45- 70	25- 60	40- 60
1976	60- 65	70-110	50- 80	70-110
1977	50- 65	70-100	40- 60	70-100
1978	80-100	150-200	80-100	180-220
1979	180-200	190-270	250-290	240-310
1980	240-270	230-270	200-240	220-250
1981	180-230	220-300	200-250	220-280 (Drought)
1982	220-330	320-360	to 270	to 300

Table 8 Estimated Average Gross Profit in rearing steers, purchased at weaner and yearling for fattening with sale at P1 export schedule during the subsequent autumn carcase weight 230 kilograms.

Year	Av. Weaner Purchase	Av. Yearling Purchase	20 mth at P1	Gross Profit from Weaner	Gross Profit from Yearling
1967	54	58	85	31	27
1967	57	70	95	38	25
1969	51	71	124	73	53
1970	70	95	120	50	25
1971	65	100	122	57	22
1972	75	110	168	93	58
1973	75	120	124	49	4
1974	63	65	90	27	25
1975	45	60	126	81	66
1976	45	60	126	81	66
1977	40	65	130	90	65
1978	55	145	230	175	85
1979	160	220	287	127	67
1980	165	165	276	111	111 (Drought)
1981	120	140	330	208	190 (Drought)
1982	140	150	340	200	190

NOTE: (a) Though valuation and estimates of sales are given in discreet figures, it should be appreciated that a range of prices will be paid for equivalent beasts, within any sale and that gross profit will vary accordingly.

(b) 1967-1973 values are based on the GAQ grade.
1974 and 1975 values are based on the Chiller Grade.
After 1976 values are based on the P1 grade and are taken at the subsequent autumn to weaner and yearling sales.

(c) Due to variable weather affecting food supply, cattle values have fluctuated markedly between the autumn and spring, particularly during the 1978 season.

(d) Value of 20 month at P1 assumes a net value after the skin has been removed.

(e) The SMPs have greatly affected returns after October 1981.

(vi) Beef Gross Margins:
The following examples are put forward to illustrate a technique of deriving a gross margin for two beef enterprises and will not necessarily reflect the margin derived by these policies in all situations, or as prices and costs change.

Further, costs for interest and supplementary feeds will not be included but will be discussed separately. To compare beef cattle with sheep or crop margins, it is essential to ensure that all direct costs, applicable to the situation are included, and further, that the comparison is made according to the most limiting resource which may be either capital or land. For this reason, the examples will express the margin in terms of return to Capital invested in stock, per hectare and per stock unit. It is convenient to compare sheep policies with cattle by means of the Stock Unit technique but care should be taken to ensure that the feed supply is adequate for both classes of stock due to the different requirements of cattle to sheep throughout the year.

Example 1

This policy involves breeding from cows and 14 month heifers. All weaners, except replacements, are sold as store cattle in April.

Production Parameters:

Calving, 95% in cows, 80% in heifers; 2% death rate.

Capital Stock:

	No.		Total	S.U.	Total
Cows	128	at $300 =	$38,400	6	768
In-calf heifers	24	at $300 =	$ 7,200	5	120
Weaner heifers	25	at $150 =	$ 3,750	3.5	88
Bulls	4	at $700 =	$ 2,800	6	24
	181		$52,150		1,000 SU

Value per Stock Unit $52.15

Income:

70 weaner steers	at $180 =	$12,600	
46 weaner heifers	at $165 =	$ 7,590	
5 2-year heifers	at $220 =	$ 1,100	
16 cull cows	at $220 =	$ 3,520	
1 bull	at $330 =	$ 330	
less 2% mortality		$ 503	
TOTAL INCOME			$24,637

Expenditure:

Animal Health-			
Drench 25 weaners @ 60c/dose	$ 15		
Spray 181 cattle @ 60 cents	$109		
Pregnancy test 128 cows @ $1	$128	$ 252	
Commission on Sale Stock-			
4.75% of $21,290		$1,011	
Freight - sale stock		$ 800	
Yard fees - 121 cattle @ $2.14 per head		$ 259	
Bull purchase - landed @ $1,200		$1,200	
TOTAL DIRECT COSTS			$ 3,522
GROSS MARGIN (before feed costs and interest)			$21,115
Gross Margin per Stock Unit			$21.12
Gross Margin per hectare (at 10 S.U./ha)			$211.2
Gross Margin as % of Capital Stock			40.49%

Example 2

This policy involves the purchase of medium weaner steers in April, which are then sold at 20 months of age at an average carcase weight of 230 kilograms. Death rate = 2%.

Capital Stock:

		S.U.	Total
Weaner Steers	250 at $165 = $41,250	4	1,000 SU

Value per Stock Unit = $41.25

Income:

245 steers at 330 (230 kg at 1.43/kg) =	$80,850	
less 2% mortality	$ 1,617	
TOTAL INCOME		$79,233

Expenditure:

Animal health-		
Drench 250 steers at 69c dose	$ 150	
Spray 250 cattle at 60c	$ 150	
Bloat control	$ 100	
Freight - sale stock at $6/head	$ 1,470	
Stock Purchase - 250 weaners at $165 landed	$41,250	
TOTAL DIRECT COSTS		$43,120
GROSS MARGIN (before feed costs and interest)		$36,013
Gross Margin per Stock Unit		$36.00
Gross Margin per hectare (at 10 SU/ha)		$360.0
Gross Margin as % of Capital Stock		69%

(vii) Partial Budgeting for Beef:

Interest and Feed Costs.
For comparison with gross margin analysis of sheep or crop alternatives in the same property, and when interest has been excluded from these analyses, it is necessary to exclude interest from beef analysis also in order to retain relativity.

However, due to the high capital requirements and the fact that in most instances borrowed capital is

involved necessitating loan servicing (15% compounded if on current account with the stock firm) a partial budget approach is normally adopted, and includes estimates of interest and feed costs in order to provide a more accurate indication of actual returns.

Feed costs can be ignored where there is no change in the supplementary feed required to implement a cattle policy in place of a sheep alternative. Where there is a change however, all additional supplementary feed costs, should be included. There is a trend towards greater supplementing of beef cattle with hay, grain and green feeds and co-operative ventures involving grazing contracts. It should be noted that the opportunity to improve supplementary feed beef profitability increases with the increase in price per kilogram of carcase. Of the variable costs related to beef enterprises, the most variable excluding the purchase price of replacement stock, and frequently the most critical cost is feed cost. Following are partial budget examples of Examples 1 and 2 including interest at 15% and feed costs. However, as interest rates increase the effect on profitability is interesting to note.

Example 1

Gross margin before interest and feed cost		$21,115
Less: Interest on capital in stock at 15% on $52,150 for 1 year	$ 7,822	
Feed Costs: 152 cows and heifers, hay 1 bale to 5 for 120 days - 1600 bales. 25 weaner heifers, hay 1 bale to 7 for 120 days - 370 bales. Total hay including bulk reg. say 2000 bales at 80c	$ 1,600	$ 9,422
Gross margin after interest and feed		$11,693
Return per S.U.		$11.69
per hectare @ 10 S.U.		$116.93
As % of Capital in stock		22.42%

Winter Feeding Costs.

North Island:
Grass wintering - 5 weaners per hectare of A.S.P. + 1 bale hay to 10 weaners per day for 60 days = 6 bales per head. Kale - 15-18 weaners per hectare plus some hay - up to 1 bale to 10 weaners per day.
Cows - pad feeding beef cows 1 bale to 4 cows meadow hay per day as a complete ration.
Grazing charges vary from season to season depending on availability of surplus roughage.
Surplus years - 50 cents per head per week.
Good grazing - $1.50 per head per week.
Winters following drought - $1.50-$3.00 depending on quality and availability.

South Island:
Hay and grain feeding for 100 days.
Weaner steers - full hay ration, 5 kg (1 bale to 7 weaners),
- hay, 4 kg (1 bale to 9 weaners (plus 2 kg grain),
- turnips (18 beasts per hectare), hay, 3.5 kg (1 bale to 10 weaners) and 2 kg grain.

Winter Growth Rates.

Great variability has been experienced in winter growth rate from year to year. Apart from parasitic effects, factors such as pre-weaning competition with cows for available grass can check calf growth which appears to create a period of slow recovery. The farmer's intuition of paddock shifts and timing and some paddocks of soft grass can slow or check growth. Cold, late springs will continue the winter slow growth period into September and delay the rapid spring growth phase.

In order to assess the various costs of wintering, the following rates of growth have been selected as being the most likely expectation.

North Island:

All grass or grass plus hay	0.2-0.4 kg per day
Kale	0.2-0.25kg per day

South Island:

5 kg medium meadow hay plus some grass	0.2-0.25kg per day
4 kg medium meadow hay plus 2 kg grain	0.4-0.7 kg per day
Ad lib turnips plus 2 kg hay, 1.5 kg grain	0.4-0.7 kg per day

To assess feed requirements and likely growth rates derived from food stuffs refer to "Livestock Production from Pasture", Section 11 in Lincoln College Farm Budget Manual - (Technical).

Example 2.

Gross margin before interest and feed cost			$36,013
Less:	Interest on capital 15% of $41,250	$ 6,187	
	Interest on capital in grain silos, roller and feedlot $2,000 @ 12%	$ 240	
	Feed Costs 250 weaners and 1 bale hay to 8 for 120 days = 3,760 bales @ $1	$ 3,760	
	Grain at 2 kg each per day for 100 days = 50 tonnes @ $140	$ 7,000	$17,187
	Gross Margin after interest and feed		$18,826
	Return per S.U.	$ 18.83	
	" per hectare @ 1034	$188.30	
	as % of capital in stock	$ 45.64	

Examples of Feed Costing per day for weaners:

Assessed cost of feed -	
Hay 1 bale @ 30 kg @ 60 cents	2.0c/kg
Grain - barley	21.0c/kg
Turnips at	1c/day

Ration	Cost/ Day	Growth/ Day	Carcase/ Day	Income/Day at 140c	150c	160c
5 kg of hay	10c	.25 kg	.12 kg	+ 6c	+ 8c	+ 9c
4 kg hay, 2 kg grain	50c	.25 kg	.13 kg	-31c	-30c	-29c
4 kg hay, 1.5 kg grain + turnips	40c	.25 kg	.13 kg	-21c	-20c	-19c

Example of assessing actual value of carcase growth in purchased cattle to time of sale.

	Weaner	Yearling	20 mth	Growth Increment (kg) Weaner	Yearling
L.W. in kilograms	210	310	400	190	90
Carcase wgt in kilograms	105	155	230	125	75

	Value of animal on sale Weaner	Yearling	20 mth	Net Increment Value per kg Weaner	Yearling
1970/71	$ 70	$ 95	$120	40c	33c
1971/72	$ 65	$100	$130	52c	40c
1972/73	$ 75	$110	$174	79c	85c
1973/74	$ 75	$120	$130	44c	13c
1974/75	$ 63	$ 70	$ 90	20c	27c
1975/76	$ 45	$ 60	$126	65c	88c
1976/77	$ 45	$ 60	$126	65c	88c
1977/78	$ 40	$ 65	$131	73c	88c
1978/79	$110	$170	$230	96c	80c
1979/80	$160	$220	$285	$1.00	86c
1980/81	$165	$165	$292	$1.01	$1.69
1981/82	$180	$230	$330	$1.20	$1.33

5.2.8 Pig Gross Margin Analysis

Gross Margins are frequently used when assessing the profitability of various production parameters. It should be noted that Gross Margins are not sufficient for comparing different types of pig enterprises as the fixed capital involved in plant and buildings will differ.

This section contains 3 gross margins which give some indication of the cash surplus for each enterprise. Firstly, there are some physical and financial assumptions

that must be considered.

(i) Physical

(a) Sow productivity = 15 pigs weaned per sow per year.

(b) Average weight of weaners = 18 kg L.W.

(c) F.C.R. Bacon = 3.3 : 1 to 82 kg L.W.
Pork = 3.0 : 1 to 53 kg L.W.

(d) Dressing-out percentage = 75%.

(e) Post-weaning mortality = 3%.

(f) Grading Prime = 30%.
Choice = 60%.
Standard = 10%.

(g) Stock Replacement = 33% sows per annum.

(h) Sow/Boar ratio = 25 : 1.

(ii) Financial

(a) Pig meat returns at current schedule rates - see Section 3.8, Financial Manual.

(b) Feed Cost - Breeder Meal = $256.80 per tonne.
Creep Meal = $463.80 per tonne.
Grower Meal = $282.20 per tonne.

(iii) Gross Margins

(a) Weaner Production -

Returns:	$
Sale of 15 weaners @ $36	540.00
Less breeding stock	80.00
Less mortality @ 30%	16.00
TOTAL RETURNS	444.00
Variable Costs:	
Food - sow (including boar at service)	
1.2 tonnes of breeder meal	308.16
Creep meal @ 16 kg/piglet	7.42
Veterinary expenses and medicines	15.12
Repairs and Maintenance	37.30

Miscellaneous expenses (e.g. electricity)	27.00
TOTAL VARIABLE COSTS	395.00
Gross Margin per sow	49.00
Gross Margin per weaner	3.27

(b) Pork Production -

Returns:	
Sale of 38 kg pigmeat at 225c/kg	85.50
Less weaner (small weaner)	25.00
Less cartage and levy	6.86
Mortality @ 3%	2.56
TOTAL RETURNS	51.08
Variable Costs:	
Food - 35 kg gain at 3.0 : 1 @ 3.0 : @ 28.22c/kg	29.63
Veterinary expenses and medicines	3.13
Repairs and Maintenance	3.85
Miscellaneous expenses	2.71
TOTAL VARIABLE COSTS	39.32
Gross Margin per porker (approx.)	12.00

(c) Bacon Production -

Returns:	
Sale of 62 kg pigmeat @ 200c/kg	124.00
Less weaner (small weaner)	25.00
Less levy and transport	7.20
Mortality @ 3%	3.72
TOTAL RETURNS	88.08
Variable Costs:	
Food - 65 kg gain @ 3.3 : 1 @ 28.22c/kg	60.53
Veterinary expenses and medicines	3.70
Repairs and Maintenance	3.96
Miscellaneous expenses	2.91
TOTAL VARIABLE COSTS	71.10
Gross Margin per baconer (approx.)	17.00

(iv) Factors Affecting Profitability

The factors which affect profitability are, in order of importance:

(a) Pig Meat Prices -

Returns for pig meats are presently influenced by the minimum price set by the Pork Marketing board. Various other buyers and the fresh meat trade offer higher prices. Selling at the most profitable carcase weight will also affect returns.

(b) Feed Costs -

Feed is the most significant cost in pig meat production. Cost can be reduced by contract buying grain and home milling and mixing. However, it is essential that the quality of feed is not reduced particularly in protein content, as this will affect the Feed Conversion Ratio (FCR).

(c) Feed Conversion Ratio (FCR) -

Economy of gain of pigs from weaning to slaughter weight may be improved by the following methods:

(i) Correct feed formulation.
(ii) Controlled environmental conditions.
(iii) Use of genetically superior breeding stock.
(iv) Accuracy of feeding.
(v) Good pig health.

(d) Breeding Performance -

This is the area in which most improvement can be made. As the cost of maintaining a sow remains relatively constant regardless of the number of weaners she produces, the margin per weaner will increase when more weaners are produced per sow per year. Factors influencing sow productivity are:

(i) Age of weaning.
(ii) Number of days from weaning to first service.
(iii) Number of pigs per litter.
(iv) Mortality of pigs to weaning.

(e) Grading -

Most buyers make differential payments within grades to encourage the production of carcasses preferred by the consumer. The grading profile can be influenced by:

(i) Breeding.
(ii) Feed ration.
(iii) Feeding rate per day.

(f) Average Daily Gain -

This parameter has virtually no effect on gross margins but will influence the return on capital.

The return for pig meat is the single most important factor, but unfortunately the producer has little control of the meat prices, nor over feed costs. Therefore, it is better to concentrate on breeding performance and F.C.R. to increase the profitability of a pig enterprise.

(v) Weighing Procedures at Abattoirs

According to the Ministry of Agriculture and Fisheries, pig carcasses must be in a clean condition on leaving the work-up area at an abattoir. The regulations do not however specify the procedures that should be followed when weighing pig carcasses. In many instances, the ears and cheeks are removed, presumably to expedite the presentation of clean carcasses. But this does reduce the weight of the carcass, at some loss to the producer. Cleaning of the external ear canals and dehairing the cheeks would overcome this problem, but an increase in killing charges would no doubt follow.

A further weight loss occurs with shrinkage deductions. These vary from zero to 4.5% depending on the district.

The following lists show the different payment systems for the abattoirs throughout the country.

(a) Baconers -

Auckland	Hot weight: 3% deduction
Hellabys'	Hot weight
Gisborne	Hot weight: 4% deduction
Wellington	Hot weight
Ashburton	Hot weight
Timaru	Hot weight: 4.5% deduction
Longburn	Hot weight
Southland Frozen Meat	Hot weight

(b) Porkers -

Whangarei	Hot weight
Auckland	Hot weight: 3% deduction
Hellabys'	Hot weight
Gisborne	Hot weight: 4% deduction
Hawera	Hot weight: 2.5% deduction
Wellington	Hot weight
Ashburton	Hot weight
Timaru	Hot weight: 4.5% deduction
Westport, Motueka	Hot weight
Christchurch	Hot weight: 3% deduction
Longburn	Hot weight
Southland Frozen Meat	Hot weight

(c) Choppers -

Auckland	Skin on: 3% deduction
Hellabys'	Skin on
Gisborne	Skinned: 3% deduction
Wellington	Skinned: 3% deduction
Wanganui	Skinned: Head removed
Ashburton	Skinned
Westport	Skin on
Motueka	Skinned
Longburn	Skin on
Southland Frozen Meat	Skin on

SOURCE: "Pork Industry Gazette", October 1978, New Zealand Pork Industry Council.

5.2.9 Deer Gross Margins
(Prepared by M.J. McGregor, December 1981)

The popularity of deer farming has increased greatly over the last few years. New Zealand is establishing markets overseas for venison, velvet and other deer by-products.

Many farmers are attracted to deer farming, either as a sideline to an existing operation or as a specialised venture. Until recently, most deer farmers in New Zealand have been in the velvet business as the returns have been very lucrative. With the low prices currently received for velvet the emphasis is now moving to venison production.

The first herds were based on animals captured in the wild. Since 1970 when the first deer farming licence was issued, the number of deer farms have increased to over 1,680 and the number of animals carried is in excess of 104,359 (November 1980, Source Aglink FPP 259). When the first live deer auction was held in 1977 an average price of $417 was obtained, with the top price being about $800. By the end of 1979 prices had escalated rapidly from the 1977 levels with hinds costing about $3,000, breeding stags about $4-$4,500, yearling hinds about $2,000, and yearling stags $1,200-$1,600. In 1980/81 there was a decrease in demand for live deer and prices dropped dramatically. At that time hinds were sold for $850, breeding stags about $300-$450, yearling hinds about $650, and yearling stags $220-$230. It is estimated that hinds would now cost up to $1,100, breeding stags between $2,000 and $3,000, yearling hinds about $1,200-$1,500, and spikers $200.

Deer by-products include antler velvet, skins, tails, sinews, tusks, hearts, livers, tongues, kidneys, feet and blood. By-products are exported for manufacture into jewelery, leather products, oriental medicines and specialty meat preparations. The following two examples show the difference between two entirely different management and stocking policies. It must be stressed that the prices and costs used approximate those ruling at 11 February 1983.

The following physical parameters are common to both examples:

Breeding and velveting life = 10 years.
Fawning percentage (hinds fawn as 2 year olds) = 85%.
Death rate - adults = 4%.
- yearlings = 5%.
Stag: hind ratio = 1:20.

Dressed weight - cull stag = 90 kg
- C.F.A. stag = 75 kg.
- cull hind = 60 kg

Velvet yields - 1 year old = 0.6 kg
- 2 year old = 1.1 kg
- 3 year old = 1.8 kg
- 4-9 year old = 2.0 kg
- 10-12 year old = 1.8 kg

Velvet price -

Grade	%	Price ($/kg)
A	78	105
B	14	75
C	5	30
D	4	10

Example 1.

This example gross margin is for a policy of live sales of yearling hinds and stags with cull hinds and stags processed as venison.

No. on Hand (1 July)	Stock Units	Capital Value ($)
100 breeding hinds	150	110,000
16 yearling hinds	16	19,200
5 stags	7	12,500
121	173	141,700

Purchases	Deaths
Breeding stag (Half cost only)	5.5
Natural Increase	**Sales**
42 hinds	2 cull hinds
43 stags	10 C.F.A. hinds
	25 yearling hinds
	43 yearling stags
85.5	85.5

Gross Revenue (per 100 hinds):

Cull hinds - 2 @ $271 (60 kg venison @ $4.25/kg plus by-products @ $16)	$ 542.00
C.F.A. hinds - 10 @ $271 each	$ 2,710.00
Yearling hinds (sold on farm) - 25 @ $1,200	$30,000.00

Yearling stags (sold on farm) - 43 @ $200	$ 8,600.00
Velvet - 5 stags, 2 kg/head @ $94.30/kg (av.)	943.00
GROSS REVENUE	$42,795.00
Direct Costs (per 100 hinds):	
Animal health - @ $3.50/head	$ 423.50
Freight - culled hinds and replacement stag, @ $5.50/head	$ 71.50
Supplementary feed - hay 2 bales per head @ $4 per bale	$ 968.00
- concentrates, 100 kg nuts to adult stags and 50 kg to all other stock @ $351.87/tonne	$ 2,076.03
Velvet harvesting - vet, etc. @ $25/stag	$ 125.00
Commission - $41,310 @ 7.25%	$ 2,994.98
Stock purchase - half stag @ $2,500	$ 1,250.00
TOTAL DIRECT COSTS	$ 7,909.01
GROSS MARGIN PER 100 HINDS	$34,886
GROSS MARGIN PER HIND (÷ 100)	$ 349
GROSS MARGIN PER STOCK UNIT (÷ 173)	$ 202

Example 2.

This example gross margin is for a policy of running velveting stags and buying replacements. Cull animals are processed as venison.

No. on Hand (1 July)	Stock Units	Capital Value ($)
100 Mixed aged stags	150	67,500
15 yearling stags	15	3,000
115	165	70,500
Purchases	Deaths	
15 weaner stags	5	
	Sales	
	2 cull stags	
	8 C.F.A. stags	
15	15	

GROSS REVENUE (per 100 stags):	
Cull stags - 2 @ $405.50 (90 kg dressed @ $4.25/kg = $382.50 plus by-products @ $23.00)	$ 811.00
C.F.A. stags - 8 @ $300.00	$ 2,400.00

Velvet - 100 stags, 2 kg/head @ $94.30/kg (av.)	$18,860.00
- 15 yearlings, 0.6 kg/head @ $10/kg	$ 90.00
GROSS REVENUE	$22,161.00
Direct Costs (per 100 stags):	
Animal health - at $3.50/head	$ 402.50
Freight - culled stags plus purchased replacements @ $5.50/head	$ 137.50
Supplementary feed - hay, 2 bales per head @ $4/bale	$ 920.00
- concentrates, 100 kg nuts to adult stags and 50 kg to all young stock @ $351.87/tonne	$ 3,782.60
Velvet harvesting - vet, etc. @ $25/stag	$ 2,875.00
Stock purchase - 15 weaner stags @ $150 each	$ 2,250.00
TOTAL DIRECT COSTS	$10,367.60
GROSS MARGIN PER 100 STAGS	$11,793.40
GROSS MARGIN PER STAG (÷ 100)	$ 118.00
GROSS MARGIN PER STOCK UNIT (÷ 165)	$ 71.50

Summary:
The gross margin per stock unit for a breeding policy is $130.50 higher than that of velveting policy.

It should be noted that the prices for deer products are subject to wide variation, particularly velvet and live animals. In early 1980 the price paid for good quality velvet fell to approximately $150 per kilogram, a drop of almost $100 from the previous month's price. The December 1982 price of $105 per kilogram is a reflection of a downturn in the South Korean economy and the increase in availability of velvet from other sources e.g. China and the Soviet Union. There is no real degree of certainty associated with deer product marketing.

This highlights the fact, that when calculating any gross margin, check on the up to date prices for revenue and expenditure items.

5.2.10 Chicken Gross Margin Analysis

Two gross margins for different enterprises are included in this section, the first for meat chickens, and the second for layers. They are intended as a rough guide only, as the size of the enterprise, and whether or not

the operator is working within a contract system (meat, chicken system only) affects the costing greatly.

(i) Physical and Financial Parameters

(a) Meat Chickens
- 1 to 2.5% Mortality.
- 1.5 to 2.0 kg liveweight when killed.
- Dressing out percentage 67 to 73%.
- Average 43-44 days from hatch to maturity.
- 2.0 to 2.4 feed/liveweight conversion.
- Assume $1.15 kg liveweight.

(b) Layers
- 7 to 15% mortality.
- 12 month laying period.
- 220 to 260 eggs per bird.
- Feed conversion of 1.7 to 3.0 kg feed per dozen eggs.
- Eggs 112c/dozen.

However, entitlement and various other levies are imposed and the final returns are likely to be 103.91c (N.I.) and 103.03c (S.I.).
- Cull bird meat, 40c per kg (average bird 2.0 kg).

(ii) Meat Chicken Gross Margin
(per 1,000 birds - as at 2 February 1982)

For the meat chicken gross margin two different costings are given based on:

(a) A small or part time chicken operator with 1 - 3,000 birds per batch.

(b) A full time meat chicken operator with 20 - 30,000 birds per batch. This is normally a contract operation in which the contracting firm pays for feed, day old chicks, litter, and most health costs and deducts these costs from the payout.

Physical Parameters.
1.5% mortality.
1.75 kg liveweight.
70% dressing out.
47 days hatch to maturity.
2.2 feed/liveweight conversion.

Expenditure:

	(a)	(b)
Day old chicks @ 37-42c ea.	$ 420.00	$ 370.00
Feed 3.85kg/bird @ 34c/kg (bulk)	$1,309.00	$1,309.00
Sawdust or shavings 1.5c/bird	$ 15.00	$ 15.00
Animal Health 1.5c/bird	$ 15.00	$ 15.00
Electricity 7-10c/bird	$ 100.00	$ 70.00
Repairs and Maintenance 1.4-1.6c/bird	$ 16.00	$ 14.00
TOTAL EXPENDITURE	$1,875.00	$1,793.00

Revenue:

985 birds @ 1.75 kg liveweight @ $1.15/kg	$1,982.31	$1,982.31
TOTAL REVENUE	$1,982.31	$1,982.31

With total revenue being about $1,930 in each case, this gives a gross margin of $138 per thousand birds in the case of (a) and of $189 in the case of (b). These are very variable however. An independent operator may decide to have his birds processed (at a cost of approx. 60c per bird) and market them himself increasing the gross margin markedly.

E.g. for case (a)
Total revenue becomes $3,368 (985 birds at 1.2 kg dressed out weight at $2.85 per kg) and total expenses are $2,466 ($591 processing plus $1,797) giving a gross margin of $902 per thousand birds.

N.B. This extra margin will be partially offset by extra costs involved, e.g. marketing labour and overheads - costs which are not usually included in gross margin analysis.

(iii) Layer Chicken Gross Margin
(per 1000 birds)

Physical Parameters
15% mortality.
12 month lay 235 eggs per bird.
Feed conversion 2.1 kg feed per dozen eggs.
Eggs 103.03c per dozen net of levy (South Island prices).

Cull birds 40c/kg - average bird 2.0 kg at end of lay.
Average unit has 8,000 birds.

Expenditure:

Stock (layer pullets) at $4.00 each	$ 4,000.00
Feed 41 kg/bird @ 28.2c/kg (bulk)	$11,562.00
Animal health 6c/bird	$ 60.00
Electricity 31.6c/bird	$ 316.00
Repairs and Maintenance 35c/bird	$ 35.00
Freight 1.6c per dozen	$ 312.00
TOTAL EXPENDITURE	$16,285.00

Revenue:

19.5 dozen eggs per bird @ 103.03c per dozen (net of levy)	$20,090.85
850 cull birds @ 2.0 kg @ 40c/kg	$ 680.00
TOTAL REVENUE	$20,770.85

With total revenue about $20,771 and total expenditure of $16,285 we have a gross margin for this enterprise of $4,486 per thousand birds.

5.3 CASH FLOWS FOR LONG TERM CROPS

5.3.1 Blackcurrants

(Based on 1 ha 1981 costs and prices)

Establishment. Year 1.

Materials		
Cuttings - 39,200 @ 6c (1.7m x 15cm)	2,352	
Plastic - 6,000m @ $33/1,000	198	
Clover - 11 kg (red and white)	25	
Fertiliser - Nitrophoska 0.5t @ $297/t	148	
Spray Materials	89	
Electricity (irrigation)	55	
		2,867
Machinery (hours)		
Soil preparation	25	
Plastic laying	14	
Fertilising	2	
Seed sowing	2	
Mowing	24	
Spraying	12	
	79	
79 hours @ $10/hour		790
Labour (hours)		
Planting costs	150	
Machine hours	79	
Irrigation laying	40	
Plastic laying	56	
Sundry	32	
	357	
357 hours @ $5/hour		1,785
TOTAL ESTABLISHMENT COSTS		5,442

CASH FLOW. 1 ha Blackcurrants : 7 years

	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Gross Income $900/t	-	2,007 (2.23t)	6,588 (7.32t)	7,101 (7.89t)	9,243 (10.27t)	2,331 (2.59t)	2,763 (3.07t)
Less Harvest-ing $13/hr	-	264	442	442	420	420	264
Income Net of Harvest-ing	-	1,743	6,146	6,659	8,823	1,911	2,499
Less Packing Freezing and Transport $135/t	-	301	988	1,065	1,386	350	414
Income Net of Harvest-ing and Marketing	-	1,442	5,158	5,594	7,437	1,561	2,085
Less Product'n Costs	5,442	773	1,014	1,014	1,014	1,014	695
Income Net of Product'n Harvest-ing and Marketing Costs	-5,442	-83	3,392	3,828	5,671	-205	638

5.3.2 Boysenberries

Costs for the establishment, production, harvesting and marketing for a 1 hectare block of boysenberies over an eight year period.

Details of cost for Year 0 (establishment year) and Year 5 (typical of full production year) only are included.

Assumptions:

Costings are estimated per hectare. Machinery has been charged at $6 per hour and labour $4 per hour. The spray schedule followed is that set out by the Fruit Growers Federation, with Simazine and Sinbar used for weed control. Packing is done by the pickers as they pick. All the crop goes into Watties for dessert or processing (jam).

90% of yield is dessert.
10% of yield is jam.

Costs:

Year 0 (establishment)

Plants (July) 2m x 3 m plantings 1580 plants per hectare at $0.80 cents per plant		$1,264.00
Fertiliser (September) 100 kg of Ammophos NPK 12.10.10		$ 33.85
Trellis (May-June) Strainer assembly 100/hectare at $3.84 for poles (3 x) = $11.52 x 100	$1,152	
Intermediate posts 300 per hectare at $6.36	$1,908	
Wires (3 pr row) 15,000 metres high tensile 2.5mm guage at $5.25 per 656m	$ 600	
Staples	$ 30	
TOTAL TRELLIS ESTABLISHMENT		$3,690.00
Irrigation (trickle) 5000m at $68.75 per 200m		$1,178.75
Sprays (mid August - early October) Fungicide and Insecticides Herbicides		$ 132.80 $ 28.26
Polythene (first year mulch)		

$40 per roll, 500 metre rolls 50 rows per hectare = 10 rolls			$ 400.00
Wires (for cane training)			$ 20.00
Machinery (based on $6 per hour)			
Cultivation and levelling	20 hours	$120.00	
Spraying	18 hours	$108.00	
Fertiliser (September)	4 hours	$ 24.00	
Post-driver (June)	30 hours	$150.00	
Polythene layer	30 hours	$180.00	
TOTAL MACHINERY			$ 582.00
Labour (based on $4.00 per hour)			
(a) Non Harvest			
Trellis Establishment	150 hours	$600.00	
Cultivation	20 hours	$ 80.00	
Marking Out	20 hours	$ 80.00	
Planting	15 hours	$ 60.00	
Irrigation Establishment	40 hours	$160.00	
Spraying	48 hours	$192.00	
Fertilising spreading	4 hours	$ 16.00	
Pruning Canes (April)	20 hours	$ 80.00	
Plastic Laying	30 hours	$120.00	
TOTAL NON HARVEST LABOUR			$1,388.00
TOTAL YEAR ZERO EXPENSES			$9,256.91

Returns: 0

Costs: $9,256.91

Deficit: $9,256.91

Year 5

Fertiliser	$ 67.70
Sprays	$666.08
Machinery	$359.00
Labour (a) Non harvest	$6,655.00

Repairs and maintenance to trellis and wires (20 hours)	$ 80.00	
TOTAL NON HARVEST LABOUR	$6,745.00	
(b) Harvest		
Yield = 23 tonnes/ha = 23,000 kg/ha		
Harvesting	$5,060.00	
Supervision	$ 345.00	
TOTAL HARVESTING LABOUR	$5,405.00	
TOTAL LABOUR		$12,150.00
Freight		$ 297.00
TOTAL FIFTH YEAR EXPENSES		$13,539.78

Returns: 23 tonnes
Dessert = 20.7 tonnes x $1100 per tonne
= $22,770

Jam = 2.3 tonnes x $750 per tonne
= $1,725

	$24,495.00
Costs	$13,539.78
Surplus	$10,955.22

Year six, seven and eight will yield and have expenditures roughly in line with year five subject to seasonal or other variations.

NINE YEAR SUMMARY

Year	0	1	2	3	4
Returns	-	-	15,975.00	19,702.50	20,980.50
Costs					
Establishment	8,622.75	-	-	-	-
Production	633.25	747.14	6,704.81	7.757.78	7,757.81
Harvest/ Marketing	-	-	3,718.80	4,589.73	4,883.50
Net Cash Flow	-9,256.91	-747.14	+5,551.39	+7,354.97	+8,339.19
Accumulated Cash Flow	-9,256.91	-10,004.05	-4,452.66	+2,902.31	+11,241.50

NINE YEAR SUMMARY (contd)

Year	5	6	7	8
Returns	24,495.00	24,496.00	24,495.00	24,495.00
Costs				
Establishment	-	-	-	-
Production	7,837.78	7,837.78	7,837.78	7,837.78
Harvest/ Marketing	5,702.00	5,702.00	5,702.00	5,702.00
Net Cash Flow	+10,995.22	+20,995.22	+10,994.22	+10,995.22
Accumulated Cash Flow	22,196.76	33,151.94	44,107.16	55,062.88

5.3.3 Strawberries

The following is a cash flow estimate for 2,000 strawberry plants of the variety Red Gauntlet, grown under Canterbury conditions. (Establishment, production, harvesting and marketing over 3 years.)

Assumptions:

Costings are estimated as for October 1982.
It is assumed the grower has the following (they are not included in the cash flow):

Land
Buildings
Tractor and implements
Irrigation pump
Truck

All fruit is sold through the local market.
Prices have been based on the average monthly prices obtained in the Christchurch Market during the 1981/82 season.
Labour attributable to harvesting (picking, supervision, cartage, packing shed) accounts for a labour cost of 37c/punnet - comprised as follows:

Adult award wage $3.86 plus 10% for piecework = $4.25. Assume average picker picks 17 punnets/hour therefore piecerate =

$$\frac{\$4.25}{17} = 25c/\text{punnet}$$

Assume supervision, cartage, packing shed, labour adds another 12c/punnet = 37c/punnet total labour cost.

YEAR 1

Cultivation		
Rotary hoeing 2 x, subsoiling, harrowing rolling		
1 hour machinery @ $5/hr	5.00	
1 hour labour @ $4/hr	4.00	
		9.00
Fertiliser		
42 kg potassic super @ $130/t	5.46	
105 kg berrymix 8.4.8 @ $240/t	25.44	
labour - 2 hrs @ $4/hr	8.00	
		38.90

Polythene		
500m @ $45/500m	45.00	
Polythene laying (by hand)		
5 hrs @ $4/hr	20.00	
Plastic (cloches) - 500m @		
$30/500m	30.00	
		95.00
Plants - (May planting)		
Single rows 900mm x 23mm		
200 plants @ $50/1000	100.00	
planting 600/hr @ $/hr	13.00	
		113.00
Irrigation		
500m biwall @ 30c/m	150.00	
20m lateral (50 mm) @ $1.40/m	28.00	
Operating costs	10.00	
		188.00
Weed Control		
Simazine 200 gm @ $14/kg	2.80	
Labour (hand weeding)		
2 hrs @ $4/hr	8.00	
Spraying 1 hr @ $$/hr	4.00	
		14.80
Straw		
12 bales @ $1.50 ea.	18.00	
labour 2 hrs @ $4/hr	8.00	
		26.00
Pesticides - 8.5 litres/2000		
plants in Year 1		
Pre-flowering - 3 sprays		
3 x Copper oxychloride		
$25.5g/8.5 l)		
0.07 kg @ $3.70/kg	0.28	
1 x Plictan (2 g/8.5 l)		
2 g @ $50/kg	0.10	
1 x Metasystox (0.06 l/2000 plants)		
0.06 l @ $13.75/l	0.83	
Flowering - 4 sprays		
4 x Roval (8.5 gm/8.5 l)		
34 gms @ $46/kg	1.56	
4 x Captan (8.5 gms/8.5 l)		
34 gms @ $19.40/kg	0.66	
1 x Plictan (2 g/8.5 l)		
2 gms @ $50/kg	0.10	

Post-flowering - 13 sprays		
13 x Rovral (8.5 gms/8.5 l)		
110.5 gms @ $46/kg	5.06	
13 x Vapona (2.3 gms/8.5 l)		
30 mls @ $23/l	0.69	
13 x Captan (8.5 gms/8.5 l)		
110.5 gms @ $19.40/kg	2.14	
		11.42
Application Costs		
Labour - 19 sprays @ 20 mins/spray		
6.5 hrs @ $4/hr		26.00
Transport		
To market		20.00
TOTAL PRODUCTION COSTS		$542.12
Labour harvesting/packaging		
325 punnets x 0.37c/punnet		120.00
Packaging		
Punnets (local market)		
325 @ $50/100	16.25	
Rubberbands	1.64	
Cellophane @ $12/1000	3.90	
Local market cartons		
27 @ $56/100	15.00	
		36.80
TOTAL HARVEST COSTS		$156.80
TOTAL COSTS		$698.92

REVENUE
325 punnets

	No. of Punnets	Price/Punnet ($)	Returns	
October	75	2.25	168.75	
November	150	0.88	132.00	
December	100	0.71	71.00	
				$371.75
			-10% commission	37.17
TOTAL RETURNS				$334.58
DEFICIT				$364.34

YEAR 2

Fertiliser		
Liquid feed 12.5 kg KNO_3 @ $3.80/5kg	9.50	
Urea (negligible cost)		9.50
Irrigation		
Operating costs		30.00
Weed control		
As for Year 1		14.80
Straw		
(half year one quantity)		13.00
Plant Clean-up		
6 hrs labour @ $4/hr		24.00
Pesticides		
(2 x year one costs)		114.84
Transport		
To local market		140.00
TOTAL PRODUCTION COSTS		$346.14
Labour, Harvesting/Packaging		
Labour		
5666 x 0.37c/punnet		2,096.42
Packaging		
punnets - 5666 @ $50/1000	280.00	
Cellophane @ $12/1000	67.20	
Rubberbands	12.00	
Local market cartons 472 @ $56/100	264.32	
		623.52
TOTAL HARVEST COSTS		$2,719.94
TOTAL COSTS		$3,066.08

RETURNS

	No. of Punnets	Price/punnet ($)	Returns
January	708	1.25	885.00
February	1,416	1.20	1,699.02
March	708	0.65	460.20
April	568	0.76	431.68

October	538	2.25	1,210.50	
November	1,020	0.88	897.60	
December	708	0.71	502.68	
				$6,086.86
		-10% commission		$608.68
NET RETURNS				$5,478.18
SURPLUS				$2,412.10

YEAR 3 (same costs and returns as Year 2)

5.3.4 Raspberries

Capital Costs (5 ha)

Machinery (small tractor, trailer, rotary hoe, cultivators, spray equipment, buckrake, irrigation, sundry tools and equipment)	$25,000

Costs for 1 ha

Year One

Capital Costs:	
Machinery (as above)	5,000
Ground preparation plants and planting	2,794
irrigation system (other than basic equipment - above)	1,342
Shelter	200
Trellises	1,579
	10,915
Production Costs:	
Fertiliser	433
Weed control	168
Irrigation operating costs	200
Insect and disease control	113
	914

Returns: Nil

Cash Flow: - $11,829

YEAR TWO

Capital Costs:	
Cool Store Shares	1,034

Production Costs:	
Fertiliser	427
Weed Control	544
Insect and disease control	1,123
Irrigation operating costs	200
Training and pruning	105
Harvesting	2,556
	4,955
Returns: 5.2 tonnes @ $1.30 per kg	6,760

Cash Flow: $771

YEAR THREE

Capital Costs:	
Cool Store Shares	1,448
Production Costs:	
Fertiliser	427
Weed Control	544
Insect and disease control	1,123
Irrigation operating costs	200
Training and pruning	464
Harvesting	6,060
	8,818
Returns:	
12 tonnes @ $1.30 per kg	15,600

Cash Flow: $5,334

YEAR FOUR

Capital Costs: Nil	
Production Costs:	
Same as for Year 3	8,818
Returns:	
Same as for Year 3	15,600

Cash Flow: $6,782

Development Budget for 1 ha Raspberries

Years	1	2	3	4
Yield (t)	Nil	5.2	12	12
Gross Revenue ($)	-	6,760	15,600	15,600
less Harvesting Costs	-	2,556	6,060	6,060
Net Revenue	-	4,204	9,540	9,540
Capital Costs	10,915	1,034	1,448	-
Production Costs	914	2,399	2,758	2,758
Total Costs	11,829	3,433	4,206	2,758
Annual Cash Flow	-11,829	771	5,334	6,782
Accumulated Cash Flow	-11,829	-11,058	-5,724	+1,058

5.3.5 Blueberries
(1 ha - 2778 plants)

Income - No. of plants = 2,778

Year	Kg/plant	Total Crop (kg)	Local Income $1.50/kg	Export Income $3.00/kg	TOTAL
3	1.3	3,612	2,709	5,418	8,127
4	2.2	6,112	4,584	9,168	13,752
5	3.8	10,556	7,917	15,834	23,751
6	5.4	15,001	11,251	22,501	33,752
7	7.0	19,446	14,584	29,169	43,753

(Assume half the total crop export, half local)

Working Costs

Year 2

Cultivation	30
Herbicide (Roundup)	150

Sawdust mulch	450	
		630
Year 3		
Irrigation and frost control	300	
Mowing (including labour)	300	
Fertiliser	175	
Sprays	300	
Pruning	500	
Repairs and Maintenance	500	
		2,075
Capital Costs		
Year 1		
Cost of plants 2,778 @ $3/plant	8,340	
Irrigation (overhead)	5,000	
		13,340
Year 3		
Framework and netting		10,600

BLUEBERRIES CASH FLOW $/ha

	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	...	Year 12
Income				8,127	13,752	23,751	33,752	43,753	...	43,753
Harvesting & Marketing Costs				2,616	4,298	7,195	10,212	13,229	...	13,229
Working Costs		630	2,075	2,075	2,075	2,075	2,075	2,075	...	2,075
Capital Costs	13,340			10,600						
Total Costs	13,340	630	2,075	15,291	6,363	9,270	12,287	15,304	...	15,304
Net Cash Flow	-13,340	-630	-2,075	-7,164	7,379	14,481	21,465	28,449	...	28,449
Accumulated Cash Flow	-13,340	-13,970	-16,045	-23,209	-15,830	-1,349	20,116	48,565		

5.3.6 Kiwifruit

(1 ha Hayward Variety - costing for Bay of Plenty area as at January 1982)

Harvesting:

Year	4	5	6	7	8	9	10
Labour @ $4/hr	120	320	480	690	850	1,050	1,240
Tractor @ $1.50/hr	2	6	10	15	20	25	30
TOTAL	122	326	490	705	870	1,075	1,270

Marketing:

Yield: (t/ha)					
export trays (90%)	4	6	10	15	18
Therefore total					
export trays	1,030	1,545	2,570	3,855	4,630
NB: 1 tray 3.5 kg					
Packhouse Charge: (grading and packing) $2.25/tray	2,318	3,476	5,782	8,674	10,420
Transport to packing store	63				
$2/bin	63	95	158	237	285
TOTAL	3,411	5,116	8,510	12,766	15,335

Returns:

Export trays @ $8/tray	8,240	12,360	20,560	30,840	37,040
Processed (10%) @ 70c/kg	280	420	700	1,050	1,260
TOTAL	8,520	12,780	21,260	31,890	38,300

Establishment Costs:

Irrigation (trickle) for shelter		107**	
Shelter belt (Year 1)			
Ripping	1 hr @ $10/hr	10	
Rotary hoeing	2 hrs @ $15/hr	30	
Plants (Crytomeria)	@ 2.5m spacing = 160 trees @ $75/100)	120	
Labour for above	17.5 hrs @ $4/hr	70	
TOTAL YEAR 1			230

Preparation and planting (year 3)			
Irrigation (trickle for vines)		511**	
Ripping	2 hrs @ $10/hr		
Rotary hoeing	6 hrs @ $15/hr		
Marking out	Labour 15 hrs @ $4/hr (string 200m plus 15 pegs = $20)		
Fence construction	T-bar with box sectioned assembly 2.75m 2 founds spaced 6m intra-row, 4.5m inter-row	1,850	
Plants (bought Year 2)	4.5 x 6m spacing, 335 @ $1/plant	335*	
Grafting and planting out	170 hrs (year 3) * 7 hrs (year 4 replace)	708	
Base fertiliser	(allowance made, i.e. based on MAF soil test)	100	
TOTAL YEAR 3			2,658

Production Costs:

Year	1	2	3	4	5	6	7	8	9	10
Mowing: 18 hrs/yr, man & mower	150	150	150	150	150	150	150	150	150	150
Weed spraying: (Roundup 1:100) 24088/l	100	100	100	100	100	100	100	100	100	100
Handwork:										
- vines (tying-up) $4/hr			120							
- shelter $4/hr	20	20	20	20						
Fertiliser: (see schedule)	85	45	165	150	130	130	130	130	130	130
Pest control: (see schedule)			80	150	210	350	490	490	490	490
Training and Pruning: @ $4/hr			655	450	500	550	600	600	600	600
Bees: 5 hives/ha @ $40/hive						200	200	200	200	200
TOTALS	355	315	1300	1020	1090	1480	1670	1670	1670	1670

* Establishment charge made in Year 2.
** Irrigation charged as a capital cost (not establishment) as follows:

NB: Only crop related costings (no capital costs of pump, filter etc.)

Shelter:

Year 1 -	400 m lateral (13 mm) @ $18/100 m	72.00	
	160 m microjets @ $21.78/100 m	35.00	
			$107.00/ha

Vines:

Year 2 -	2,200 m lateral (13 mm) @ $18/100 m		396.00
	100 m submain (32 mm) @ $42.50/100 m		42.50
	335 microjets @ $21.78/100 m		72.96
			$511.46/ha

CASH FLOW: KIWIFRUIT 'HAYWARD'
1 ha in the Bay of Plenty over 10 years (T-bar fencing) January 1982

Year:	0	1	2	3	4	5	6	7	8	9	10
Income					350	1,400	8,520	12,780	21,260	31,890	38,300
- marketing and harvesting costs					122	326	3,901	5,821	9,380	13,841	16,605
Net Return					228	1,074	4,619	6,959	11,880	18,049	21,695
Establishment Costs		230	335	2,658							
Production Costs		355	315	1,300	1,020	1,090	1,480	1,670	1,670	1,670	1,670
Capital Costs	25,000	107		511							
TOTAL COSTS	25,000	692	650	4,469	1,020	1,090	1,480	1,670	1,670	1,670	1,670
Net Cash Flow	-25,000	-692	-650	-4,469	-792	-16	3,139	5,289	10,219	16,379	20,025
Accumulated Cash Flow	-25,000	-25,692	-25,342	-30,811	-31,603	-31,619	-28,480	-23,191	-12,972	3,407	23,432

THE EFFECT OF YIELD AND PRICE VARIATIONS ON GROSS RETURNS PER HA PER YEAR FOR KIWIFRUIT
('HAYWARD') AT 90% EXPORT
(no account of process fruit)

Yield t/ha trays/ha 90% exp.	6			7			8			9			10		
Returns ($/tray)															
7.50	2,888	7,725	11,588	7,725	11,588	16,383	15,428	19,275	24,112	24,112	28,928	32,775	29,888	34,710	38,588
8.00	3,080	8,240	12,360	8,240	12,360	17,480	16,456	20,560	25,720	25,720	30,840	34,960	31,880	37,040	41,160
8.50	3,272	8,755	13,132	8,755	13,132	18,572	17,485	21,845	27,327	27,327	32,785	37,145	33,872	39,338	43,732

5.3.7 Grapes
(for wine production in Canterbury)
(1981 costs and prices)

Income

- The price received is $350/tonne.
- The crop is mechanically harvested by contract at a cost of $40/tonne.

Yields	Year 1	2	3	4	5	6
Tonne/hectare			6	12	18	18
Harvest cost			$240	$480	$720	$720
Annual returns			$2,100	$4,200	$6,300	$6,300
Returns - harvest cost			$1,860	$3,720	$5,580	$5,580

ESTIMATED COSTS OF ESTABLISHMENT YEAR 1:

Growing Costs	No. x	hours or Quantity/ha	Equipment	Unit Rate	Total Cost/ Hectare
Cultivation					
Plough	1	2 hours	LTE	17.00	34.00
Discing	2	1.5 hours	LTE	17.00	51.00
Rotary hoe	1	2 hours	LTRH	19.00	38.00
Planting					
Marking out		1.5	LT	15.00	22.50
Cuttings		2,260		0.50	1,130.00
Planting	1	16 hours	L*	4.00	64.00
Weed spray	1	3 l/ha over .33 ha	Simazine	10.00	10.00
Labour		1 hour	LTS	22.00	22.00
Inter-row cultivation	2	2.5 hours	LTRH	19.00	95.00
Hand weeding	1	5 hours	L*	4.00	20.00
TOTAL COSTS					1,486.50

KEY:

			Hourly rate $
L	-	Labour	5.00
L*	-	Labour	4.00
T	-	Tractor	10.00
E	-	Equipment	2.00
RH	-	Rotary hoe	4.00
S	-	Sprayer	7.00

ESTIMATED COSTS OF ESTABLISHMENT YEAR 2:

Growing Costs	No. x	Hours or Quantity/ha	Equipment/ Materials	Unit Rate	Total Cost/ Hectare
Pruning	1	20 hours	L*	4.00	80.00
Trellis Erection:					
Cartage/layout		7 hours	LT	15.00	105.00
Driving posts		620 posts		1.00	620.00
Assembly		80 hours	L*	4.00	320.00
Posts		620 p, 2.7m		6.90	4,278.00
Wire	37	(coils), 24,200m	12 gauge ht	25.00	925.00
Staples	620	(x2) 114/kg		1.60/kg	17.40
Nails	620	(x4) 43/kg	galv. 2"	3.50/kg	202.00
Strainers		3/row,		1.50/kg	90.00
Replants 8%	200		Cuttings	.50	100.00
labour		4.0 hours	L*	4.00	16.00
Tying and Disbudding	2	22 hours	L*	4.00	176.00
String		0.6 m/plant		$20/3,000m	10.00
Training		60 hours	L*	4.00	240.00
Weeds spray		3 ha over .33 ar.	Simazine	10.00	10.00
		2.5 hours	LTS (both)	22.00	55.00
		3 l/ha over .33 ar.	Preglone	9.00	10.00
Inter-row cultivation	4	2.5 hours	LTRH	19.00	190.00
Hand weeding	1	5 hours	L	4.00	20.00
Sprays		See over page.			50.00
TOTAL GROWING COSTS					$7,434.40

ESTIMATED COST OF PRODUCTION YEAR 3:

Growing Costs	No. x	Hours/ Quantity/ Hectare	Equipment/ Materials	Unit Rate	Total Cost/ Hectare
Pruning		88 hours	L*	4.00	352.00
Replants (2%)		53 cuttings		0.5	27.00
		2 hours	L*	4.00	8.00
Vine Control:					
Tucking in		20 hours	L*	4.00	80.00
Tying Down		15 hours	L*	4.00	60.00
Debudding		14 hours	L*	4.00	56.00
Weed spray		Same as 2nd year			87.50
Cultivation	4	2.5	LTRH	19.00	190.00
Hand weeding	1	5	L*	4.00	20.00
Sprays		See over page.			199.00
Labour	6	1.5	LTS	22.00	198.00
TOTAL GROWING COSTS					1,277.50

SPRAY PROGRAMME

Spraying commences in the year after planting. A full programme is followed from the third year onwards.

Time	Material	Rate/ha	Unit Rate	2nd yr $/ha	3rd + $/ha
Bud burst	Kocide	2.0 kg	$ 5.00/kg	10.00	10.00
Mid Oct.	Microsul	1.7 kg	$ 2.00/kg		3.40
Early Nov.	Microsul	1.7 kg	$ 2.00	2.00	3.40
Mid Nov.	Euparen	2.2 kg	25.00	25.00	55.00
Dec. Post Bloom	Carbaryl	1.7 kg	8.00		13.60
Jan. small berry	Microsul	6.7 kg	2.00	13.40	13.40
March - just prior to harvest	Mesurol	2.0 kg	50.00		100.00
TOTAL				50.40	198.80

Kocide and Euparen - Downy mildew
Euparen - Botrytis
Micosul - Powdery Mildew
Mesurol - bird repellent
Carbaryl - mealy bug, thrips, bronze beetle, cutworm.

CASH FLOW. Costs and prices are as at March 1981. Per hectare

Year			3	4	5	6	7	8	9	10
Gross Revenue	-	-	2,100	4,200	6,300	6,300	6,300	6,300	6,300	6,300
Less Harvest and Marketing Costs			240	480	720	720	720	720	720	720
Net Revenue			1,860	3,720	5,580	5,580	5,580	5,580	5,580	5,580
Capital expenditure										
Crop establishment	1,486.50	7,434.4	-	-	-	-	-	-	-	-
Cash farm expenses	-	-	1,277.5	1,277.5	1,277.5	1,277.5	1,277.5	1,277.5	1,277.5	1,277.5
Total cash expenditure	1,486.5	7,434.4	1,277.5	1,277.5	1,277.5	1,277.5	1,277.5	1,277.5	1,277.5	1,277.5
Cash receipts	-	-	1,860	3,720	5,580	5,580	5,580	5,580	5,580	5,580
Cash expenditure	1,486.5	7,434.4	1,277.5	1,277.5	1,277.5	1,277.5	1,277.5	1,277.5	1,277.5	1,277.5
Cash flow	-1,486.5	-7,434.4	582.5	2,442.5	4,302.5	4,302.5	4,302.5	4,302.5	4,302.5	4,302.5
Accumulated cash flow	-1,486.5	-8,920.9	-8,338.4	-5,895.9	-1593.4	2,709.1	7,011.6	11,314.1	15,616.6	9,919.1

5.3.8 Sweet Cherry

Cash flows for one hectare sweet cherry orchard.
Established and managed as either:

(i) Traditional (T) (7 x 7m spacing, 200 trees/ha.
(ii) Semi-traditional (S) (4.5 x 3.65m spacing, 600 trees/ha).
(iii) Hedgerow plantings (H) (1m x 4.5m spacing, 2,225 trees/ha).

Costings per hectare as for March 1981.
Machinery and labour $4/hour.
Sprays on per hectare basis.
10-12 kg bins - $5.00 each.
Wooden ladders $75.00 each.

(i) Traditional

Year 0

Establishment:

Trees 7m x 7m = 200/ha @ $3.25	650
Fertiliser 1 kg/tree = 4 sacks @ $20	80
Machinery based on $4/hr	
- cultivation 1 subsoil	
3 cultivations	8
- fertiliser spreading	8
- planting 10 hours	40
Labour based on $4/hour	
- cultivation	8
- fertiliser spreading	8
- planting 20 hours	80
Overhead irrigation (per ha)	4,000
	$4,882

Year 1

Production:

Pesticides	
- spray programme	100
- weedwiper "Roundup" $100/5 l	25
Irrigation	
- 20 kw motor	
- 5 hours, 10 applications, 5c/kw/hr	50
Machinery	
- spraying - 5 sprays, .5 hour	10
- pruning, 2 hours (buckraking)	8
- cultivation, 5 x .5 hour	10

Labour	
- spraying, 5 hours	20
- weed wiping	20
- pruning, 3 hours	12
- cultivation, 2.5 hours	10
- general: administration, irrigation, maintenance	100
	$365

Year 2

Production: As for Year 1.	
Plus fertiliser as for Year 0	80
Fertiliser spreading costs	
- machinery	8
- labour	8
	$461

Year 3

Production:	
Pesticides	
- spray programme	150
- herbicide strip "Roundup" (hours 12)	75
Fertiliser	
- orchard 8:4:8 NPK. 1 kg/tree	80
Irrigation	
- electricity (until year 12)	50
Machinery	
- spray programme, 3.5 hours	14
- herbicide-strip boom spraying (to year 12)	8
- fertiliser spreading (to year 12)	8
- pruning	8
- mowing 10 x .25 hour (to year 12)	20
Labour	
- spraying, 7.5 hours	30
- boom (until year 12)	8
- fertiliser (until year 12)	8
- pruning	30
- mowing, 5 hours (until year 12)	20
- general (until year 12)	100
	$609

Capital:	
Mower	
- ($1,500) 1 ha proportion	$150

Year 4

Production: As for Year 3 plus:

Additional	
- spray programme	200
- fertiliser 2 kg/tree	160
- spraying machinery	20
- pruning machinery	20
- spraying labour	40
- first detail pruning	80
	$817

Harvesting:	
Labour	
- 3 mins/tree (10 hours)	40
Machinery (2 hours)	8
	$48

Marketing:	
Packing materials	
- 50 boxes (2 kg cartons) @ $0.65 each	33
Packing labour	
- 5 boxes/hour	40
allows for other workers in shed	
Toll Calls	10
Freight - $0.50/box	25
	$108

Revenue:	
100 kg @ $2.25/kg	$225

Capital:	
Picking bins 10 x $5.00	$50

Year 5

Production:

As for Year 4 but alter the following to read:

Spray programme (now need Mesurol)	300
Spray machinery	24
Spray labour	50
	$931

Harvesting:	
Labour	
- 6 mins/tree (20 hours)	80
Machinery	15
	$95
Marketing:	
Packing materials (100 boxes)	65
Packing labour	80
Toll calls	15
Freight	50
	$210
Capital:	
10 picking bins @ $5.00	50
2 ladders @ $75.00	150
	$200
Revenue:	
200 kg @ $2.25	$450

Year 6

Capital:	
20 picking bins @ $5.00	100
2 ladders	150
1 grader (1 ha proportion)	150
	$400
Production:	
As for Year 5 but following now:	
Spraying programme (full protective and Mesurol)	500
Fertiliser	240
Spraying	
- machinery (as for previous year)	24
- labour (as for previous year)	50
	$1,221

Harvesting:	
Labour	
- 2 harvests 6 mins/tree	160
Machinery	20
	$180
Marketing:	
Packing materials 200 x $0.65	135
Packing labour	
- with grader, 6 boxes/hour	135
Grader electricity	5
Toll calls	25
Freight	100
	$400
Revenue:	
400 kg @ $2.25	$900

Year 7

Production:	
Additional to previous years	
- amend these headings:	
Spray programme	550
Pruning	
- machinery	40
- labour	160
	$1,361
Harvesting:	
Contract rate $0.50/kg	500
Machinery	50
	$550
Marketing:	
Packing materials	
- 500 boxes	325
Labour	
- 6 boxes/hour	335
Grader electricity	10
Toll calls	50
Freight	250
Promotion	150
	$1,120
Revenue: 1000 kg	$2,250

	Year 8	Year 9	Year 10	Year 11	Year 12
Capital:					
Bins @ $5 each	$ 700	$ 1,250			
Ladders @ $75 ea	150				
Grader @ $150		150			
	$ 850	$ 1,400			
Production:					
As for previous years but detail pruning costs rise to amounts shown	200	200	250	350	350
	$1,401	$1,401	$1,451	$1,551	$1,551
Harvesting:					
Labour based on $0.50/kg	1,500	3,000	4,500	5,500	6,000
machinery	75	100	100	100	100
	$1,575	$3,100	$4,600	$5,600	$6,100
Marketing:					
Packing materials cartons @ $0.65 ea	975	1,950	2,925	3,575	3,900
Packing labour, based on 6 boxes per hour (covers graders and packers)	1,000	2,000	3,000	3,670	4,000
Grader electricity	15	25	30	35	40
Toll calls	100	100	100	100	100
Freight	750	1,500	2,250	2,750	3,000
Promotion	250	350	350	350	350
	$3,090	$5,925	$8,655	$10,480	$11,390
Revenue:					
Based on $2.25/kg	6,750	13,500	2,025	24,750	27,000
	$6,750	$13,500	$2,025	$24,750	$27,000

(ii) Semi-Intensive

Year 0	
Establishment:	
Trees (4.5 x 3.65m) 600/ha @ $3.25	1,950
Fertiliser - 1 kg/tree - 12 bags @ $20	240
Irrigation	4,000
Machinery	
- cultivation and subsoil only	20
- contract tree planters	160
- fertiliser spreading	8
Labour	
- cultivation, 5 hours	20
- planting and surveying	20
- fertiliser spreading	8
	$6,426

Year 1		Year 2
Production:		
Fertilisers		
- supplementary summer urea	100	(NPK) 240 (S.U.) 100
Spray programme	300	300
Herbicides		
- "Roundup" - 5 l = $100 (weed wiper)	75	75
Irrigation		
- electricity	50	50
Machinery		
- fertiliser spreading	4	4
- spraying	12	12
- cultivation	20	20
- pruning	8	8
Labour		
- fertiliser spreading	4	8
- spraying	20	20
- weed wiper, 15 hours	60	60
- cultivation	20	20
- pruning - tipping and shaping (3 m/tree)	40	120
- general - irrigation, administration, maintenance	100	100
	$813	$1,141

Year	3	4	5	6	7	8	9	10	11	12
Capital										
Bins @ $5 each	150	300	550	1,000	2,500					
Mower @ 15 x 10	150									
Grader @ 15 x 10		150			150					
Pneumatic pruning equipment $8,000 (as listed for hedgerow)			800							
	$300	$450	$1,350	$500	$1,150	$2,500				
Production										
Fertiliser	340	**480	480	480	480					
Spray programme	400	*450	500	550	550					
Herbicides - efficient boom spraying	75	75	75	75	75					
Irrigation - electricity	50	50	50	50	50					
Machinery										
- fertiliser spreading	8	4	4	4	4					
- spraying	16	20	24	28	28					
- herbicide	4	4	4	4	4					
- mowing	40	40	40	40	40					
- pruning	8	8	75	75	150					
Labour										
- fertiliser spreading	8	4	4	4	4					
- spraying	24	30	32	36	36					
- herb. strip	4	4	4	4	4					
- mowing	40	40	40	40	40					
- pruning	120	120	200	200	400					
- general	100	100	100	100	100					
	$1,237	$1,429	$1,632	$1,690	$1,965	$1,965	$1,965	$1,965	$1,965	$1,965

* Full programme with Mesurol reliance from Year 4.
** Now 2 kg per tree.

Year	3	4	5	6	7	8	9	10	11	12
Harvesting										
Labour	$ 80	600	1,500	3,000	6,000	9,000	12,000	13,500	15,000	15,000
Machinery	8	40	100	200	300	400	500	500	500	500
	$ 88	$ 640	$1,600	$3,200	$6,300	$9,400	$12,500	$14,000	$15,500	$15,500
Marketing										
Packing materials - cartons @ $0.65 each	98	390	975	1,950	3,900	5,850	7,800	8,775	9,750	9,750
Grader - electricity	-	10	15	25	40	45	50	50	50	50
Packing - labour	120	400	1,000	2,000	4,000	6,000	8,000	9,000	10,000	10,000
Freight	75	300	750	1,500	3,000	4,500	6,000	6,750	7,500	7,500
Toll calls	10	25	50	75	100	150	150	150	150	150
Promotion	25	100	150	250	400	400	400	400	400	400
	$318	$1,225	$2,940	$5,800	$10,940	$16,945	$22,400	$25,125	$27,850	$27,850
Revenue										
$2.25/kg	300kg	1200kg	3000kg	6000kg	12000kg	18000kg	24000kg	27000kg	30000kg	30000kg
	$675	$2,700	$6,750	$13,500	$27,000	$40,500	$54,000	$60,750	$67,500	$67,500

(iii) Hedgerow

Year 0

Establishment:	
Trees 4.5 x 1 m (2,225 trees/ha)	7,250
Fertiliser .25 kg/tree	220
Irrigation (overhead)	4,000
Machinery	
- cultivation and subsoiling	20
- planting (tree plant 4.5 hours @ $35)	160
- fertiliser spreading	4
Labour	
- cultivation	20
- planting	20
- fertiliser spreading	4
	$11,698

Year 1

Production:	
Fertiliser (urea 100 g/tree)	400
Spray programme	300
Herbicides	
- "Preglone" and "Roundup"	125
Irrigation	
- electricity	50
Machinery ($4/hour)	
- fertiliser spreading	4
- spraying	12
- boom spraying herbicides	8
- mowing	20
- pruning (buckrake, compressor)	40
Labour	
- fertiliser spreading	4
- spraying	20
- herbicide	8
- mowing	20
- pruning (1 min/tree)	75
- general: administration, irrigation, maintenance	100
	$1,186

Capital:		
Mower		150
Pneumatic pruning equipment:		
- PTO driven compressor	$2,000	
- Handpieces - 6 J's @ $390	2,340	
- 6 F-24's @ $460	2,760	
- Hose and fittings	900	
	$8,000	
	÷ 10	
		800
		$950

	Year 2	Year 3	Year 4	Year 5
Capital:				
Bins @ $5 each	200	500	1,800	1,250
Graders @ $15 x 10	150		150	
3 Platforms @ $40 x 10			1,200	
	$ 350	$ 500	$3,150	$1,350
Production:				
Fertiliser	220 Spring NPK	880 Spring NPK 1 kg/tree	880	880
	400 Summer Urea			
Spray programme	400	450	550	550
Herbicides	125	125	75 (Round-up only)	75
Irrigation - electricity	50	50	50	50
Machinery				
- fertiliser spreading	8	8	4	4
- spraying	16	20	28	28
- herbicide	8	4	4	4
- mowing	20	20	20	20
- pruning	-	80	80	80

Labour				
- fertiliser spreading	8	8	4	4
- spraying	24	30	36	36
- herbicide	8	4	4	4
- mowing	20	20	20	20
- pruning	-	150	150	150
- general	100	100	100	100
	$1,407	$1,899	$2,005	$2,005
Harvesting:				
Labour	*150	**1,250	2,800	6,675
Machinery	20	40	200	200
	$170	$1,290	$3,000	$6,875
Marketing:				
Packing materials (@ $0.65)	145	1,270	3,620	8,680
Grader electricity	5	25	40	50
Packing labour	150	1,300	3,710	8,900
Freight ($0.50/box)	112	975	2,785	6,675
Toll calls	10	50	100	150
Promotion	25	150	400	400
	$447	$3,770	$10,655	$24,855
Revenue:				
$2.25/kg	445kg	3,894kg	11,125kg	26,700kg
	$1,000	$8,760	$25,030	$60,075

Cash Flows are summarised in Table 1.

* Pneumatic hand pruning, 1 minute/tree.
** Platform pneumatic pruning.

CASH FLOWS: DAWSON CHERRY. THREE PRODUCTION SYSTEMS

Year		0	1	2	3	4	5	6	7	8	9	10	11	12	TV
Revenue	T					1,225	450	900	2,250	6,750	13,500	20,250	24,750	27,000	
Crop Returns	S				675	2,700	6,750	13,500	27,000	40,500	54,000	60,750	67,500	67,500	
@ $2.25/kg	H			1,000	8,760	25,030	60,075								
Expenditure	T	4,880			150	50	200	400		850	1,400				
Establishment (yr #0)	S	6,425			300	450	1,350	500	1,150	2,500					
and capital (yrs 1-12)	H	11,700	950	350	500	3,150	1,250								
	T		365	460	610	820	930	1,220	1,360	1,400	1,400	1,450	1,450	1,450	
Production	S		815	1,140	1,240	1,430	1,630	1,690	1,965	1,965	1,965	1,965	1,965	1,965	
	H		1,185	1,410	1,900	2,005	2,005								
	T					50	95	180	550	1,575	3,100	4,600	5,600	6,100	
Harvesting	S				90	640	1,600	3,200	6,300	9,400	12,500	14,00	15,500	15,500	
	H			170	1,290	3,000	6,875								
	T					110	210	400	1,120	3,090	5,925	8,655	10,480	11,390	
Marketing	S				320	1,225	2,940	5,800	10,940	16,945	22,400	25,125	27,850	27,850	
	H			450	3,770	10,655	24,855								
Net Cash Flow	T	-4,880	-365	-460	-760	-805	-985	-1,300	-780	-165	1,675	5,545	7,220	8,060	+4,000
	S	-6,425	-815	-1,140	-1,275	-1,045	-770	2,310	6,645	9,690	17,135	19,660	22,185	22,185	+9,900
	H	-11,700	-2,135	-1,380	1,300	6,220	25,090								+13,350
Accumulated	T	-4,880	-5,245	-5,705	-6,465	-7,270	-8,255	-9,555	-10,335	-10,500	-8,825	-3,280	3,940	12,000	
Cash Flow	S	-6,425	-7,240	-8,380	-9,655	-10,700	-11,470	-9,160	-2,515	7,175	24,310	43,970	66,155	88,340	
	H	-11,700	-13,835	-15,215	-13,915	-7,695	17,395								
Net Present Value	T	-4,880	-375	-490	-830	-905	-1,140	-1,510	-960	-210	2,185	7,450	9,995	17,195	
Compound Factor	S	-6,425	-840	-1,210	-1,395	-1,175	-890	2,680	8,170	12,275	22,360	26,420	30,710	45,745	
3%	H	-11,700	-2,200	-1,465	1,420	7,000	44,565								

KEY: T = traditional, S = semi-intensive, H = hedgerow.

5.3.9 Oranges (1981 costs and prices)

1. Yield
   Planting density = 4.6 x 2.4 m = 900 trees/ha.

Year	1	2	3	4	5	6	7	8	9	10
t/ha	-	-	-	5	12	20	27	35	42	51

2. Price returned
   1981 - $300/t

3. Capital Cost
   900 trees @ $4 = $3,672

4. Land preparation for establishment

Ploughing	$ 30/ha
Discing	$ 25
Rotary hoe	$ 30
Roll, sow and cover with grass seed	$ 20
Total	$105

5. Mowing

5x/year	$100
Rotovation	30
	$300

6. Weed Control

Year 1:		
Herbicides nil		
Cultivation: 4 discing @ $2/hr/ha/discing @ $10.00/hr	80	
4 furrow out @ 1 hr/ha/furrow @ $10.00/hr	40	
		120
Year 2-3:		
Herbicides: Simazine and Gramoxone in 2 m strip, @ 4 l/ha and 6 l/ha @ $9.40/l, $10 l respectively	40	
Spraying: tractor 1.5 hr @ $10/hr	15	
	58	
	120	
Cultivations as for Year 1		233

Year 4: (and subsequent years)		
Herbicides: as for Year 2, but 2 applications	80	
Tractor: 3 hr/ha @ $10/hr	30	
Cultivations: 1 light harrowing and furrow out/year 2 hrs/ha @ $10/hr	20	
		131

7. Insecticides

Oils: $1.80/1 @ 2 1/100 1	130
Gusathion: $12.50/kg @ 100 g/100 1	35
Malathion: $4/kg @ 200 g/100 1	30

Years 1-4: 2 sprays = $390
Years 5-10: 3 sprays = $585

8. Fungicides

Captan: $9/kg @ 200 g/100 1	65
Copper oxychloride: $3.50/kg @ 400g/100 1	50
Benlate: $36/kg @ 50 g/100 1	65

Years 1-4: 2 sprays Captan and Copper oxychloride = $230
Years 5-10: 3 sprays Captan and Copper oxychloride = $345
Bulk dipping Benlate each year = $65

9. Fertiliser (per tree)

2.5 kg sulphate of ammonia @ 25c/kg	0.60
2.0 kg superphosphate @ 15c/kg	0.30
0.5 kg muriate of potash @ 25c/kg	0.12
5 kg	$1.00

Year 1-4 apply 0.5 kg/tree for each year of life.
Year 6-10 increase amount by 25% for each tree/each year.

10. Harvesting
Based on picking rate 100 kg/hr; casual hourly rate of $3.50 — $35

11. Packaging
10 kg polythene bags @ $75/1,000.

12. Freight
$15/t per 50 kms.

13. Irrigation
Under tree jet, sprinklers on electric pump.
Running costs = $30/year

ORANGE CASH FLOW - $/ha

Year	1	2	3	4	5	6	7	8	9	10
Yield/ha	-	-	-	5	12	20	27	35	42	51
Income	-	-	-	1,500	3,600	6,000	7,100	10,500	12,600	15,300
Less										
Harvesting	-	-	-	175	420	700	945	1,225	1,470	1,785
Freight	-	-	-	75	180	300	405	525	630	765
Packaging	-	-	-	40	90	150	200	260	315	380
Working costs										
Land preparation	105	-	-	-	-	-	-	-	-	-
Mowing	-	130	130	130	130	130	130	130	130	130
Irrigation	30	30	30	30	30	30	30	30	30	30
Weed and Pest Control	805	918	918	816	1,126	1,126	1,126	1,126	1,126	1,126
Fertiliser	90	180	270	360	450	560	690	850	1,050	1,300
Planting Out	700									
Capital Costs										
900 trees	3,600									
Net Cash Flow	-5,330	-1,258	-1,348	-126	1,174	3,004	3,574	6,354	7,849	9,784
Accumulated Cash Flow	-4,330	-6,658	-8,006	-8,132	-6,958	-3,954	-380	5,974	13,823	23,607

5.3.10 Lemons (South Island)

Establishment, Production, Harvesting and Marketing over 10 years.

The following is a cash flow estimate for one hectare of lemons grown in the South Island. The orchard is laid out on a standard 6m x 3m square giving 555 trees per hectare.

Little labour is required in the first years apart from maintaining tree shape - essentially a clean trunk to knee height and the removal of water shoots.

All trees are grafted onto sweet orange rootstock which tends to produce a larger tree but better quality fruit than that of rough lemon.

Fruit may be produced in the 2nd or 3rd year but this should be removed before reaching any size or it will adversely affect tree health by placing stress on it.

Assumptions:

Labour has been charged at $4.80/hour and machinery at $5.00/hour. The high wage is to ensure quality picking, as lemons are a slow crop tp pick demanding care as to size and colour.

Price was determined by an average of lemon prices in the Christchurch market in 1982 at $1.00/kg.

All fruit is marketed locally in 5 kg bags. The orchard is 50 km from market and freight costs have been charged at $15.00/tonne.

Spray programme according to citrus export current chemical costs.

Seasonal variation is minimal.

South Island production is lower than in the North Island.

Estabishment:

Trees 6m x 3m = 555/ha @ $3.25	1,083
Fertiliser 0.5 kg/tree at 20c/kg	56
Machinery at $5.00/hour	
Cultivation x 3	15
Fertiliser spreading	10
Planting 5 hours	25
Labour at $4.80/hour	

Cultivation	14
Fertiliser spreading	10
Planting 30 hours	144
Irrigation - trickle/ha	2,500
	3,857

Year One

Pesticides - spray programme	200
Herbicides - 2m strip	40
Irrigation	30
Machinery - spraying 3 sprays 4.5 hours @ $5	23
Cultivation - x 2 hours	10
Labour - spraying 4.5 hours	23
- cultivation 2 hours	10
- general	100
	436

Year Two

As year one plus fertiliser @ 1 kg/tree	111
Spreading - machinery	10
- labour	10
	567

Year Three

Pesticides - spray programme	300
Herbicides	40
Irrigation	30
Machinery 5 hours spraying	25
Cultivation 2 hours	10
Mowing 3 hours	15
Fertiliser at 1.5 kg/tree	166
Labour - spraying 5 hours	24
- fertiliser	10
- pruning	200
- mowing at 3 hours	15
- general	100
	935

Year Four

As year three but spray programme	400
Fertiliser 2.0 kg/tree	222
Machinery for sprays	30
Spraying labour	29
Pruning	200
	1,100
Harvesting - labour 20 hours	96

- machinery 3 hours	15
	111
Marketing - packing materials	
300 bags @ 20c each (5 kg)	60
- packing labour @ 30 bags/hour	48
- freight $15/t/50 kms	21
	129
Revenue - 1.4 tonnes @ $1/kg	1,400
Capital - 2 picking bags @ $30 each	60
- 4 bins 500 kg capacity @ $40 each	200
	260

Year five

As year four but spray programme increased to include fungicides	800
Spray - machinery	30
- labour	29
Fertiliser to include Magnesium Sulphate application	60
Machinery 1.5 hours	8
Labour 1.5 hours	7
	1,575
Harvesting - labour 45 hours	216
- machinery 5 hours	25
	241
Marketing - materials packing (600 bags)	120
- labour	96
- freight	41
	257
Revenue - 2.7 tonnes @ $1 kg	2,700
Capital - 2 picking bags @ $30 each	60
- 4 bins @ $50	200
	260

Year Six

Production as Year five	1,575

Harvesting - labour	450
- machinery	50
	500
Marketing - packing materials	170
- labour	134
- freight	63
	367
Revenue - 4.2 tonnes @ $1/kg	4,200

Year Seven

Production as before

Harvesting - labour	480
- machinery	80
	560
Marketing - packing materials	280
- packing labour	224
- freight	105
	609
Revenue - 7 tonnes @ $1/kg	7,000
Capital - 1 bin @ $50	50

Year Eight

Production as before

Harvesting - labour	500
- machinery	90
	590
Marketing - packing material	390
- packing labour	310
- freight	145
	845
Revenue - 9.7 tonnes	9,700

Year Nine

Production as before

Harvesting - labour	550
- machinery	100
	650

Marketing - packing materials	530
- labour	426
- freight	200
	1,157
Revenue - 13.3 tonnes @ $1/kg	13,300

Year Ten

Production as before

Harvesting - labour	600
- machinery	120
	720
Marketing - packing materials	600
- labour	480
- freight	225
	1,305
Revenue - 15 tonnes @ $1/kg	15,000

SUMMARY CASH FLOW
VILLA FRANCA LEMONS: SOUTH ISLAND

Year	0	1	2	3	4	5	6	7	8	9	10
Yield (kg)					1,400	2,700	4,200	7,000	9,700	13,300	15,000
Revenue: evopretums $1/kg					1,400	2,700	4,200	7,000	9,700	13,300	15,000
Expenditure: establishment and capital	3,857				260	260	50				
Production		436	567	935	1,100	1,575	1,575	1,575	1,575	1,575	1,575
Harvesting					111	241	500	560	590	65057	720
Marketing					129	257	367	609	845	1,157	1,305
Net cash flow	-3,857	-436	-567	-935	200	367	1,708	4,256	6,690	9,918	11,400
Accumulated Cash Flow	-3,857	-4,293	-4,860	-5,795	-5,595	-5,228	-3,520	+736	+7,426	+17,344	+28,744

5.3.11 Apples

The following crop costings apply to growing Granny Smith apples using three different training systems:

1. Extensive (6m x 6m) spacing using the Hawkes Bay training system.

2. Semi-intensive (3.5m x 4.5m) Centre Leader training system.

3. Intensive (1.5m x 3.5m) Centre Leader training system.

Spray schedules and fertiliser programmes are designed to produce export quality apples. The costings can be used for other export varieties with reasonable accuracy provided yield and price figures are altered.

All apple sales are to the NZAPMB and grading and packaging costs are not included. For convenience only, the yields are expressed in numbers of cartons as the processed apples will not actually be packed into cartons. All cartons are between nineteen and twenty-one kilograms.

Year 0

Establishment Costs:	Ext.	S.Int.	Int.	Ext.	S.Int.	Int
Cultivation:						
(contract equiv. prices)						
Ploughing	38.50	38.50	38.50			
Harrowing	23.50	23.50	23.50			
Hoeing	38.50	38.50	38.50			
Levelling	23.50	23.50	23.50			
				124	124	124
Fertiliser:						
Potassium nitrate @ $16.20/10kg 50kg, 53kg, 143kg	81.00	85.86	231.66			
Superphosphate @ $141.6c/tonne 23kg, 32kg, 75kg	3.26	4.53	10.61			
				84	90	242
Planting:						
Trees $2.90 ea. 277, 652, 1,905	803	1,891	5,525			
				803	1,891	5,525

Sprays:						
1. Pests and diseases						
- Kilval 0.2 l/ha @ $19.64/l	6.92	16.19	46.22			
- Mancozeb 100g/100 l @ $6.67/kg 4 applications of each	2.00	5.00	15.00			
				9	21	61
2. Herbicides						
- Preglone @ $62/5l	12.40	24.80	49.60			
				12	25	50
Irrigation:						
Power	10.00	23.00	67.00			
				10	23	67
Pruning:						
Twine	18.00	16.00	12.00			
Wire	16.00	14.00	10.00			
				34	30	22
Labour: ($5.00/hr)						
Cultivation	56	56	56			
Fertilisation	9	21	63			
Planting (includes marking and pegging out)	251	600	1,751			
Pest and disease spraying	21	29	37			
Herbicide spraying	6	12	24			
Irrigation	43	100	171			
Pruning	87	77	57			
Mowing 10x	82	82	82			
				555	977	2,241
Machinery: ($10.00/hr)						
Fertiliser spreader 0.6 h, 1.5 h, 4.4 h	6	15	44			
Pest and disease spraying, 2.4 h, 5.7 h, 16.5 h	24	57	165			
Herbicide spraying, 1.2 h, 2.4 h, 4.8 h	12	24	48			
Post-hole borer ($13/day) 1 day, 2 days, 6 days	13	26	78			
Mowing 10 x	127	127	127			
				182	249	462
TOTAL ESTABLISHMENT COST				$1,813	3,430	8,794

Year 1

Fertiliser:						
Potassium nitrate	96	160	247			
Superphosphate	4	6	11			
				100	166	258
Sprays:						
1. Pests and diseases	25	51	83			
				25	51	83
2. Herbicides				12	25	50
Irrigation:						
Power				15	23	40
Pruning				25	23	20
Labour: ($5.00/hr)						
Fertilisation	10	23	66			
Pest and disease spraying	21	29	37			
Herbicide spraying	6	12	24			
Irrigation	65	100	175			
Mowing	82	82	82			
Pruning	208	127	87			
				392	373	471
Machinery: ($10.00/hr)						
Fertiliser spreading	7	38	43			
Pest and disease spraying	43	58	74			
Mowing	127	127	127			
Herbicide spraying	11	22	44			
				188	245	288
TOTAL ESTABLISHMENT COSTS YEAR 1				757	906	1,210

Year 2

Production and Marketing Costs:

Fertiliser:						
Potassium nitrate 62kg, 130kg, 163kg	100	211	264			
Superphosphate, 28kg, 59kg, 75kg	4	9	11			
				104	220	275
Sprays:						
1. Pests and diseases						
- Bordeaux @ $7.28kg 4.8kg, 10kg, 19kg	35	73	139			
- Kilval, Mancozeb 4 applications ea.	9	21	61			
				44	94	200
2. Herbicides				12	25	50
Irrigation:						
Power				15	23	40
Pruning:						
Twine	20	18	14			
Wire	-	-	-			
				20	18	14
Labour: ($5.00/hr)						
Fertilisation	10	23	66			
Pest and disease spraying	21	29	37			
Herbicidal spraying	6	12	24			
Irrigation	65	100	175			
Mowing	82	82	82			
Pruning	257	157	107			
Harvesting 47c/carton			20			
				441	403	511

Machinery: ($10.00/hr)						
Fertiliser spreading	7	38	43			
Pest and disease spraying	43	58	74			
Mowing	127	127	127			
Herbicide spraying	11	22	44			
Cartage 51c/carton			31			
				188	245	319
Return:						
Intensive only - 60 ctns av. 20 kg each						
- export 50% 30 x $3.67			110			
- local 40% 24 x $3.10 (av.)			75			
- processing 10% 6 x $1.40			9			
						194
Total Costs Year 2				824	1,028	1,409
(Intensive Costs include marketing)						
Deficit Year 2				$824	1,028	1,215

Year 3

Production and Marketing Costs

Fertiliser:						
Potassium nitrate 92kg, 142kg, 180kg	149	230	292			
Superphosphate, 43kg, 66kg, 85kg	6	9	12			
				155	239	304

Sprays:				
Extensive				
1. Pest and diseases				
20% incr. on Yr 2	53			
2. Herbicides as for Yr 2	12			
			65	
Semi-intensive and intensive.				
1. Pests and diseases				
- Greentip -				
intermediate oil				
mid-September				
35 l @ $2.51/l				
49 l		88	123	
plus Bordeaux @				
$7.28/kg 14kg, 20kg		102	146	
5 applications of:				
14 day intervals till				
end of November				
Syllit 405				
@ $8.17/l				
2 l, 2.8 l		82	115	
Nimrod 25 WP $8.42/kg				
2.8 kg, 4 kg		24	34	
- petal fall (end Oct.)				
and end November				
2 applications of:				
Gusathion 50 SP				
$15.77/kg				
1.4 kg, 2.0 kg		44	63	
Kelthane 35 $10.82/kg				
1.4 kg, 2.0 kg		31	44	
- early December till				
end of season.				
6 applications of:				
Mancozeb $8.28/kg				
2.1 kg, 3.0 kg		104	149	
Captan $5.00/kg				
1.4 kg, 2.0 kg		42	60	
Carbaryl $8.30/kg				
1.4 kg, 2.0 kg		70	100	
- bitter pit control.				
3 applications of:				
Calcium nitrate $1.28/kg				
1.3 kg, 1.9 kg		5	8	
			592	842

2. Herbicides						
- Preglone	12	25	50			
				12	25	50
Irrigation:						
Power				21	28	35
Pruning: Twine				15	10	-
Labour: ($5.00/hr)						
Fertilisation	20	32	40			
Pest and disease spraying	14	57	73			
Herbicide spraying	6	11	11			
Irrigation	65	100	174			
Mowing	82	82	82			
Pruning	443	334	114			
Harvesting		74	226			
				630	690	720
Machinery: ($10.00/hr)						
Fertiliser spreading	24	38	49			
Pest and Disease spraying	52	427	547			
Herbicides	11	24	49			
Mowing (10 x)	127	127	127			
Cartage		80	244			
				213	696	1,016
Miscellaneous pre-harvest					70	70
Returns:						
Semi-intensive 158 ctns						
- export 79 x $3.67		290				
- local 63 x $3.10		195				
- process 16 x $1.40		23				
					508	
Intensive 480 ctns						
- export 240 x $3.67			881			
- local 192 x $3.10			595			
- process 48 x $1.40			67			
						1,543

Total Costs Year 3 (Production plus marketing for intensive and semi-intensive)				1,111	2,350	3,037
Deficit Year 3				$1,111	1,842	1,494
Year 4						
Fertiliser:				75	86	111
Sprays:						
1. Pests and diseases				550	750	965
2. Herbicides						
- Roundup 5 l $28.31/l strip sprays				142	142	142
Irrigation:				29	37	40
Labour: ($5.00/hr)						
Fertilisation	23	29	37			
Pest and Disease spraying	96	129	166			
Herbicide spraying	11	11	11			
Irrigation	107	129	174			
Mowing	82	82	82			
Pruning	414	290	114			
Harvesting	61	354	770			
				794	1,024	1,354
Machinery: ($10.00/hr)						
Fertiliser spreading	29	42	56			
Pest and Disease spraying	400	449	567			
Herb. spraying	24	24	24			
Mowing	82	82	82			
Cartage	67	384	833			
				602	981	1,562
Miscellaneous pre-harvest				70	70	70

Returns:							
Extensive	130 ctns						
- export	65	239					
- local	52	161					
- process	13	18					
					418		
Semi-intensive 753 ctn							
- export	377		1,384				
- local	301		933				
- process	75		105				
						2,422	
Intensive	1,632 ctns						
- export	816			2,995			
- local	653			2,025			
- process	163			229			
							5,249
Total Costs Year 4 (Production plus marketing)					2,262	3,090	4,244
Deficit/Surplus Year 4					-$1,844	-668	+1,005
Year 5							
Intensive Production Costs As for Year 4 (less marketing):							2,641
Fertiliser:					85	93	
Sprays:							
1. Pests and diseases		612	816				
2. Herbicides		126	126				
					738	942	
Irrigation:					35	45	
Labour: ($5.00/hr)							
Fertilisation		26	30				
Pest and Disease spraying		122	150				
Herbicide spraying		11	11				
Irrigation		99	101				
Mowing		82	82				
Pruning		250	173				

Harvesting		184	851	1,876		
					774	1,398	1,876
Machinery: ($10.00/hr)						
Fertiliser spraying		40	42			
Pest and Disease spraying		411	493			
Herbicide spraying		24	24			
Mowing		82	82			
Cartage		200	924	1,751		
					757	1,565	1,751
Miscellaneous pre-harvest:					70	70	
Returns:						
Extensive	390 ctns					
- export	195	716				
- local	156	484				
- process	39	55				
					1,255		
Semi-intensive	1,807					
- export	904		3,318			
- local	723		2,241			
- process	180		252			
						5,811	
Intensive	3,427 ctns					
- export	1,714			6,291		
- local	1,371			4,250		
- process	341			478		
							11,019
Total Costs Year 5 (Production plus marketing)					2,459	4,113	6,268
Deficit/Surplus Year 5					-$1,204	+1,698	+4,751
Year 6						
Intensive and semi-intensive production costs as for Year 5 (less marketing costs)						2,338	2,641

Fertiliser:		95			95	
Sprays:						
1. Pest and diseases		740				
2. Herbicides		126				
					866	
Irrigation:					40	
Labour:						
Fertilisation		29				
Pest and Disease spraying		136				
Herbicide spraying		12				
Irrigation		100				
Mowing		82				
Pruning		243				
Harvesting		405	1,193	1,939		
					1,007	1,193	1,939
Machinery:						
Fertiliser spreading		40				
Pest and Disease spraying		445				
Herbicide spraying		25				
Mowing		122				
Cartage		438	1,294	2,102		
					1,070	1,294	2,102
Miscellaneous pre-harvest:					70	
Returns:						
Extensive	858 ctns					
- export	429	1,574				
- local	343	1,063				
- process	86	121				
					2,758	
Semi-intensive	2,530					
- export	1,256	4,610				
- local	1,012	3,137				
- process	253	355				
						8,102
Intensive	4,112 ctns					
- export	2,056			7,546		
- local	1,645			5,100		

- process	411		576			
						13,222
Total Costs Year 6 (Production plus marketing)				3,148	4,825	6,682
Deficit/Surplus Year 6				-$390	+3,277	+6,540
Year 7						
Intensive and semi-intensive Production costs as for Year 5 (less marketing costs)					2,338	2,641
Fertiliser:				100		
Sprays:						
1. Pest and Disease spraying	850					
2. Herbicides	126					
				976		
Irrigation:				40		
Labour:						
Fertilisation	32					
Pest and Disease spraying	164					
Herbicide spraying	11					
Irrigation	99					
Mowing	82					
Pruning	236					
Harvesting	746	1,371	2,054			
				1,370	1,371	2,054
Machinery:						
Fertiliser spreading	45					
Pest and Disease spraying	222					
Herbicide spraying	24					
Mowing	122					
Cartage	856	1,487	2,229			
				1,269	1,487	2,229

Miscellaneous pre-harvest:					70		
Returns:							
Extensive	1,673 ctns						
- export	837	3,072					
- local	669	2,074					
- process	167	234					
					5,384		
Semi-intensive	2,909						
- export	1,455		5,340				
- local	1,164		3,608				
- process	290		406				
						9,644	
Intensive	4,359 ctns						
- export	2,179			7,997			
- local	1,744			5,406			
- process	436			611			
							14,014
Total Cost Year 7 (Production plus marketing)					3,825	5,196	6,924
Surplus Year 7					$1,559	4,448	7,090
Year 8							
All Production Costs as for Year 7 (less marketing)					2,223	2,338	2,641
Marketing Costs:							
Harvesting		1,373	1,536	2,096			
Cartage		1,489	1,664	2,273			
					2,862	3,200	4,369
Returns:							
Extensive	2,911 ctns				9,362		
Semi-intensive	3,258 ctns					10,477	
Intensive (maximum production)	4,446 ctns						14,296
Total Production Costs Year 8					2,223	2,338	2,641
Total Marketing Costs Year 8					2,862	3,200	4,369

Surplus Year 8				4,277	4,939	7,372

Year 9

Marketing Costs:						
Harvesting		1,579	1,690	2,096		
Cartage		1,711	1,831	2,273		
					3,290	3,521	4,369
Returns:						
Extensive	3,347 ctns				10,763		
Semi-intensive	3,584 ctns					11,525	
Intensive	4,446 ctns						14,296
Total Production Costs Year 9					2,223	2,338	2,641
Total Marketing Costs Year 9					3,290	3,521	4,369
Surplus Year 9					$5,250	5,666	7,286

Yields for the intensive system have ceased to increase, semi-intensive yields as follows to year 15. Extensive yields will increase as follows to year 20.

Year	Extensive	Semi-intensive
10	4,250	4,659
11	5,143	5,684
12	5,143	6,707
13	5,915	7,512
14	6,388	8,112
15	6,739	8,437
16	7,009	
17	7,219	
18	7,400	
19	7,503	
20	7,586	

EXTENSIVE SYSTEM

Year	0	1	2	3	4	5	6	7	8	9	10
Returns					418	1,255	2,758	5,384	9,362	10,763	12,377
Costs											
Cultivation	124										
Fertiliser	84	100	104	155	75	85	95	100	100	100	
Planting	803										
Sprays											
1. Pests and diseases	9	25	44	65	550	612	740	850	850	850	
2. Herbicide spraying	12	12	12	12	142	126	126	126	126	126	
Irrigation	10	15	15	21	29	35	40	40	40	40	
Pruning	34	25	20	15							
Labour	555	392	441	630	794	774	1,007	1,370	1,997	2,203	
Machinery	182	188	188	213	602	757	1,070	1,269	1,902	2,124	
Miscellaneous pre-harvest					70	70	70	70	70		
Establishment costs	1,813	757									
Total Costs (Production and marketing)			824	1,111	2,262	2,459	3,148	3,825	5,085	+5,513	6,007
Annual Cash Flow	-1,813	-757	-824	-1,111	-1,844	-1,204	-390	+1,559	+4,277	+5,250	+6,370
Accumulated Cash Flow	-1,813	-2,570	-3,394	-4,505	-4,349	-7,553	-7,943	-6,384	-2,107	+3,143	+9,513

	11	12	13	14	15	16	17	18	19	20
Returns	14,976	17,222	18,427	19,348	20,122	20,726	21,244	21,456	21,670	21,887
Production Costs	2,223	2,223	2,223	2,223	2,223	2,233	2,223	2,223	2,223	2,223
Marketing Costs	4,579	4,266	5,634	5,916	6,152	6,337	6,495	6,560	6,626	6,692
Annual Cash Flow	+8,174	+9,633	+10,570	+11,209	+11,747	+12,166	+12,526	+12,673	+12,821	+12,972
Accumulated Cash Flow	+17,687	+27,320	+37,890	+49,099	+60,846	+73,012	+85,538	+98,211	+111,032	+124,004

SEMI-INTENSIVE SYSTEM

Year	0	1	2	3	4	5	6	7	8	9	10
Returns	-	-	-	508	2,422	5,811	8,102	9,644	10,477	11,525	13,484
Costs											
Cultivation	124	-	-	-	-	-	-	-	-	-	-
Fertiliser	90	166	220	239	86	93	93	93	93	93	-
Planting	1,891	-	-	-	-	-	-	-	-	-	-
Sprays											
1. Pests and Diseases	21	51	94	592	750	816	816	816	816	816	-
2. Herbicides	25	25	25	25	142	126	126	126	126	126	-
Irrigation	23	23	23	28	37	45	45	45	45	45	-
Pruning	30	23	18	10	-	-	-	-	-	-	-
Labour	977	373	403	690	1,024	1,398	1,740	1,918	2,083	2,237	-
Machinery	249	245	245	696	981	1,565	1,935	2,128	2,305	2,472	-
Miscellaneous pre-harvest	-	-	-	70	70	70	70	70	70	70	-
Establishment Costs	3,430	906	-	-	-	-	-	-	-	-	-
Total Costs (Production and Marketing)	-	-	1,028	2,350	3,090	4,113	4,825	4,196	5,538	5,859	6,457
Annual Cash Flow	-3,430	-906	-1,028	-1,842	-668	+1,698	+3,277	+4,448	+4,939	+5,666	+7,027
Accumulated Cash Flow	-3,430	-4,336	-5,364	-7,206	-7,874	-6,176	-2,899	+1,549	+6,488	+12,154	+19,181

	11	12	13	14	15
Returns	16,316	19,253	20,942	22,617	23,522
Production Costs	2,338	2,338	2,338	2,338	2,338
Marketing Costs	4,984	5,881	6,528	7,050	7,332
Annual Cash Flow	+8,994	+11,034	+12,076	+13,229	+13,882
Accumulated Cash Flow	+28,175	+39,209	+51,285	+64,514	+78,366

INTENSIVE SYSTEM

Year	0	1	2	3	4	5	6	7	8	9
Returns	-	-	194	1,543	5,249	11,019	13,222	14,014	14,296	14,296
Costs										
Cultivation	124	-	-	-	-	-	-	-	-	-
Fertilisation	242	258	275	304	111	111	111	111	111	111
Planting	5,525	-	-	-	-	-	-	-	-	
Sprays										
1. Pests and Diseases	61	83	200	842	965	965	965	965	965	965
2. Herbicide spraying	50	50	50	50	142	142	142	142	142	142
Irrigation	67	40	40	35	40	40	40	40	40	40
Pruning	22	20	14	-	-	-	-	-	-	-
Labour	2,241	471	511	720	1,354	2,460	2,523	2.638	2,680	2,680
Machinery	462	288	319	1,016	1,562	2,480	2,831	2,958	3,002	3,002
Miscellaneous pre-harvest	-	-	-	70	70	70	70	70	70	70
Establishment Costs	8,794	1,210	-	-	-	-	-	-	-	-
Total Costs	-	-	1,409	3,037	4,244	6,268	6,682	6,924	7,010	7,010
Annual Cash Flow	-8,794	-1,210	-1,215	-1,494	+1,005	+4,751	+6,540	+7,090	+7,286	+7,286
Accumulated Cash Flow	-8,794	-10,004	-11,219	-12,713	-11,708	-6,957	-417	+6,673	+13,959	+21,245

5.3.12 Nectarines and Peaches
(Development Budget for 1 ha)

Years	0	1	2	3	4	5	6	7	8	9	10
Yield	0.00	0.00	0.00	11340.00	18830.00	22610.00	22610.00	22610.00	22610.00	22610.00	22610.00
Gross Revenue	0.00	0.00	0.00	22680.00	37660.00	45220.00	45220.00	45220.00	45220.00	45220.00	45220.00
HARVESTING COSTS											
picking 11c kg^{-1}	0.00	0.00	0.00	1247.40	2071.30	2487.10	2487.10	2487.10	2487.10	2487.10	2487.10
cartage 8.6c kg^{-1}	0.00	0.00	0.00	975.24	1619.38	1944.46	1944.46	1944.46	1944.46	1944.46	1944.46
Total Harvesting	0.00	0.00	0.00	2222.64	3690.68	4431.56	4431.56	4431.56	4431.56	4431.56	4431.56
Net Revenue	0.00	0.00	0.00	20457.40	33969.30	40788.40	40788.40	40788.40	40788.40	40788.40	40788.40
CAPITAL COSTS											
TOTAL CAPITAL	5254.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Capital Cost	5254.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PRODUCTION COSTS											
Fertiliser	0.00	304.00	695.00	695.00	695.00	695.00	695.00	695.00	695.00	695.00	695.00
Sprays	0.00	146.00	470.00	856.00	860.00	860.00	860.00	860.00	860.00	860.00	860.00
Irrigation	0.00	25.00	25.00	30.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00
Prune	0.00	50.00	168.00	336.00	560.00	840.00	1120.00	1120.00	1120.00	1120.00	1120.00
FSC	0.00	110.00	130.00	168.00	192.00	192.00	192.00	192.00	192.00	192.00	192.00
Machine	0.00	115.00	135.00	150.00	175.00	175.00	175.00	175.00	175.00	175.00	175.00
Total Production Cost	0.00	750.00	1623.00	2235.00	2522.00	2802.00	3082.00	3082.00	3082.00	3082.00	3082.00
Total Costs	5254.00	750.00	1623.00	2235.00	2522.00	2802.00	3082.00	3082.00	3082.00	3082.00	3082.00
Annual Cash Flow	-5254.00	-750.00	-1623.00	18222.40	31447.30	37986.40	37706.40	37706.40	37706.40	37706.40	37706.40
Accumulated Cash Flow	-5254.00	-6004.00	-7627.00	10595.40	42042.70	80029.10	117736.00	155442.00	193148.00	230855.00	268561.00

5.3.13 Pears
(1 ha Packhams Triumph)

Years	0	1	2	3	4	5	6	7	8	9	10
Yield	0.00	0.00	0.00	162.00	333.00	740.00	1850.00	3700.00	4588.00	5320.00	5320.00
Gross Revenue	0.00	0.00	0.00	751.68	1545.12	3433.60	8584.00	17168.00	21288.30	24684.80	24684.80
HARVESTING COSTS											
Harvesting	0.00	0.00	0.00	62.37	93.24	207.20	518.00	1036.00	1284.64	1489.60	1489.60
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Harvesting	0.00	0.00	0.00	62.37	93.24	207.20	518.00	1036.00	1284.64	1489.60	1489.60
Net Revenue	0.00	0.00	0.00	689.31	1451.88	3226.40	8066.00	16132.00	20003.70	23195.20	23195.20
CAPITAL COSTS											
Cultivation	172.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tree/post/wire	3799.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Irrigation equipment and installation	4356.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Capital Cost	8327.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PRODUCTION COSTS											
Fertiliser	0.00	170.00	170.00	120.00	182.00	364.00	362.00	362.00	362.00	362.00	362.00
Training/pruning	0.00	100.00	150.00	225.00	275.00	300.00	300.00	300.00	300.00	300.00	300.00
Pest/disease control	0.00	356.00	419.00	478.00	661.00	838.00	838.00	838.00	838.00	838.00	838.00
Mowing	0.00	84.00	84.00	84.00	84.00	84.00	84.00	84.00	84.00	84.00	84.00
Pollination	0.00	0.00	0.00	45.00	90.00	135.00	135.00	135.00	135.00	135.00	135.00
herbicides	0.00	115.00	115.00	121.00	121.00	121.00	121.00	121.00	121.00	121.00	121.00
Total Production Cost	0.00	825.00	938.00	1073.00	1412.00	1842.00	1840.00	1840.00	1840.00	1840.00	1840.00
Total Costs	8327.00	825.00	938.00	1073.00	1413.00	1842.00	1840.00	1840.00	1840.00	1840.00	1840.00
Annual Cash Flow	-8327.00	-825.00	-938.00	-383.69	38.88	1384.40	6226.00	14292.00	18163.70	21355.20	21355.20
Accumulated Cash Flow	-8327.00	-9152.00	-10090.00	-10473.70	-10434.80	-9050.41	-2824.41	11467.60	29631.30	50986.50	72341.70

5.3.14 Avocados (1982 costs and prices)

Establishment Costs Year 0

GROUND PREPARATION:			
Herbicide (Roundup)	2 l/ha @ $25.28/l	$50.50	
Spraying	$10.50/ha	10.50	
Rotary hoeing	x 2 @ $25/ha	50.00	
			$111.00
SHELTER:			
Polythene	200m @ $35/500m	$14 00	
Casuarina	200 @ $60/100	120.00	
Planting	8 hrs @ $5.00/hr	40.00	
			$174.00
TREES:			
236 trees	@ $11.00 each	$2,596.00	
Marking out	8 hrs @ $3.70/hr	29.50	
Planting	48 hrs @ $5.00/hr	240.00	
			$2,865.50
IRRIGATION:			
1,062m 15mm pipe	@ $29.96/100m	$318.00	
50m 40mm pipe	@ $111.20/100m	55.50	
Laying irrigation	24 hrs @ $5.00/hr	120.00	
			$484.50
TREE SHELTERS:			
Corner stakes	(4x 35c each) x 236	$330.50	
Sarlon	(3m x $1/m) 236	708.00	
Labour	40 hrs @ $5.00/hr	200.00	
			$1,238.50
TOTAL ESTABLISHMENT COST			$4,873.50

Production Costs Year 1

FERTILISER:			
Ammo-phos 13:6:11:12	@ 0.5 kg/tree @ $331.7/t	$40.00	
Sulphate of ammonia	100 g/tree @ $204.4/t	5.00	

Labour	6 hrs @ $5.00/hr	30.00	
Straw mulch		100.00	
Spreading	8 hrs	29.50	
			$204.50
MOWING:			
16 ha	$24/hr x 0.25 hrs/ha		$96.00
WEED CONTROL:			
Handweeding	x 3 @ 4 hrs/ha	$44.50	
Shelter	4 hrs @ $5.00/hr	20.00	
			64.50
Production Costs Year 1			$365.00

Production Costs Year 2

FERTILISER:			
Ammo-phos	1 kg/tree	$78.50	
Sulphate of ammonia	200 g/tree	10.00	
Labour	6 hrs @ $5.00/hr	30.00	
Straw mulch		100.00	
Spreading		29.50	
			$248.00
MOWING: (as above)			96.00
WEED CONTROL:			
Preglone/Simazine			
Preglone	5 l/ha @ $10.22/l	$30.66	
Simazine	2.5 kg/ha @ $9.42/ha	9.42	
Handweeding	16 hrs @ $5.00/hr	80.00	
			120.30
Production Costs Year 2			$464.30

Production Costs Year 3

FERTILISER:		
Urea	150 kg/ha @ $358.5/t	$53.71
Superphosphate	440 kg/ha @ $108.85/t	57.89
Muriate of Potash	100 kg/ha @ $167.5/t	16.71

Dolomite	200 kg/ha @ $12/t	34.25	
Spreading	16 hrs	59.20	
Straw mulch		100.00	
Spreading (labour)	8 hrs @ $5.00/hr	40.00	
			$351.76
MOWING: (as above)			96.00
SPRAYING:			
4 x Azinphos methyl	1 kg ai/ha @ $26.16/kg	$105.64	
Labour	16 hrs @ $5.00	80.00	
			184.64
Production Costs Year 3			$632.40

Marketing Costs Year 3

PACKAGING:			
Cartons	60c each x 110	$66.00	
Wrappers	(20 x 2c each) x 110	44.00	
Labour	10 hrs @ $5.00/hr	50.00	
			$160.00
HARVESTING:	10 HRS @ $5.00		50.00
TRANSPORT:	$1/ctn x 110		110.00
Marketing Costs Year 3			$320.00

Production Costs Year 4

FERTILISER:			
Urea	440 kg/ha	$157.54	
Superphosphate	660 kg/ha	71.84	
Muriate of Potash	200 kg/ha	33.41	
Lime	200 kg/ha	34.25	
Spreading (labour)	16 hrs @ $5.00	80.00	
Straw mulch		100.00	
Spreading (labour)	8 hrs @ $5.00	40.00	
			$517.04

MOWING: (as above)			96.00
SPRAYING:			
Azinphos methyl	x 6	$159.96	
Labour	20 hrs @ $5.00	100.00	
			$259.96
Production Costs Year 4			$873.00

Marketing Costs Year 4

HARVESTING:	55 hrs @ $5.00		$275.00
PACKING:			
Cartons	1,100	$660.00	
Wrappers	20 x (1,100) .02	440.00	
Labour	92 hrs @ $5.00	460.00	
			1,560.20
TRANSPORT:			1,100.00
			$2,935.00

Production Costs Year 5-8

Production costs from year 4 onwards should be the same.

Marketing Costs Year 5

Harvesting	220 hrs @ $5.00	$1,100	
Packaging	4,440 ctns @ $1	4,400	
Labour	190 hrs @ $5.00	950	
Transport	4,400 ctns @ $1	4,400	
			$10,850

Marketing Costs Year 6

Harvesting	266 hrs @ $5.00	$1,330
Packaging	5,500 ctns	5,500
Labour	230 hrs @ $5.00	1,150

Transport	5,500 ctns @ $1	5,500	
			$13,480

Marketing costs year 6-8 the same.

Production Costs Year 9

As above plus		815.70	
Tree removal	40 hrs @ $500	200	
Production Costs Year 9			$1,015.70

Marketing costs same as Year 5.

Production Costs Year 10 and 11 same as for Year 9.

Marketing Costs Year 10.

Harvesting	200 hrs @ $5.00	$1,000	
Packaging	4,130 ctns	4,130	
Labour	180 hrs @ $5.00	900	
Transport	4,130 ctns @ $1	4,130	
			$10,160

Marketing Costs Year 11.

Harvesting	250 hrs @ $5.00	$1,250	
Packaging	4,720 ctns	4,720	
Labour	200 hrs @ $5.00	1,000	
Transport	4,720 ctns @ $1	4,720	
			$11,690

YEARLY CASH FLOW: ONE HECTARE OF HASS AVOCADOS

Year	0	1	2	3	4	5	6	7	8	9	10	11
Revenue:												
Sales	-	-	-	2,750	27,500	110,000	137,500	137,500	137,500	110,000	103,250	118,000
less Marketing Exps	-	-	-	320	2,935	10,850	13,480	13,480	13,480	10,850	10,160	11,690
	-	-	-	2,430	24,565	99,150	124,020	124,020	124,020	99,150	93,090	106,310
Expenditure:												
Establishment	4,874	-	-	-	-	-	-	-	-	-	-	-
Production	-	365	464	632	873	873	873	873	873	1,016	1,016	1,016
Cash Flow	-4,874	-365	-464	1,798	23,692	98,277	123,147	123,147	123,147	98,134	92,074	105,294
Accumulated Cash Flow	-4,874	-5,239	-5,703	-3,905	19,787	118,064	241,211	364,358	487,505	585,639	677,713	783,007

5.3.15 Apricots (Moorpark)

Establishment, Production, Harvesting and Marketing over 15 years.

The following is the cash flow estimate for one hectare of apricots grown in Central Otago under a semi-intensive (800 trees per hectare) system.

Assumptions:

Labour has been charged at $4.50 per hour, machinery $4.00 per hour.

Price is based on the average price received in the auckland market in the 1982 season - $9.50 per "7 x 7" case.

Freight is estimated at $1.90 per case average.

Wooden 7 x 7's are estimated at $1.80 per case.

Capital items such as picking ladders and bins, fruit grader have been estimated on a 10 hectare economic unit and divided into a one hectare cost.

Items <u>not</u> included in this Cash Flow include:

1. Tractor, forklifts, spray units, fertiliser spreader.
2. Coolstore (2.4 x 3 x 2.4m^3 estimated $4,300).
3. Frost alarm (250).
4. Shelter belts and driveways.
5. Equipment sheds etc.
6. Loans - interest/payback.

Further assumptions:

1. Prices of inputs and outputs vary at the same rates.
2. Silver leaf disease causes no reduction in yield over the time considered.
3. Seasonal variation is minimal.

Inflation Adjusted Net Present Value:

Assume - current inflation 18% p.a.

- finance for operation at 14% (Rural Bank).

To correct these cash flows for inflation, they should be compounded at 18% and discounted at 14%, resulting in a net compounding of 4%, giving a net present value.

A positive net present value means the investment is worthwhile economically.

SUMMARY CASH FLOW
MOORPARK APRICOTS SEMI-INTENSIVE SYSTEM: CENTRAL OTAGO

Year	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Revenue: Crop return $9.50 per case				3800	5700	11900	15700	19000	24700	28500	31825	33250	33250	33250	33250	35625
Expenditure: Establishment (yr 0)	6170			230	475	250	175									
Production		660	1020	1420	1860	2330	2960	3010	3200	3230	3350	3350	3350	3350	3350	3350
Harvesting				360	750	1330	1740	2260	3320	3750	4150	4285	4285	4285	4285	4620
Marketing				1450	2180	4360	5570	7500	9770	11090	12595	13200	13200	13200	13200	14175
NET CASH FLOW	-6170	-660	-1020	340	435	3630	5255	6230	8410	10430	11730	12415	12415	12415	12415	13480
ACCUMULATED CASH FLOW	-6170	-6830	-7850	-7510	-7075	-3445	1810	8040	16450	26880	38610	51025	63440	75855	88270	101750
NET PRESENT VALUE: Compound factor (4%)	-6170	-690	-1100	425	510	4420	6650	8200	11510	15440	17360	19112	19880	20670	21500	24280

5.3.16 **Macadamia Nuts**
(1 ha orchard)
(1982 costs and prices)

Year 1

Returns			0
Capital Costs			
Trees:	720/ha (4.5m x 2.25m hedgerows) 720 trees @ $9.50 each	6,840	
	36 trees (allowing 5% loss)	342	
			7,182
Irrigation equipment:	210m 50mm pipe	1,575	
	18 sprinklers	162	
			1,737
Knapsack sprayer:			140
			$9,059
Production costs			
Land Preparation:	$35/hr x 2		70
Labour:			
(man days)	$5.60/hour ($44.80/day)		
planting (2.5)		112.00	
replanting (5% loss)		5.60	
irrigation (3, including installation)		134.40	
pruning (1.5)		67.20	
weed and pest control (1, hand weeding, spot spraying etc.)		44.80	
maintenance (1.5)		67.20	
			431.20
Mowing:	$25.50/hr x 3		76.50
Electricity:			170
Insurance:	$1/$100 value of crop		70
Rates:			35

Fertiliser:	450 kg urea	79.00	
	125 kg super	31.25	
	200 kg muriate of potash	15.00	
		125.25	
	spreading (3 times/year)	180.00	
			305.25
Miscellaneous (chemicals, pruners, etc.)			70
			$1,233.00
Cash Flow at end of Year 1		-$10,292	

Year 2

Returns		0	
Capital Costs			
Trees:	(allowing 4% loss) 29 trees @ $9.50 ea.		$275
Production Costs			
Labour:			
Planting 1.5 hours		8.40	
Pruning (1.5 days)		67.20	
Weed and pest control (1 day)		44.80	
Irrigation (1.0 day)		44.80	
Maintenance (1.5 day)		67.20	
			232.40
Mowing:	$25.50/hr x 3		76.50
Electricity:			170
Insurance:			70
Rates:			30
Fertiliser:	As for Year 1		305.25
Miscellaneous:			70
			$954.15

Cash Flow at end of Year 2 -$1,229.00

Year 3

Returns		0	
Capital Costs:			
Trees:	(allowing for 3% loss) 22 trees @ $9.50 ea	205	
Shed:	14m x 6m x 3m (for packing, drying, storage etc.)	4,500	
			$4,705
Production Costs			
Labour:			
Planting 1.5 hours		8.40	
Weed and pest control (1 dau)		44.80	
Irrigation (1 day)		44.80	
Maintenance (1.5 day)		67.20	
			165.20
Mowing:	$25.50/hr x 3		76.50
Electricity:			170
Insurance:			70
Rates:			30
Fertiliser:	As for Year 1		305.25
Miscellaneous:			70
			$886.95

Cash Flow at end of Year 3 -$5,592

Year 4

Returns	360 kg nuts (in shell) @ $2.30/kg	828
Less Harvesting		

and marketing costs	7% of gross return	58	
			770
Production Costs:			
Labour			
Weed and pest control (1)		44.80	
Irrigation (1)		44.80	
Maintenance (1.5)		67.20	
			156.80
Mowing:	$25.50/hr x 3		76.50
Electricity:			170
Insurance:			90
Rates:			30
Fertiliser:	(double rate of Year 1)		610.50
Miscellaneous:			70
			1,203.80
Cash Flow at end of Year 4		-$434	

Year 5

Returns	720 kg nuts (in shell)	1,656	
less Harvesting and Marketing Costs	(7% gross return)	116	
			1,540
Production Costs			
Labour: (days)			
Weed and pest control (1.5)		67.20	
Raking and burning (2.5)		112.00	
Irrigation (1)		44.80	
Maintenance (1.5)		67.20	
			291.20
Mowing:	$25.50/hr x 3		76.50
Electricity:			170

Insurance:			130
Rates:			30
Fertiliser:	(double rate of Year 1)		610.50
Miscellaneous:			140
			$1,448.20
Cash Flow at end of Year 5		-$92	

Year 6

Returns	3,200 kg nuts (in shell)	7,360	
less Harvesting and Marketing Costs	(7% gross return)	515	
			6,845
Production Costs			
Labour:	As for year 5		291.20
Mowing:	$25.50/hr x 2		51.00
Electricity:			170
Insurance:			130
Rates:			30
Fertiliser:	(double rate of Year 1)		610.50
Miscellaneous:			140
			$1,422.70
Cash Flow at end of Year 6		$5,422.00	

Year 7

Returns	5,400 kg nuts (in shell)	14,420	
less Harvesting and Marketing costs	(7% gross return)	870	
			11,550

Production Costs		
Labour:		
Weed and pest control (1.5)	67.20	
Raking and burning (3)	134.40	
Irrigation (1)	44.80	
Pruning (1.5)	67.20	
Maintenance (1.5)	67.20	
		380.80
Mowing: $25.50/hour x 2		51.00
Electricity:		170
Insurance:		130
Rates:		30
Fertiliser:		610.50
Miscellaneous:		140
		1,511.50
Cash Flow at end of Year 7	$10,038.00	

Year 8

Returns	7,200 kg nuts (in shell)	16,560	
less Harvesting and Marketing costs	(7% gross return)	1,159	
			16,400
Production Costs			
Labour:	As for year 7		380.80
Other:	As for year 7		1,130.70
			$1,511.50
Cash Flow at end of year 8		$14,888.00	

NB: N.Z. Data unavailable after year 8.
Overseas information about yields is variable.

Year 9

Returns	9,800 kg nuts (in shell)	22,540	
less Harvesting and Marketing Costs	(7% gross return)	1,578	
			$20,962
Production Costs:	As for year 8		$1,511.50
Cash Flow at end of year 9		$19,450.00	

Year 10

Returns	10,600 kg nuts (in shell)	24,380	
less Harvesting and Marketing Costs	(7% gross return)	1,707	
			$22,673
Production Costs:	As for year 9		$1,511.50
Cash Flow at end of Year 10		$21,121.00	

Year 11

Returns	11,700 kg nuts (in shells)	26,910	
less Harvesting and Marketing Costs		1,884	
			$25,026
Production Costs:	As for year 10		$1,511.50
Cash Flow at end of Year 11		$23,514.00	

Year 12

Returns 14,000 kg nuts

	(in shell)	32,200	
less Harvesting and Marketing Costs		2,254	
			$29,946
Production Costs:	As for year 11		$1,511.50
Cash Flow at end of Year 12		$28,434.00	

Year 13

Returns	14,700 kg nuts (in shell)	33,910	
less Harvesting and Marketing Costs		2,367	
			$31,443
Production Costs: As for Year 12 except Labour: Weed and pest control (2.5 man days)		112.00	$1,623.50
Cash Flow at end of Year 13		$29,819.00	

Year 14

Returns	15,600 kg nuts	35,880	
less Harvesting and marketing Costs		2,512	
			$33,368
Production Costs:	As for year 13		$1,623.50
Cash Flow at end of Year 14		$31,734.00	

Year 15

Returns	16,200 kg nuts	37,260	
less Harvesting and			

Marketing Costs		2,608	
			$34,652
Production Costs:	As for Year 14		$1,623.50
Cash Flow at end of Year 15		$33,028.00	

SUMMARY CASH FLOW FOR A ONE HECTARE MACADAMIA ORCHARD

Year	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Income	-	-	-	828	1,656	7,360	12,420	16,560	20,962	24,380	26,910	32,200	33,810	35,880	37,260
less: Harvesting and Marketing Costs	-	-	-	58	116	515	870	1,159	1,578	1,707	1,884	2,254	2,367	2,512	2,608
				770	1,540	6,845	11,550	15,400	20,962	22,673	25,026	29,946	31,443	33,368	34,652
Production Costs	1,233	954	887	1,204	1,448	1,423	1,512	1,512	1,512	1,512	1,512	1,512	1,624	1,624	1,624
Capital Costs	9,059	275	4,705	-	-	-	-	-	-	-	-	-	-	-	-
Expenditure Total	10,292	1,229	5,592	1.204	1,448	1,423	1.512	1,512	1,512	1,512	1,512	1,512	1,624	1,624	1,624
Net Cash Flow	-10,292	-1,229	-5,592	-434	-92	+5,422	+10,038	+14,888	+19,450	+21,121	+23,514	+28,434	+29,819	+31,734	+33,028
Accumulated Cash Flow	-10,292	-11,521	-17,103	-17,537	-17,629	-12,087	-2,409	+12,839	+32,289	+53,410	+76,924	+105,358	+135,177	+166,911	+199,939

5.3.17 Asparagus

ASSUMPTIONS

1. Production is in Canterbury of Mary Washington 500 W.

2. Establishment method - crown transplants, grown on property plant density 27,000 pl/ha.

3. All production is sold to processor with 85% grade 1, 15% grade 2. Price is $1.33/kg grade 1, $0.84/kg grade 2. Processor provides packaging, pays transport.

4. All cultivation, spraying, and fertilising is done by contractor at contract rates

5. Labour for harvesting cost $300/t picked.

TYPICAL YEAR - YEAR 3

Costs

Fertilister			
Calcium Ammonium Nitrate	800 kg/ha @ $420/t	336	
Superphosphate	300 kg/ha @ $125/t	38	
Muriate of potash	350 kg/ha @ $200/t	70	
Lime	0.5 t/ha @ $ 53/t	27	
			471
Spray			
Pre-emergent (2 x) Paraquat	21/ha @ $ 10/l		40
Cultivation			
Mowing	$ 43/ha	43	
Discing (2 x)	$ 20/ha	40	
Harrow	$ 20/ha	20	
			103
Machinery			
Fertiliser spreading (2 x)	1.5 hr/ha @ $ 10/hr	30	
Spraying (2 x)	1.0 hr/ha @ $ 10/hr	20	
			50
Labour			
Fertiliser spreading	3 hrs @ $ 5/hr	15	

Spraying	2 hrs @ $ 5/hr	10
Harvesting	$300/t yield 1.75t	525
		560
Capital Cost		
Cutting Rig	$2,200 over 10 ha	220
TOTAL COSTS YEAR 3		1444

Returns:

1.75 l - Grade 1	(@ 1.33)	1978
- Grade 2	(@ 0.84)	220
TOTAL		2198

Surplus for Year $754.

FOR ASPARAGUS CASH FLOW $/ha - see next page.

YIELD PRICE MATRIX

	-,-0.5,1.5, 2.0,2.0,1.5	-,-,1.75,3.0, 4.0,4.0,3.0	-,-,2.0,3.5, 5.0,5.0,3.5
Grade 1 $1.00/kg Grade 2 $0.68/kg	-963	+5,067	+7,185
Grade 1 $1,33/kg Grade 2 $0.84/kg	+752	+9,860	+12,971
Grade 1 $2.00/kg Grade 2 $1.40/kg	+4,825	+19,155	+25,387

ASPARAGUS CASH FLOW ($/ha)

Year	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Gross Income	-	-	2,198	3,769	5,026	6,026	3,769	-	-	2,198	3,769	5,026	5,026	3,769
less: Harvesting and Marketing costs	-	-	525	900	1,200	1,200	900	-	-	525	900	1,200	1,200	900
Net Income	-	-	1,673	2,869	3,826	3,826	2,869	-	-	1,673	2,869	3,826	3,826	2,869
Working Costs														
Cultivation	141	103	103	103	103	103	103	141	103	103	103	103	103	103
Seed	100	-	-	-	-			100	-	-	-	-	-	-
Fertiliser	589	52	471	471	471	471	471	471	471	471	471	471	471	471
Sprays	15	40	40	40	40	40	40	15	40	40	40	40	40	40
Machinery	360	34	50	50	50	50	50	450	50	50	50	50	50	50
Labour	664	14	25	25	25	25	25	664	25	25	25	25	25	25
Total Working Costs	1,869	243	689	689	689	689	689	1,841	689	689	689	689	689	689
Capital Costs	-	-	220	-	-	-	-	-	-	-	-	-	-	-
Net Cash Flow	-1,869	-243	+764	+2,180	+3,137	+3,137	+2,210	-1,841	-689	+984	+2,180	+3,137	+3,137	+2,180
Accumulated Net Cash Flow	-	-2,112	-1,348	+832	+3,969	+7,106	+9,316	+7,475	+6,786	+7,770	+9,950	+13,087	+16,224	+18,404

5.4 BUDGETS

5.4.1 Mixed Cropping and Livestock

The following budget is for a typical Canterbury mixed cropping and livestock farm for the period 1 July 1981 to 30 June 1982. Prices used are as at November 1981.

The figures used do not represent a specific situation but are merely offered as an example use of the Lincoln College budget teaching forms. These teaching budget forms are only one of many different forms and layouts available for budgeting purposes.

A cash flow is also included.

Farm Cash Budget

For Period 1 July 1981 to 30 June 1982

Farmer

Property

Address

Phone

Farm Area

Total 233.1984 ha

Effective 221.0610 ha

Prepared by

Date of Preparation 10 Nov. 1981

Lincoln College
University College of Agriculture
Canterbury
New Zealand

Department of Farm Management and Rural Valuation

STATEMENT OF ASSETS
(AT MARKET VALUE)

PROPERTY OF: DATE 9 / 11 / 81

LAND AND IMPROVEMENTS				IF LEASEHOLD ONLY		
Property	Area	Tenure	Value as F/H	Lessors Int.	Lessees Int.	
	158	F/H	441,000	80%	20%	
	75	L/H	206,000	164,800	41,200	
Totals			441,000			
TOTAL VALUE OF OWNER'S INTEREST IN LAND & IMPS.						647,000

LIVESTOCK								
Sheep: Brd & Cls	Number	$/hd	Total	Breed & Class	Number	$/hd	Total	
1120 CPW m.a.ewe	1120	21	23,520					
CPW hoggets	350	25	8,750					
Wethers	50	15	750					
Sub Totals				Sub Totals				
Total No. Sheep					TOTAL VALUE OF SHEEP			33,020
Cattle:								
R 3 yr steers	72	300	21,600					
Sub totals				Sub totals				
Total No. Cattle					TOTAL VALUE OF CATTLE			21,600
Other Livestock:								
Sub Totals				Sub Totals				
Total No.					TOTAL VALUE OF OTHER LIVESTOCK			-

PLANT AND MACHINERY			
Motorized: Item	Value	Non Motorized: Item	Value
Bedford truck	2,100	Plough	1,000
Fiat tractor	8,000	Grubber	500
Ford tractor	8,020	Harrows	600
Massey Ferguson tractor	4,014	Grain bin	850
Motorbike	900	Cultivator	1,950
		Baler	900
Total Motorized Plant	23,034	Total Non Motorized Plant	5,800
TOTAL VALUE OF PLANT AND MACHINERY			28,834

PRODUCE ON HAND							
Type	Amount	Price	Total	Type	Amount	Price	Total
				Nui ryegrass	9,790	1.10	10,769
				Barley	4,000	1.85	7,400
TOTAL VALUE PRODUCE ON HAND							18,169

CURRENT ASSETS			
Type	Amount	Type	Amount
TOTAL CURRENT ASSETS			-

NON FARM ASSETS			
TOTAL FARM ASSETS			
Type	Amount	Type	Amount
TOTAL NON FARM ASSETS			-

TOTAL ASSET VALUE	748,623

STATEMENT OF LIABILITIES

PROPERTY OF: _____ DATE 1 / 7 / 81

TERM LIABILITIES Type	Creditor	Orig. Debt	Int %	Repayment Terms	Amount Outstand.	
Mortgages						
	-	55,000	14%	5 year loan	55,000	
	(Solicitors)					
	Family	160,000	6%	Vendor mortgage	153,243	
	Rural Bank	35,000	9%	25 year amortised	31,660	
Loans						
Term loan	Bank	2,500	14%	5 year loan (table)	1,667	
Hire Purchase						
				TOTAL TERM LIABILITIES		241,570

CURRENT LIABILITIES Type	Creditor	Int %	Terms of Loan	Amount	
Bank Overdraft(s)					
Stock Firm Account(s)				8,735	
Sundry Creditors	(	9,752		9,752	
	Family (	9,509		9,509	
	(	2,000		2,000	
Income Tax	Terminal due		7 / 9 / 82	1,411	
	1st Provisional due		/ /		
	2nd Provisional due		/ /		
			TOTAL CURRENT LIABILITIES		31,407
			TOTAL FARM LIABILITIES		272,977

NON FARM LIABILITIES Type	Creditor	Int %	Terms	Amount	
			TOTAL NON FARM LIABILITIES		-
			TOTAL LIABILITIES		272,977

SUMMARY

TOTAL ASSETS	748,623	less TOTAL LIABS.	272,977	= TOTAL EQUITY	475,646
Total Farm Assets	748,623	less Total Farm Liabs	272,977	= FARM EQUITY	475,646

ANALYSIS

TOTAL LIABILITIES	=	37	% of TOTAL ASSETS
TOTAL EQUITY	=	63	% of TOTAL ASSETS
TOTAL FARM LIABILITIES	=	37	% of TOTAL FARM ASSETS
FARM EQUITY	=	63	% of TOTAL FARM ASSETS

FARM CASH BUDGET SUMMARY

PROPERTY OF _____ PERIOD: 1/7/81 - 30/6/82

EXPENDITURE	$	REVENUE		$
STOCK PURCHASES		SHEEP		
Sheep		Wether lambs	90 @ $20.30	1,827
5 @ $200	1,000	Wether lambs	685 @ $18.85	12,912
		Ewe lambs	360 @ $20.00	7,200
		C.F.A. ewes	277 @ $13.00	3,601
Cattle		Hoggets	46 @ $25.00	1,150
72 @ $210	15,120			
Other Livestock		WOOL & SKINS		
		All wool	6280 kg @ $2.80	17,584
WORKING EXPENSES		Skin	20 @ $5	100
Wages	9,924			
Animal Health	1,294			
Breeding and Testing	-	CATTLE		
Crop Expenses	6,063	R 3 yr steers	72 @ $280	20,160
Dairy Shed Expenses	-			
Electricity	1,500			
Feed	400			
Fertiliser and Lime	5,452			
Freight	4,296			
Miscellaneous Contracts	1,463			
Seeds	5,099			
Selling Charges	-	DAIRY		
Shearing Expenses	1,580			
Water Charges	500			
Weed & Pest Control	-			
Other				
REPAIRS AND MAINTENANCE		OTHER LIVESTOCK		
Buildings	600			
Other Improvements	1,200			
Plant (non motorised)	2,800			
VEHICLE RUNNING EXPENSES				
Fuel	7,960	CASH CROPS		
Repairs & Maintenance	3,300	Wheat	97 t @ $195	18,915
Registration	100	Barley	222 t @ $185	41,070
Car Expenses	960			
ADMINISTRATION				
Professional Fees	1,150			
Telephone and Mail	534	SMALL SEEDS		
Other Expenses	145	'Nui' ryegrass	9.0 t @ $1.10/kg	9,900
		White clover	2500 kg @ $2.80/kg	7,000
STANDING CHARGES				
Insurance	800			
Interest	19,979	OTHER FARM PRODUCE		
Rates	2,975			
Rent	6,355			
TOTAL FARM CASH EXPENDITURE	102,549	TOTAL FARM CASH REVENUE		141,419

FARM OPERATING CASH SURPLUS ~~DEFICIT~~ $38,870

CASH FORECAST STATEMENT

PROPERTY OF _____ PERIOD: 1/7/81 - 30/6/82

FURTHER CASH EXPENDITURE	$	FURTHER CASH REVENUE	$
CAPITAL		CAPITAL	
Development		Asset Realisations	-
Trees	326		
Water supply	295		
Plant Purchases	-	Plant Sales	-
Principal Repayments		Loans Uplifted	-
Rural Bank	713		
Bank	500		
		Gifts	-
Off-Farm Investments	-	Govt Assistance & Incentives	-
INCOME EQUALISATION DEPOSIT	-	INCOME EQUALISATION WITHDRAWAL	-
TAXATION PAYMENTS		TAXATION REFUND	-
Terminal			
1st Provisional due 7/9/81	5,215		
2nd Provisional due 7/3/82	7,320		
NON-FARM EXPENDITURE		NON-FARM REVENUE	
Drawings	11,120	Interest	-
Life Insurance	270		
School Fees	-	Dividends	-
Donations	-		
Other	-	Other	-
TOTAL FURTHER CASH EXPENDITURE	25,759	TOTAL FURTHER CASH REVENUE	-
FARM OPERATING CASH DEFICIT (xP3)		FARM OPERATING CASH SURPLUS (xP3)	38,870
TOTAL B	25,759	TOTAL A	38,870

TOTAL A	38,870
LESS TOTAL B	25,759
NET CASH RESULT	$13,111

CASH RECONCILIATION

TRADING BANKS (NET ±)	6,321	NET OPENING CASH POSITION (±)	-14,907
STOCK FIRMS (NET ±)	-8,735		
SUNDRY CREDITORS (-)	-21,261	NET CASH RESULT (±)	13,111
SUNDRY DEBTORS (+)	+8,768		
NET OPENING CASH POSITION (±)	-14,907	NET CLOSING CASH POSITION (±)	-1,796

SHEEP RECONCILIATION

PROPERTY: PERIOD: 1 July 1981 to 30 June 1982

Stock Units Opening 1/7/81	Rate	Class of Stock Breed	Opening Nos. @ 1/7/81	Nat. Incr.	Killed	Deaths and Losses	Sales	Purch-ases	Closing Nos. @ 30/6/81	Class of Stock	Closing s.u.'s 30/6/82
	Ewes										
		Lambs		710	-	-					
		Unmated Hgts					360			Unmated Hgts	
280	0.8	Mated Hgts	350		-	4	46	-	350	Mated Hgts	280
		Ewes: 2th						-	300	Ewes: 2th	300
		4th								4th	
		6th								6th	
1170	1.0	4yr	1170			23	277	-	870	4yr	870
		5yr								5yr	
		6yr								6yr	
		Aged								Aged	
		TOTAL EWES	1520						1520	TOTAL EWES	
	Wethers - m.s.										
		and wether Lambs		810		-	775	-	35	Hgts	24.5
24.5	0.7	Hgts	35		34	1					
		2th								2th	
		Aged								Aged	
		TOTAL WETHERS	35						35	TOTAL WETHERS	
	Rams										
		Lambs		-							
		Hgts						5	5	Hgts	
		2ths	5		5	-	-			2ths	
		Aged	10					-	10	M.Age	
		TOTAL RAMS	15						15	TOTAL RAMS	12
		TOTAL SHEEP	1570	1520	39	28	1458	5	1570	TOTAL SHEEP	
			(a)	(b)	(c)	(d)	(e)	(f)	(g)		

1487	TOTAL S.U's	÷	221	EFFECTIVE AREA =	6.72	S.U's /ha	S.U's /ha	6.72	=	1487	÷	221

LAMBING PERFORMANCE (Based on Ewes to Ram)
Tailing = NA % Survival to Sale = 100 %

DEATH RATES
Ewes = 2 % Hgts = 1 % Lambs = NA % Rams = NA %

RECONCILIATION
(1) Totals a + b + f = 3095
(2) Totals c + d + e + g = 3085
Total (1) must = Total (2)

SHEEP PRODUCTION

PROPERTY OF: _____ PERIOD 1/7/81 - 30/6/82

LAMB RECONCILIATION

Natural Increase				Disposal						
Ewes to Replacement Sire				Sales						
				To Works		Store	Retain	Deaths	Killed	TOTAL
		710	Ewe Lambs		FOM x Feed	360	350	-	-	710
1170	Ewes @ 61.5% =	720	Wether Lambs	685	FOM x Feed		35	-	-	720
Ewes to Terminal Sire										
350	Ewes @ 26% =	90	MS Lambs	90	FOM x Feed		-	-	-	90
1520	Total Ewes	1520	Total Lambs	775		360	385	-	-	1520

FLOCK WASTAGE STATISTICS

Avg Number of Lambings per Ewe = 3.9 [Total Ewes ÷ Number annual reps]

Replacements as % of Total Ewe Flock = 19.7 % [Annual reps ÷ Total Ewes x 100]

Annual Culling Rate as % = 18.3 % [Annual Cull Ewes ÷ Total Ewes x 100]

SALES

Class of Sheep Sold	Number	Carcass Wgt/hd	Total Wgt	Gross Price per kg	Gross Price per hd	TOTAL SALES
Wks Lambs	90	14 kg	1260	1.45	$20.30	1,827
	685	13 kg	8905	1.45	$18.85	12,912
Store Lambs	360	-	-	-	$20.00	7,200
Total No. Lambs Sold	1135					
Cull Ewes						
	277	-	-	nett	$13.00	3,601
Hoggets						
	46	-	-	nett	$25.00	1,150
Others						
TOTALS						26,690

WOOL

Class of Sheep Sold	No. Sheep Shorn	Kg per hd	Total Wgt (kg)	Price/kg Gross	TOTAL SALES
Main Shear:					
1570 @ 4.0 kg each	1570	4.0	6280	2.80	17,584
Sub Totals					
Crutchings					
Sub Total					
TOTALS					17,584

SKINS

Slinks @ = [ ] Others 20 @ $5 = [100] TOTAL SKINS 100

OTHER SHEEP REVENUE. Type of Produce Sold	Amount	Unit Price	TOTAL SALES
Skins 20 @ $5 each			
TOTALS			

TOTAL SHEEP & WOOL CASH REVENUE 44,374

BEEF CATTLE RECONCILIATION

PROPERTY: PERIOD: 1/7/81 - 30/6/82

Stock Units Opening 1/7/81	Rate	Class of Stock / Breed	Opening Nos. @ 1/7/81	Natural Increase	Killed	Deaths and Losses	Sales	Purch-ases	Closing Nos. @ 30/6/82	Class of Stock	Closing s.u.'s 30/6/82
	Heifers										
		Calves								Calves	
		R1yr								R1yr	
		Dry R2yr								Dry R2yr	
		I.C. R2yr								I.C. R2yr	
		I.C. R3yr								I.C. R3yr	
		M.A. Cows								M.A. Cows	
		TOTAL BR. COWS								TOTAL BR. COWS	
	Steers										
		Calves								Calves	
		R1yr	0		-	-	-	72	72	R1yr	
		R2yr	72		-	-	72	-	0	R2yr	360
		R3yr								R3yr	
		R3yr +								R3yr +	
		TOTAL STEERS	72						72	TOTAL STEERS	
	Bulls										
		Calves								Calves	
		R1yr								R1yr	
		R2yr								R2yr	
		M.A.								M.A.	
		TOTAL BULLS								M.A.	
		TOTAL CATTLE	72	-	-	-	72	72	72	TOTAL CATTLE	

			a	b	c	d	e	f	g			
360	TOTAL SU's	:	221	EFFECTIVE AREA =	1.63	SUs/ha	SUs/ha	1.63	=	360	:	221

CALVING PERFORMANCE (Based on Cows Mated)
Cows = NA %: Heifers = NA %:

DEATH RATES
Cows = NA %: R1yr Hfs = NA %: R2yr Hfs = NA %
Bulls = BA %: R1yr Sts = NA %: Steers = 0 %

RECONCILIATION
(1) Totals a + b + f = 144
(2) Totals c + d + e + g = 144
Total (1) must = Total (2)

BEEF CATTLE PRODUCTION

PROPERTY OF: _____ PERIOD: 1/7/81 - 30/6/82

CALF RECONCILIATION

			Sales				
Cows to Replacement Sire			Weaners	Vealers	Retain	Deaths	Total
	Cows @ ___ %	Hf. Calves					
		Bull Calves					
Cows to Terminal Sire							
	Cows @ ___ %	M.S. Calves					
N/A	Total Cows	N/A Total Calves	N/A	N/A	N/A	N/A	N/A

HERD WASTAGE STATISTICS

Avg. number of Calvings/Cow = TOTAL COWS [N/A] ÷ No. An. Reps [N/A] = [N/A]

Number Annual Reps [N/A] ÷ TOTAL COWS [N/A] = Reps as % of Total Herd = [N/A %]

Annual Culling Rate = [N/A %] of TOTAL COWS.

SALES

Class of Cattle Sold	Number	Carcass Wgt/hd	Total Wgt	Gross Price per kg	Gross Price per hd	TOTAL SALES
R 3 yr steers	72	250 kg	nett	price	$280	20,160
TOTALS						20,160

OTHER BEEF CATTLE REVENUE

Type of Produce Sold	Amount	Unit Price	TOTAL SALES
TOTALS			20,160

TOTAL BEEF CATTLE CASH REVENUE [ ]

COMMENTS

These cattle are sold in June when the schedule and butcher demand are high. A nett price of $280 may be somewhat conservative.

SEEDS, MANURE YIELDS SCHEDULE

Pdk	Area	Programme		Yield (t)		Seeds (kg)		Lime		Fertiliser		
		From	To	Per Ha	Total	Per Ha	Total	Per Ha	Total	Type	Per Ha	Total
1	2.62	Barley	Barley	4.5 t	11.8	121 kg	317	-	-	NH4 SO4	250 kg	0.5 t
2	2.02	Tama	Tama	Grazing		40 kg	81	-	-	Sup.	125 kg	0.2 t
3	8.09	Wheat	Barley	4.5 t	36.4	121 kg	797	-	-	NH4 SO4	250 kg	2.0 t
4	8.49	Wheat	Barley	4.5 t	38.2	121 kg	1027	-	-	NH4 SO4	250 kg	2.0 t
5	7.68	Ryegrass	Grazing	.675 t	5.184	nil	nil	-	-	NH4 SO4	375 kg	2.5 t
6	2.83	Barley	Barley	4.5 t	12.7	121 kg	342	-	-	NH4 SO4	250 kg	0.5 t
7	6.47	Wheat	Barley	4.5 t	29.1	121 kg	783	-	-	NH4 SO4	250 kg	1.6 t
8	1.00	NO CHANGE -		will remain in Walnut trees						-	-	-
9	1.60	Wheat	Barley	4.5 t	7.2	121 kg	194	-	-	NH4 SO4	250 kg	0.4 t
10	7.28	NO CHANGE -		Permanent		Pasture				-	-	-
11	8.5	NO CHANGE -		Permanent		Pasture				-	-	-
12	8.6	NO CHANGE -		Permanent		Pasture				-	-	-
13	3.23	Tama	Tama	Grazing		40 kg	129	-	-	Sup.	125 kg	0.8 t
14	2.83	Tama	Tama	Grazing		40 kg	113	-	-	Sup.	125 kg	0.6 t
15	2.83	Lucerne	Lucerne	-	-	-	-	-	-	-	-	-
16	2.83	NO CHANGE		-	-	-	-	-	-	-	-	-
17	1.20	NO CHANGE		-	-	-	-	-	-	-	-	-
18	2.83	NO CHANGE		-	-	-	-	-	-	-	-	-
19	3.23	NO CHANGE		-	-	-	-	-	-	-	-	-
20	3.64	NO CHANGE		-	-	-	-	-	-	-	-	-
21	3.08	Barley	Barley	4.5 t	13.8	121 kg	373	-	-	NH4 SO4	250 kg	0.8 t
22	7.28	NO CHANGE		-	-	-	-	-	-	-	-	-
23	4.85	Tama	Tama	Grazing		40 kg	194	-	-	Sup.	125 kg	0.6 t
24	4.20	NO CHANGE		-	-	-	-	-	-	-	-	-
25	4.20	Barley	Barley	4.5 t	18.9	121 kg	504	-	-	NH4 SO4	250 kg	0.8 t

Fertilisers	Totals (Tonnes)
Lime	

Seeds	Totals	Seeds	Totals

SEEDS, MANURE YIELDS SCHEDULE

Pdk	Area	Programme		Yield (t)		Seeds (kg)		Lime		Fertiliser		
		From	To	Per Ha	Total	Per Ha	Total	Per Ha	Total	Type	Per Ha	Total
26	2.02	NO CHANGE		-	-	-	-	-	-	-	-	-
27	4.04	Lucerne	Lucerne	-	-	-	-	-	-	-	-	-
28	5.66	NO CHANGE		-	-	-	-	-	-	-	-	-
29	4.45	Clover	Wheat	.25 t	1.113	134 kg	596	-	-	NH_4SO_4	250 kg	1.5 t
30	8.9	Wheat	Barley	4.5 t	40	121 kg	1076	-	-	NH_4SO_4	250 kg	2.1 t
31	4.04	Clover	Wheat Clover	.25 t	1.01	134 3	541 12	-	-	NH_4SO_4	375 kg	1.5 t
32	4.45	Clover	Wheat Clover	.25 t	1.113	134 3	596 13.4	-	-	NH_4SO_4	250 kg	2.1 t
33	8.90	Tama	Tama	Grazing		40 kg	356	-	-	Sup.	125 kg	1.1 t
34	7.28	Tama	Tama	Grazing		40 kg	292	-	-	Sup.	125 kg	0.9 t
35	4.09	Clover	Wheat	.25 t	1.023	134 kg	549	-	-	NH_4SO_4	375 kg	1.5 t
36	4.00	Stubble	Barley	Stubble		121 kg	484	-	-	NH_4SO_4	250 kg	1.0 t
37	10.11	Barley	Grassed	4.5 t	45.5	40 kg	404	-	-	NH_4SO_4	375 kg	3.7 t
38	4.4	NO CHANGE		-	-	-	-	-	-	-	-	-
39	4.45	Clover	Wheat	.25 t	1.113	134 kg	596	-	-	NH_4SO_4	375 kg	1.5 t
40	4.45	NO CHANGE		-	-	-	-	-	-	-	-	-
41	3.60	NO CHANGE		-	-	-	-	-	-	-	-	-
42	3.60	NO CHANGE		-	-	-	-	-	-	-	-	-
43	3.60	NO CHANGE		-	-	-	-	-	-	-	-	-
44	28.3	NO CHANGE		-	-	-	-	-	-	-	-	-

Fertilisers	Totals (Tonnes)
NH_4SO_4	18.3 t
Super	4.2 t
Lime	Nil

Total T/D = 22.5 t

Seeds	Totals	Seeds	Totals
Barley	5966 kg	Tama ryegrass	1163 kg
Nui ryegrass	404 kg		
Wheat	2878 kg		

CROP PRODUCTION

PROPERTY OF: _____ PERIOD: 1/7/81 - 30/6/82

CURRENT YEAR'S PRODUCTION

Crop	Area	Ave.Yield (kg)	Total Production (kg)
Barley	50.28	4500	226,260
Wheat	21.48	4500	96,660
Ryegrass	17.79	675	12,008
Totals	89.55		334,928

CROP RECONCILIATION

Crop	Opening	Production	Purchases	Sales	Used	Closing
Barley	Nil	226 t	-	222 t	-	4 t
Wheat	Nil	97 t	-	97 t	-	-
Ryegrass 'Nui'	6.79	12 t	-	9 t		9,790 kg
Clover 'Huia'	2.5 t	-	-	2.5 t	-	Nil
	(a)	(b)	(c)	(d)	(e)	(f)
Total kg	9.29	335 t	-	330.5 t	-	13.79

Reconciliation (1) Totals a + b + c = 344.29
(2) Totals d + e + f = 344.29

Total (1) must equal total (2)

HAY RECONCILIATION (Bales)

Type	Opening	Produced	Purchased	Sales	Used	Closing
Square bales	-	2000	-	-	1800	200
Big round	2	225	-	-	217	10
Totals	(a) 2	(b) 2225	(c) -	(d) -	(e) 2017	(f) 210

Reconciliation: (a) + (b) + (c) 2227 = (d) + (e) + (f) 2227

CROPS USED

Crop	Quantity	Use (Feed or Seed)
Tama ryegrass	27.07 ha	Winter greenfeed

CROP SALES

Crop	Quantity	How marketed	Unit Price	Total
Wheat	97 t	Flour mill	$195/t	18,915
Barley	222 t	Malting Company	$185/t	41,070
Ryegrass 'Nui'	9000 kg	Wrightson N.M.A.	$1.10/kg	9,900
White clover	2500 kg	Wrightson N.M.A.	$2.80/kg	7,000
			TOTAL CROP CASH REVENUE	76,885

BUDGET WORKSHEETS

A

LIVESTOCK PURCHASES (Excluding Freight)

Sheep	$	Cattle-Beef	$	
Rams	1,000	R 1 yr steers 72 @ $210	15,120	
	1,000		15,120	
Other Livestock (specify)		Dairy		
				16,120

WORKING EXPENSES

WAGES

Employee	Time Employed	Rate of Pay	Totals	
Married man	44 hr/wk + OT	$140/wk	7,280	
Single person	Temporary	$4/hour	2,644	
				9,924

ANIMAL HEALTH

Vet Fee		Cattle		
Plus Visits @ $		Spraying cattle @ $ /hd	-	
Sheep		Drenching cattle @ $1.2/hd	87	
Dipping 1520 sheep @ $0.10/hd	152	Ear Tags @ $ /hd	-	
Drenching 1470 ewes @ $0.25/hd	368	Vacc'n cattle @ $ /hd	-	
1520 lambs @ $0.20/hd	304	Preg. Test cows @ $ /hd	-	
Vacc'n 1520 sheep @ $0.12/hd	183	Dairy		
lambs @ $ /hd	-	Vacc'n cattle @ $ /hd		
Dckng Rings 20 pkts @ $10 /pkt	200	Bloat Control		
Ear Tags @ $ /100	-	Ear Tags @ $ ea		
Footrot	-	Mastitis Control		
		Other livestock		
	1,207			1,294

BREEDING AND TESTING

A.B.	Cows @ $	per cow =		
Herd Testing	Herd fee @ $	plus per cow =		
Pregnancy Testing	Cows @ $	per cow =		
Breeding group costs				
				-

TOTAL CARRIED FORWARD 27,338

B.

TOTAL BROUGHT FORWARD	27,338

CROP EXPENSES

Weed & Pest Control (for Crops & Small Seeds)

Area	Cover	Chemical	Rate	Tot.Chem.	Cost/L	$ Tot.Chem.	Appln $/ha*	Tot.Appn $
50.28	Barley	MCPA		186 ℓ	$5.50	939		
21.48	Wheat	MCPA		80 ℓ	$5.05	404	Self	
6.87	Lucerne	Atrazine		14 ℓ	$6.84	96		
17.79	Ryegrass	Lindane		18 ℓ	$13.25	239	Applied	
50.28	Barley	Avenge		201 ℓ	$10.20	2,050		
21.48	Wheat	Bayleton		21.5ℓ	$20.75	445		
17.79	Ryegrass	Mataven		107 ℓ	$9.25	990		
								5,163

* N.B. Application cost only or Application plus chemical combined.

Contract Harvesting

Area	Crop	Ha per hr	Hours	Rate/hr	Labour	Total
	Does own harvesting - refer to Freight section for crop haulage					

Contractors Auger hire T augered at $ /T =	-
Contractors Cartage (Pdk to Silo) T carted at $ /T =	-
Windrowing	-
	-

Sacks and Box Hire

Sacks at $ per sack Boxes at $ per Box	
Total Sacks & Boxes	

Seed Dressing, Certification & Levies

12,000 kg of Nui @ $0.075/kg	900
kg of @ $ /kg	
kg of @ $ /kg	
kg of @ $ /kg	
Seed Testing	
Grain & Seed Drying	
Wheat Board Levy	
Other (e.g. innoculation)	
	6,063

DAIRY SHED EXPENSES

Milking machine requisites (rubberware)	
Cleaning materials - chemicals	
- hardware	
Total Expenses per Milking Cow	-

TOTAL CARRIED FORWARD	33,401

C.

TOTAL BROUGHT FORWARD	33,401

ELECTRICITY

Farm: 900 Household: 600	1,500

FEED - Conserved:

Hay baling 2000 ba.@ 20¢/bale		Hay bales @ $ /bale	
Twine		bales @ $ /bale	
Cartage		Grain T @ /T	
Other		Grazing	
			400

FERTILISER & LIME

Type	Quantity	Unit Cost	Total	Type	Quantity	Unit Cost	Total
NH_4SO_4	18.3 t	$253.75	$4,643				
Super	4.2 t	$136.85	$ 575				
Sub Total	22.5 t			Sub Total			5,218

Freight

Type	Quantity	From	Km	Rate per tonne	Total
NH_4SO_4	18.3 t	Hornby	20	$10.35	189.40
Super	4.2 t	Hornby	20	$10.35	44.60
Total	22.5 t				234.00

Spreading

Area	Cover	Method	Type	Rate/ha	Total Qty	Unit Cost	Total	
	Spread on by self at drilling - refer to Machinery & Fuel							
	Total							5,452

TOTAL CARRIED FORWARD	40,753

D.

TOTAL BROUGHT FORWARD	40,753

FREIGHT

Stock Freight

Number	Stock Class	To/From	Km	$ per hd	Total
775	Wether lambs	to Islington	22	0.46	356
360	Ewe lambs	to Addington	29	0.46	166.60
277	Cull for age ewe	to Addington	29	0.57	156
72	R 2 yr steers	to Addington	29	4.00	288
72	R 3 yr steers	to Addington	29	4.20	302.40
					1,269.00

Crop and Seed Freight

Produce		To/From	Km	Unit Rate	Total
Wheat	97 t	to Christchurch	32	$8.79 t	860
Barley	222 t	to Christchurch	32	$8.79 t	1,952
Barley seed	6.0 t	from Christchurch	32	$8.79 t	60
Wheat seed	3.0 t	from Christchurch	32	$8.79 t	30
					2,902

Other Freight

Wool 43 bales @ $2.90 per bale	125
	4,296

MISCELLANEOUS CONTRACTING

225 big round bales @ $6.50 each	
	1,463

OTHER WORKING EXPENSES

	-

SEEDS

Type	Variety	Total	Unit Cost	Total Cost
Wheat	Kopara)	2878 kg	$400 t	1,010
Wheat	Oroua)			
Barley	Mata	5966 kg	$400 t	2,360
Ryegrass	Nui	404 kg	$1.40 kg	566
Ryegrass	Tama	1163 kg	$1.00 kg	1,163
Total				5,099

TOTAL CARRIED FORWARD	51,611

E.

TOTAL BROUGHT FORWARD	51,611

SELLING CHARGES

Commissions		Stock Yarding fees	
$ stock sales @ % =		head @ $ /hd	
$ stock sales @ % =		head @ $ /hd	
$ Total		Trucking charges	
		head @ $ /hd	
		head @ $ /hd	
$ produce sales @ % =			
$ produce sales @ % =			
$ Total		Wool handling	
		Receive, weigh & catalogue	
Levies		kg @ $ /kg	
Wool Board $ gross @ %		Reclassing & Bining	
Wool Stab'tion $ " @ %		kg Fleece wool @ $ /kg	
		kg oddments @ $ /kg	
			-

SHEARING EXPENSES

Shearing:	1520	sheep @ $ 50	per 100	=	760
.	1520	lambs @ $ 36	per 100	=	550
Crutching	-	sheep @ $ -	per 100	=	-
Shed hands		men @ $	per hour	=	
Full contract				=	
Wool packs	45	packs @ $ 6	each	=	270
Wool cartage		packs	km @ $ /km	=	REFER TO FREIGHT
Sundry					
					1,580

WATER CHARGES

Irrigation Water Charge:	Stock Water Charge:	
Community Water Charges: 500	Units @ $	500

WEED AND PEST CONTROL (for Lucerne & Pasture excluding small seeds only)

Area Cover	Chemical	Rate	Tot.Chem	Cost/L	$ Tot.Chem.	Appn $/ha*	Total Applied $
	REFER TO CROP EXPENSES						
* N.B. Application cost only or Application plus chemical combined.							-

TOTAL CARRIED FORWARD	53,691

F

TOTAL BROUGHT FORWARD	53,691

REPAIRS AND MAINTENANCE

BUILDINGS	$		$	
Employees cottage	400			
Farm buildings	200			
				600

OTHER IMPROVEMENTS	$		$	
Fences	1,200	Water Supply		
		Yards		
Tree and Hedge Trimming				
Drain Cleaning				
Farm Tracks and Roads				
				1,200

PLANT (non motorised)	$		$	
Cultivation	1,500	Irrigation		
Harvesting	1,000	Hardware	300	
				2,800

VEHICLE RUNNING EXPENSES

FUEL

Machine	hrs or km	ℓ/hr or km	Total litres	Fuel Type	Cents/ℓ	Total	
Ford 5000	700 hrs		@ $4.50/hr	Diesel	40	3,360	
Fiat 880	550 hrs		@ $6.10/hr	Diesel	40	3,600	
Massey 35	350 hrs		@ $1.20/hr	Diesel	40	500	
Inter. 321	110 hrs		1250 ℓ	Diesel	40	500	
							7,960

REPAIRS AND MAINTENANCE

Machine	hrs or km	Oil & grease	Filters	Other (Specify)	Total	
Fiat 880	2000 hrs				1,500	
Ford 5000	1100 hrs				1,200	
Massey 35	9000 hrs				300	
Internat. Header					300	
						3,300

REGISTRATION

Tractors [2] Trucks [-] Other [Motorbike] — 100

CAR EXPENSES (km/yr = 4,000)

Fuel [600] R & M [300] Registration [60] — 960

TOTAL CARRIED FORWARD	70,611

TOTAL BROUGHT FORWARD	70,611

ADMINISTRATION

PROFESSIONAL FEES	$		$	
Accountancy	950	Farm Advisory	200	
Legal	-	Secretarial	-	1,150

TELEPHONE AND MAIL	$		$	
Telephone Rental	134	Stamps		
Telephone Tolls	400	Other Charges		534

OTHER EXPENSES	$		$	
Subscriptions	25	Stationery & Office	120	
Travelling		Other		145

STANDING CHARGES

INSURANCE				
Buildings $ @	400	Public Liab. $ @		
Mot. Plant $ @	200	Wool $ @		
Plant $ @		Crop $ @	200	
Acc. Compensation		Hay		800

INTEREST					
Type of Debt	Creditor	Amt Outstanding	Int. Rate	Ann. Interest	
Mortgages	Family	153,000	6%	9,195	
	Solicitor	55,000	14%	7,700	
	Rural Bank	31,660		2,850	
Loans					
Term loan	Bank	1,667		234	
Hire Purchase					
Bank					
Stock Firm					
Sundry					19,979

RATES	$		$	
County Council	2,896	Catchment Board	23	
Pest Dest. Board	56	Special Rates		2,975

RENT					
Area	Property	Lessor	Term	Rental	
64 ha	-	-			6,355

TOTAL FARM CASH EXPENDITURE	102,549

BUDGETED TAXATION PROFILE FOR YEAR ENDING 30/6 /82

DEDUCTIONS			ADDITIONS		
FARM OPERATING CASH DEFICIT (XP3)		-	FARM OPERATING CASH SURPLUS (XP3)		38,870
DECREASE IN STOCK AT STANDARD VALUE			INCREASE IN STOCK AT STANDARD VALUE		
Sheep	NIL		Sheep	NIL	
Cattle	NIL		Cattle	NIL	
Other	NIL		Other	NIL	
		-			-
DECREASE IN PRODUCE ON HAND		-	INCREASE IN PRODUCE ON HAND		3,762
DEFERRED INCOME FROM THIS YEAR			DEFERRED INCOME FROM PREVIOUS YEARS		
- Income Equalisation Deposits			- Income Equalisation Withdrawals		
			- Wool Stabilisation Withdrawals		
		NIL			NIL
DEPRECIATION		5,564	DEPRECIATION RECOVERED		NIL
LOSSES ON SALES OF DEPRECIATED ITEMS		-	NON DEDUCTIBLE EXPENSES		
INVESTMENT ALLOWANCE		-	House Repairs (¾)		
			Car Expenses (½)	480	
DEVELOPMENT CLAIMED		621	Car Depreciation (½)	55	
			House Insurance (¾)	300	
			House Electricity (¾)	400	
					1,235
			Produce Used		150
SUB TOTAL		6,185	SUB TOTAL		44,017
TAXABLE FARM INCOME			TAXABLE FARM LOSS		
TOTAL		37,832	TOTAL		

	TAXABLE FARM INCOME		37,832
ADD	NET OFF FARM ASSESSABLE INCOME		
	ASSESSABLE INCOME		37,832
LESS	SPECIAL EXEMPTION		
	SUPERANNUATION		
	LIFE INSURANCE	270	
	TAXABLE INCOME		37,832
	TAX THEREON		17,602
LESS	REBATES		
	156 spouse		
	TAX DUE		17,446 (1)
LESS	P.A.Y.E.	NIL	
	PROVISIONAL PAID	5,750	
	TERMINAL TAX		11,696 (2)

NEXT YEARS BUDGETED TAX PAYMENTS

PROVISIONAL (1)	6,000
TERMINAL (2)	6,000
TOTAL	12,000

TO BE PAID

7/9/82	⅓	PROVISIONAL	4,000
7/3/83	⅔	PROVISIONAL	8,000
		TERMINAL	

TAXATION WORK SHEETS

SHEEP STANDARD VALUE ADJUSTMENT

OPENING STOCK 1 / 7 / 81				CLOSING STOCK 30 / 6 / 82			
NO.	CLASS	STANDARD VALUE	TOTAL VALUE	NO.	CLASS	STANDARD VALUE	TOTAL VALUE
		TOTAL INCREASE IN STANDARD VALUE	NIL			TOTAL DECREASE IN STANDARD VALUE	NIL

CATTLE STANDARD VALUE ADJUSTMENT

OPENING STOCK 1 / 7 / 81				CLOSING STOCK 30/ 6 / 82			
NO.	CLASS	STANDARD VALUE	TOTAL VALUE	NO.	CLASS	STANDARD VALUE	TOTAL VALUE
		TOTAL INCREASE IN STANDARD VALUE	NIL			TOTAL DECREASE IN STANDARD VALUE	NIL

CROP ADJUSTMENT

OPENING PRODUCE 1/7 /81				CLOSING PRODUCE 30/ 6 /82			
TONNES	PRODUCE	UNIT PRICE	TOTAL VALUE	TONNES	PRODUCE	UNIT PRICE	TOTAL VALUE
2.5	White clover	$280	7,000	9.79	Nui ryegrass	$110	10,769
6.79	Nui ryegrass	$110	747	4.0	Barley	$185	740
		TOTAL	7,749			TOTAL	11,509
		INCREASE IN PRODUCE	3,762			DECREASE IN PRODUCE	

DEVELOPMENT ADJUSTMENT

DEVELOPMENT B/F EX ACCOUNTS _____ _____ _____ CURRENT YEAR 621 TOTAL CLAIMABLE 621	DEVELOPMENT AMOUNT CLAIMED 621 AMOUNT CARRIED FWD FOR FUTURE YEARS - 621

B.

DEPRECIATION SCHEDULE

ITEM	BOOK VALUE AT START OF YEAR $	PURCHASES	SALES	LOSS OR PROFIT ON SALE	FIRST YEAR DEPRECIATION RATE	FIRST YEAR DEPRECIATION AMOUNT	ORDINARY DEPRECIATION RATE %	ORDINARY DEPRECIATION AMOUNT $	BOOK VALUE END OF YEAR $	INVESTMENT ALLOWANCE RATE	INVESTMENT ALLOWANCE AMOUNT
Car	548	-	-	-		-	DV 20%	109	441		
Bedford truck	1,276	-	-	-		-	DV 20%	225	1,021		
Tractor - Fiat	10,899	-	-	-		-	DV 20%	2,180	8,719		
Tractor - Ford	2,267	-	-	-		-	DV 20%	454	1,813		
Tractor - Massey	1,856	-	-	-		-	DV 20%	371	1,485		
Motorbike	230	-	-	-		-	DV 20%	46	184		
International header	3,530	-	-	-		-	DV 20%	706	2,824		
Baler	1,833	-	-	-		-	DV 20%	367	1,466		
Plant & Machinery	5,054	-	-	-		-	DV 20%	505	4,549		
(non-motorised)		-	-	-		-					
Buildings	22,849	-	-	-		-	CP 2.5%	571	22,278		
TOTAL	50,342	NIL	NIL	NIL	—	NIL	—	5,564	44,780	—	

LINCOLN COLLEGE FARM ADVISORY SERVICE
ESTIMATES FOR THE YEAR ENDING 30 June 1982

SHEEP	1/7/81	30/6/82
Breeding Ewes	1170	1170
Ewe Hoggets	350	350
Wether Hoggets		
Wethers	35	35
Rams	15	15
	1570	1570

Opening Balance	$ 6,321	Name:
Less O/S Income	$ -	
		Address:
Surplus/Deficit	$ 13,111	
Closing Balance	$ 19,432	Code:

CATTLE	1/7/81	30/6/82
Breeding Cows		
Rising 2 yr. Heifers		
Rising 1 yr. Heifers		
Steers	72	72
Bulls		
	72	72

Lambing % (S. to S.) 100 %
Calving % (S. to S.) N/A %
Deaths: Cattle - %
Sheep 2 %

Officer .....
Date Compiled 10 November 1981
Wool Weights: Ewes ..... Kgs.
Hoggets 4.0 Kgs.
Lambs ..... Kgs.

Wool (Net) 280 Cents/Kg.
Total Wool 6280 Kg.
Lambs (Sale) $20.30 /Head
Ewes (Sale) $13 /Head
..... /Head

Wheat 21.48 ha 4.5 t/ha
Barley 50.28 ha 4.5 t/ha
Ryegrass 17.79 ha .675 t/ha
Lime - tons T/D 22.5 tons

CODE NUMBER	INCOME	TOTAL	PREV. SEASON	JULY	AUGUST	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MARCH	APRIL	MAY	JUNE
	Hoggets	1150											1150		
1000	Ewes c.f.a.	3601						3601							
1001	Lambs wethers	14739						4000	4520	2009	2000	2210			
	ewes	7200								7200					
1300	Cattle	20160		20160											
1900	Wool and skin	17684					17684								
2202	Wheat	18915									6305	6305	6305		
2203	Barley	41070									21035	15035	5000		
	Nui ryegrass	9900												9900	
	White clover	7000						7000							
	TOTAL INCOME $	141419		20160	-	-	17684	14601	4520	9209	29340	23550	12455	9900	-

	EXPENDITURE														
1020	Ewes														
1021	Lambs														
1024	Rams	1000								1000					
1320	Cattle	15120													15120
4010	Wages	9924		827	827	827	827	827	827	827	827	827	827	827	827
4030	Animal Health	1294		87	183	200	304				152		368		
4050	Heading Sacks etc.														
4060	Contract	1463										1463			
4080	Electricity	1500		125	125	125	125	125	125	125	125	125	125	125	125
4110	Stock Food	400								400					
4130	Freight	4296		288		125	90	156	356	167	1952	860			302
4140	Manure & Top Dressing	5452				4852							600		
4170	Seeds	5099				5099									
4180	Shearing & Wool Packs	1580		1580											
4220	Weed & Pest Control	6063						2670	3393						
4300	Repairs & Maintenance	4600				575	575	575	575	575	575	575	575		
4400	Vehicle Exps. & Fuel	12320		1026	1026	1026	1026	1026	1026	1026	1026	1026	1026	1026	1034
4500	Administration Exps.	1829				1518				311					
4620	Insurance F. & A.	800			200			200			200			200	
4630	Rates	2975		744			744			744			743		
4650	Mtge. Int. & Principal	21192				7064					7064			7064	
4657	Current A/c. Interest														
4660	Rent	6355										6355			
6110	Taxation	12535				5215						7320			
6120	Personal Expenses	11120		927	927	927	927	927	927	927	927	927	927	923	927
6130	Life Assurance + P/A	270				90				90				90	
	Water charges	500					500								
7400	Capital Expenses	621						621							
	TOTAL EXPENDITURE $	128308		5604	3288	27643	5118	7127	7229	6192	12848	19478	5191	10255	18335
	ESTIMATED END OF MONTH BALANCE			20877	17589	-10054	2512	9986	7277	10294	26786	30858	38122	37767	19432
	ACTUAL END OF MONTH BALANCE		6321												
	BALANCE LAST YEAR														

5.4.2 Dairy

The following is a dairy farm budget for the 1982/83 season. The per cow milkfat production is the average production from cows in Canterbury as printed in the 56th Farm Production Report, New Zealand Dairy Board.

The income is shown to include two milkfat payments. The advance being the payment of milkfat produced in the 1982-83 financial year and the deferred payment being the income received in the 1982-83 financial year for milkfat produced in the 1981-82 financial year.

The farm working expenses are shown as dollars per kilogram of milkfat produced.

This example is for a factory supply dairy farm supplying whole milk.

Farm Details

Farm Size - 90 ha irrigated. (Either spray or border dyke irrigation.)

Stock Wintered:
160 cows mixed age.
36 in-calf heifers
42 rising yearlings

Production
180 cows @ 158/cow = 28,440 kg. 316 kg/ha.

Income

28,200* kg at advance payment of 318c/kg	$89,676
28,200 kg at deferred payment of 71c/kg	$ 1,974
Cull cows - 20 @ $280 each	$ 5,600
Bobby calves - 120 @ $14 each	$ 1,680
Total Income	$98,930

* 240 kg used for calf milk.

Expenditure

	$/kg Milkfat	
Wages	0.22	6,257
Animal Health	0.13	3,697
Breeding	0.08	2,275
Herd Testing	0.05	1,422
Shed expenses	0.07	1,990
Electricity (not including irrigation)	0.12	3,413
Feed - 3,000 bales made 110 round bales straw purchased Calf meals	0.15	4,266
Fertiliser - 250 kg DAP/ha on 85 ha 125 kg sulphate of Ammonia/ha	0.42	11,945
Freight	0.04	1,138
Repairs and Maintenance - including land and buildings, weed and pest and pasture renovation	0.14	3,982
Vehicle Running	0.32	9,101
Administration and Standing Charges - including Border dyke irrigation water	0.10	2,844
TOTAL	1.84	$52,330

Farm Surplus

Income	$98,930
Expenditure	$52,330
Surplus	$46,600
Farm Surplus per cow	$259
Farm Surplus per kg Milkfat	$1.63
Farm Surplus per Hectare	$518

SECTION 6

TAXATION FOR PRIMARY PRODUCERS
1983

M.B. Clark, M.Com. A.C.A.
Senior Lecturer in Agricultural Accounting
Lincoln College

CONTENTS

6. INCOME TAXATION

6.1 INTRODUCTION

The law relating to income tax in New Zealand is detailed in the Income Tax Act 1976, as amended by subsequent taxation legislation and budgets. It must be appreciated that for reasons of brevity, only selected aspects of the taxation law have been included in this section, and that caution must be exercised when applying those guidelines to a particular circumstance. If in doubt, the Inland Revenue Department, your accountant, or financial adviser should be consulted.

6.2 TAXATION IN NEW ZEALAND

6.2.1 Overview

Income tax is collected throughout the income year by either the PAYE or Provisional tax systems. These monies are regarded as payments of tax for that year. After the income year has finished the taxpayer completes his Income Tax Return and files it with the Inland Revenue Department. The return is checked and the results notified to the taxpayer - for example, a refund of tax overpaid or an assessment notice requiring more tax to be paid by a specified date. A penalty of 10% is charged if this tax is not paid within one month of the specified due date.

Any taxpayer can object to his income tax assessment where the substance or accuracy is disputed. The requirement for objections are stipulated in the Income Tax Act and any person contemplating such action would be well advised to seek professional advice. It should be noted, however, that the lodgement of an objection does not suspend the taxpayer's obligation to pay the tax assessed, or the right of the Commissioner to collect the tax.

6.2.2 PAYE (Pay As You Earn) Tax on Personal Income

The PAYE system is where source deductions of tax are made by the employer. The PAYE system applies to three types of payment:

(a) Salary and wages - where the amount of tax depends on the tax code on the employee's IR 12 (Tax Code Declaration). The tax codes for primary employment take account of the family rebates applicable to that taxpayer so that the tax deductions are calculated on a progressive basis. For secondary employment, PAYE tax is deducted at a flat rate of 35% on income earned up to 30 September 1982 and 31% thereafter.

(b) Extra emoluments, such as back pay or bonuses, where tax is deducted at a flat rate of 35% on income earned up to 30 September 1982 and 31% thereafter.

(c) Withholding payments, which basically refer to casual payments where there is not a strict employer-employee relationship. Common types of payment and the appropriate tax rates are specified on the back on the "employees" IR 13 (Withholding Payments Deduction Certificate) and include:

Company directors' fees	35%
Shearing work	15
Droving work	15
Farm work	15
Casual agricultural employees	15
Payments to suppliers of wild deer, pigs, goats (whole carcass or animal parts)	25
Honoraria	35

It should be noted that failure to provide an IR 13 to the employer will, in general, increase the rate of withholding tax deducted by 15 cents for every $1.

The employer must pay the total tax deductions for a month to the Inland Revenue Department by the 20th of the following month. Each year he is required to

(a) complete the pay details on the IR 12s and/or IR 13s, and give the yellow (bottom) copy to the employee: and

(b) provide the Inland Revenue Department with an annual reconciliation of all PAYE and Withholding Payments and tax deductions including the top copies of the IR 12s and IR 13s.

Relevant records, in English, must be kept for at least 7 years.

6.2.3 Provisional Tax System

Provisional tax is paid by all taxpayers who receive income which is not taxed at source as PAYE income. Therefore the following would be regarded as provisional taxpayers:

(a) Individuals who derive business or professional income, e.g. farmers.

(b) Individuals where assessable income derived from

rents, interest and/or dividends is in excess of $500. (Otherwise regarded as a PAYE taxpayer.)

(c) Companies.

(d) Trusts.

The provisional tax system works on the basis of advance payments of tax made by the taxpayer himself to the Inland Revenue Department.

As the current year's income is not known at the time of making the payments, provisional tax is usually based on the income of the preceding year, or on an estimate of the current year's income. These amounts may be adjusted (re-estimated) as the year progresses, but it should be noted that a penalty may be imposed if there is gross underestimation.

Provisional tax is generally payable in two instalments: one third by 7 September, the rest by 7 March. (These dates for payment are not appropriate where the taxpayer has a non-standard balance date. Reference should be made to Appendix I at the end of this section.)

The situation may arise when the first instalment of provisional tax is payable before last year's return has been completed, and therefore last year's tax is not known. This is likely to occur when the balance date is between 7 June and 1 October. If the taxpayer has not estimated his provisional tax, the first instalment of tax is based on the last completed tax return (i.e. 2 years ago). The difference between last year's tax and the provisional tax already paid is the amount due as the remaining instalment.

6.2.4 Returns of Income

In general, every taxpayer must furnish a return of income each year setting out details of the assessable income derived by him during the preceding year, plus such supporting information, accounts etc. as may be required. Annual returns relate to an income year ending 31 March unless an alternative balance date has been approved.

All companies, partnerships, trusts, and persons who are in business for any part of the income year must furnish returns of all their income, irrespective of whether a profit or a loss is made. Business accounts must be supplied.

A return of income is not required from any taxpayer who

receives not more than $11,500 total from salary, wages, pensions, and/or national superannuation.

These taxpayers, known as pay-period taxpayers, may elect to furnish a return in order to get the benefit of any rebate, special exemption or deduction not taken into account in their tax code. Where a return is not furnished the tax already deducted under the PAYE system is not adjusted; where a return is furnished, the amount of tax payable is the true liability of the taxpayer.

It should be noted that shearers are excluded from treatment as pay-period taxpayers.

Return forms are provided by the Inland Revenue Department as follows:

IR 3 - Individual return for self-employed and persons with (net) investment income over $500.

IR 3B - Supplementary return of business income.

IR 3F - Supplementary return of farming income.

IR 4 - Company and club returns.

IR 5 - Individual return for persons who receive income from salary, wages or superannuation, with or without net investment income (i.e. interest and dividends after exemptions, and net rents) of $500 or less.

IR 5A - Estate or Trust return.

IR 7 - Partnership return.

6.2.4 (i) Due Dates for Annual Returns

Annual returns for IR 5 taxpayers are due 7 June each year. Annual returns for all other taxpayers are due as follows:

(a) Balance dates between 1 October and the following 7 June (inclusive) - return is due 7 August.

(b) Balance dates between 8 June and the following 30 September (inclusive) - return is due two months after balance date.

6.2.5 Assessment

The return of income requires the taxpayer to calculate his actual tax liability and compare this with the tax

already paid during the income year. These details are checked by the Inland Revenue Department when the return is furnished, and the result of their assessment is notified to the taxpayer. Even if the result is a loss, the amount is still confirmed by the Department.

In general, the assessment usually results in:

1. A refund of tax (tax paid exceeds the actual liability): or

2. More tax to pay (tax paid is insufficient to meet the actual liability). The assessment notice usually stipulates the due date for payment. Provisional taxpayers, however, pay this "terminal tax" by 7 March in the following year, excepting companies whose due date depends upon their balance date. (Refer to Appendix I.)

6.3 CALCULATING TAXABLE INCOME

Taxable income is calculated in the following way:

	Income
less	Exempt Income
=	Assessable Income
less	Special Exemptions
=	TAXABLE INCOME

(a) Income is generally accepted to mean a gain in money or money's worth derived by a person as a reward for services rendered, the profits of a business or a profit-making enterprise, or from property.

(b) Exempt Income is income specified by the Income Tax Act to be wholly exempt from tax.

(c) Assessable Income is therefore income of any kind which is not exempted from income tax.

(d) Special Exemptions are specified types of expenditure which may be deducted from the assessable income of individuals. (See also the taxation of "Other" Trusts in section 6.7.)

(e) Taxable Income is therefore the residue of assessable income after deducting the taxpayer's special exemptions.

6.4 TAXATION OF INDIVIDUALS

6.4.1 Overview

Individuals are required to file IR 5 or IR 3 returns depending on their sources of income (see section 6.2.4 - Returns of Income), and to pay tax at the rates specified by the Income Tax Act. These rates vary according to the level of income on the basis that the higher the income, the higher the marginal rate of tax. The rates of tax are detailed in Appendix II.

Tax is calculated according to the following relationship:

	Income		
less	Deductions		
=	Assessable Income		
less	Special Exemptions		
=	TAXABLE INCOME - calculate -		Tax
		less	Rebates
			Tax Liability
		less	Tax paid during year (e.g. PAYE)
			TERMINAL TAX or REFUND

Income, excluding exempt income, can be reduced by the deductions allowed to salary and wage earners and/or by appropriate special exemptions in order to obtain the taxable income. Tax is assessed using the appropriate rates and the allowable tax rebates deducted to obtain the actual tax liability. Tax paid during the income year is then credited to ascertain whether more tax is payable (i.e. terminal tax), a refund is due for tax overpaid, or the assessment is correct.

6.4.2 Exempt Income

The following items, amongst others, may be applicable to individuals and regarded as exempt income:

1. 50% of interest from Farm Vendor Finance Bonds or from money left in approved farms as Farm Vendor Mortgages. Such interest does not qualify for the general interest exemption.

2. Premiums on redemption of Inflation Adjusted Savings Bonds.

3. Up to $500 accumulated interest from Post Office National Development Bonds and/or New Zealand Savings Certificates. This interest does not qualify for the general interest exemption.

4. Up to $200 interest and dividends from all sources.

5. Any educational scholarship or bursary.

6. Prize money from horse or dog racing, or trotting.

7. Prizes from Post Office Bonus Bonds.

It should be noted that gifts, legacies, capital gains and monies derived by chance, i.e. gambling, are not regarded as income unless it can be fairly said to be the taxpayer's business.

6.4.3 Assessable Income

Includes, amongst others:

1. Profits or gains derived from any business.

2. Employment income, such as salary and wages, including allowances which benefit the individual e.g. food, board or lodgings supplied to employee. Allowances which reimburse the employee for work related expenditure are not assessable.

3. Earnings related Accident Compensation receipts.

4. National Superannuation receipts.

5. Profits or gains derived from the sale or disposition of property if it is the business of the taxpayer to deal in such property, or if the property was acquired for the purpose or intention of selling or otherwise disposing of it. Property refers to all personal property as well as land.

6. Revenues from land e.g. net rents received; profits from extraction, removal or sale of minerals, timber etc.

7. Royalties and know how payments.

8. Interests, dividends, annuities and pensions. (See also Exempt Income.)

9. Unemployment benefits received by persons without dependent children.

10. As from 1 October 1980 travelling allowances received by an employee will be taxable except those amounts which represent a reimbursement of:

    (i) expenditure incurred by the employee in gaining or producing his assessable income: and/or

    (ii) additional transport costs incurred by the employee in travelling between home and his place of work. "Additional transport costs" are defined to mean:-

        (a) The excess above normal travel costs where these have been incurred because of:

            - the time of day or day of the week the employee works;

            - the necessity to carry any work related equipment;

            - the fulfilling of any statutory obligation;

            - a temporary change in the place of work;

            - any other condition of work applying to that employee; or

        (b) the excess costs above $1 per day incurred because of the absence of public transport serving the place of work. Except in special circumstances, the costs incurred in travelling more than 70 km per day must be excluded from this calculation.

6.4.4 Deduction for Employment Related Expenses

Recipients of salary, wages and/or national superannuation, and casual agricultural employees, are permitted to deduct employment related expenses from this income. The allowable deduction is the greater of:

(a) $52 or 2% of employment income, whichever is the smaller; or

(b) The actual amount of employment related expenditure or loss incurred in gaining assessable income. Details of the claim together with supporting evidence for payments in excess of $20 should be included in the taxpayer's return of income. Allowable expenditures include:

(i) Union fees and subscriptions.

(ii) Reference books, journals and periodicals. (Maximum of $20 for any one volume or issue.)

(iii) Special or protective clothing.

(iv) Tools of trade and equipment. (Maximum of $100 for any one item.)

(v) Self-education expenses where they relate to promotion, or for refresher courses, conferences, etc. (Maximum of $400.)

(vi) Travelling expenses incurred in the course of employment, but not between home and work.

(vii) Use of a private dwelling, where a room or defined area is set aside wholly or principally for employment related purposes. Allowable expenditures are limited to:

* repairs and maintenance of the room's interior;

* heating or lighting of that room;

* insurance on the contents of that room.

(viii) Other expenditure incurred for purposes of, and as a condition of employment.

These expenses should be reduced by the amount of reimbursement received from the employer, if any, before any of the limits are applied.

6.4.5 Special Exemptions

Only one special exemption is currently available, for

(a) Life, personal accident, or sickness insurance premiums on policies which cover the taxpayer, spouse, or children; and

(b) Contributions to specified funds, most commonly for superannuation.

The special exemption allowable is the lesser of the amount paid or $1,000 ($800 if a member of a subsidised superannuation scheme). As from 1 April 1983, the amount of the special exemption has been increased to $1,400 or $1,200 if a memer of a subsidised superannuation scheme.

6.4.6 Tax Rebates

Rebates are deducted from the actual tax assessed, and give equal benefit to all taxpayers irrespective of their level of income. The total rebates claimed cannot exceed the assessed amount of tax payable.

Principal rebates available to individuals for the 1982/83 income year are as follows:

1. PERSONAL REBATE FOR CHILD TAXPAYERS
   $117 per year.
   Applies to a child taxpayer who during the income year was under 15 years old or attended a primary, secondary, or special school, and for whom a family benefit was payable in that tax year.

   This rebate allows a child to effectively earn $678 before becoming liable to income tax.

2. PRINCIPAL INCOME EARNER REBATE
   $156 reduced by 6 cents for each complete dollar that the taxpayer's income exceeds $12,000, provided that for incomes less than $5,673, the rebate is limited to 2.75% of the assessable income (dollars only).

   This rebate therefore reduced to nil when assessable income reaches $14,600.

   Available to taxpayers other than children, spouses of principal income earners, national superannuitants, principal income earners eligible for the new family rebate and spouses of such persons.

3. SPOUSE REBATE
   $78 reduced by 10 cents for each complete dollar by which the spouse's income exceeds $520.

   This rebate, which applies equally to a husband or a wife, therefore reduces to nil when the spouse's income reaches $1,300.

4. YOUNG FAMILY REBATE
   $234 reduced by 6 cents for each complete dollar that the principal earner's income exceeds $13,700.

   This rebate therefore reduces to nil when the principal earner's income reaches $17,600.

   Available to families who have at least one child under 5 years during the income year, and who is eligible for the family benefit. Only one rebate per family is allowed, and should be claimed by the principal income earner.

5. LOW INCOME FAMILY REBATE
$234 reduced by 6 cents for each complete dollar that the combined income of the family (i.e. the taxpayer and spouse) exceeds $9,800.

This rebate therefore reduces to nil when the aggregated income reaches $13,700.

Available to families who have at least one child who is eligible for the family benefit during the income year. Only one rebate per family is allowed, and should be claimed by the principal income earner.

6. FAMILY REBATE
$702 reduced by 7.5 cents for each complete dollar that the combined income of the family (i.e. the taxpayer and spouse) exceeds $9,800.

This rebate therefore reduces to nil when the aggregated income reaches $19,160.

Available to families who have at least one child who is eligible for the family benefit during the income year. Only one rebate per family is allowed and should be claimed by the principal income earner.

7. DEPENDENT RELATIVE REBATE
The lesser of $60 or 35.5% of contributions made towards the support of each dependent relative. The rebate can be claimed for a maximum of two relatives.

The rebate is not available if the relative can support his or herself (generally regarded as receiving an income of $3,100 p.a.). Also excluded are children for whom family benefit is payable.

Where a taxpayer supports a separated spouse, the larger of the spouse rebate or dependent relative rebate may be claimed.

8. HOUSEKEEPER/CHILD CARE REBATE
The lesser of $233 or 35.5% of payments made.

This rebate is allowable for the care of a dependent child (at or away from home) provided the services are deemed necessary or a housekeeper is required because of the taxpayer's disability.

9. RESIDENTIAL RATES REBATE
The lesser of $25 or the amount of rates paid.

This rebate is available to individuals for rates paid on an owner-occupied home which is the principal residence of the taxpayer.

10. DONATIONS AND SHOOL FEES
The lesser of $187.50 or 40.5% of payments made.

Donations must be for a minimum of $5 and made to approved charities. School fees applies to fees paid for children aged under 18 at the start of the income year, and covers fees for private schools, activity fees paid to State schools, fees paid to schools for the handicapped or disabled, or fees paid to registered pre-school organisations.

Receipts must be furnished in support of the rebate claimed.

11. BACK PAY REBATE
6 cents for every dollar of back pay received before 1 October 1982 which relates to previous income years.

12. OVERTIME REBATE
10 cents per hour of paid overtime worked before 1 October 1982.

13. SHIFT WORK REBATE
40 cents for each qualifying shift worked before 1 October 1982.

14. FIRST HOME MORTGAGE INTEREST REBATE
The lesser of $1,000 or 40.5% of mortgage interest paid.

The rebate will be allowable for the first five years of ownership by owner-occupiers who have purchased their first home. Special provisions apply for first homes purchased between 1 April 1976 and 31 March 1981.

15. INTEREST ON HOME VENDOR MORTGAGE REBATE
The lesser of $500 or 20% of such interest received.

In order to qualify for this rebate, the mortgage must be approved as a "home vendor mortgage" by the Housing Corporation prior to 6 August 1982.

16. HOME, FARM AND FISHING VESSEL OWNERSHIP SAVINGS
45 cents for every dollar saved during the year in special home/farm/fishing vessel ownership accounts.

Maximum rebates per year are:

(a)	Home account	:	$1,350 ($3,000 savings)
(b)	Farm account	:	$2,250 ($5,000 savings)
(c)	Fishing vessel account	:	$2,250 ($5,000 savings)

Maximum savings in any one account are:

(a) Home account : $10,250
(b) Farm account : $60,000
(c) Fishing vessel account : $60,000

If savings are withdrawn and used for purposes other than that specified, the tax rebate must be repaid. This effectively imposes a withdrawal tax of 45% under these circumstances.

17. Visitors from overseas who work for part of the income year in New Zealand are allowed a proportion (based on time worked here) of the following rebates:

Child taxpayers
Spouse rebate
Young family
Low income family
Dependent relative
Housekeeper

The Principal income earner and family rebate entitlements are, however, determined by reference to the equivalent annual income which would have been earned if the taxpayer worked for a full year.

Principal rebates available to individuals for the 1983/84 income year are as follows:

1. PERSONAL REBATE FOR CHILD TAXPAYERS
$156 per year
Applies to a child taxpayer who during the income year was under 15 years old or attended a primary, secondary, or special school, and for whom a family benefit was payable in that tax year.

This rebate allows a child to effectively earn $780 before becoming liable to income tax.

2. PRINCIPAL INCOME EARNER REBATE
$312 reduced by 12 cents for each complete dollar that the taxpayer's income exceeds $12,000, provided that for incomes less than $5,673, the rebate is limited to 5.5% of the assessable income (dollars only).

This rebate therefore reduces to nil when assessable income reaches $14,600.

Available to taxpayers other than children, spouses of principal income earners, national superannuitants, principal income earners eligible for the new family rebate and spouses of such persons.

3. FAMILY REBATE
$1,404 reduced by 15 cents for each complete dollar that the combined income of the family (i.e. the taxpayer and spouse) exceeds $9,800.

This rebate therefore reduces to nil when the aggregated income reaches $19,160.

Available to families who have at least one child who is eligible for the family benefit during the income year.

Only one rebate per family is allowed and should be claimed by the principal income earner.

4. DEPENDENT RELATIVE REBATE
The lesser of $60 or 31% of contributions made towards the support of each dependent relative. The rebate can be claimed for a maximum of two relatives.

The rebate is not available if the relative can support his or herself (generally regarded as receiving an income of $3,100 p.a.). Also excluded are children for whom family benefit is payable.

5. HOUSEKEEPER/CHILD CARE REBATE
The lesser of $310 or 31% of payments made.

This rebate is allowable for the care of a dependent child (at or away from home) provided the services are deemed necessary or a housekeeper is required because of the taxpayer's disability.

6. RESIDENTIAL RATES REBATE
The lesser of $25 or the amount of rates paid.

This rebate is available to individuals for rates paid on an owner-occupied home which is the principal residence of the taxpayer.

7. DONATIONS AND SHOOL FEES
The lesser of $200 or 31% of payments made.

Donations must be for a minimum of $5 and made to approved charities. School fees applies to fees paid for children aged under 18 at the start of the income year, and covers fees for private schools, activity fees paid to State schools, fees paid to schools for the handicapped or disabled, or fees paid to registered pre-school organisations.

Receipts must be furnished in support of the rebate claimed.

8. FIRST HOME MORTGAGE INTEREST REBATE
The lesser of $1,000 or 31% of mortgage interest paid.

The rebate will be allowable for the first five years of ownership by owner-occupiers who have purchased their first home. Special provisions apply for first homes purchased between 1 April 1976 and 31 March 1981.

9. HOME, FARM AND FISHING VESSEL OWNERSHIP SAVINGS
45 cents for every dollar saved during the year in special home/farm/fishing vessel ownership accounts.

Maximum rebates per year are:

(a)	Home account	: $1,350 ($3,000 savings)
(b)	Farm account	: $2,250 ($5,000 savings)
(c)	Fishing vessel account	: $2,250 ($5,000 savings)

Maximum savings in any one account are:

(a)	Home account	: $10,250
(b)	Farm account	: $60,000
(c)	Fishing vessel account	: $60,000

If savings are withdrawn and used for purposes other than that specified, the tax rebate must be repaid. This effectively imposes a withdrawl tax of 45% under these circumstances.

10. Visitors from overseas who work for part of the income year in New Zealand are allowed a proportion (based on time worked here) of the following rebates:

Child taxpayers
Dependent relative
Housekeeper

The Principal income earner and family rebate entitlements are, however, determined by reference to the equivalent annual income which would have been earned if the taxpayer worked for a full year.

6.4.7 Example

A married man with 2 children aged 4 and 6 derived the following income during the year ended 31 March 1983.

Salary	$13,600
Mortgage interest	260
Savings Bank interest	220
Dividends received	300

His wife earned $600 in the same year.

Throughout the year he paid the following amounts:

Life assurance premiums	$ 480
Superannuation (subsidised scheme)	350
Donations to Red Cross	30
Activity fees to school	70
Rates on own home	152
Interest on mortgage over (first) home	2,800

Tax deductions from his salary as per his IR 12 were $2,012 and provisional tax paid on other income was $40.

His income tax assessment would be as follows:

Salary	$13,600		
less Standard Deduction		52	
			$13,548
Mortgage interest		260	
Savings Bank Interest		220	
Dividends		300	
		780	
less exemption		200	
			580
TOTAL ASSESSABLE INCOME			14,128
less Special Exemptions:			
Life assurance premiums		480	
Superannuation contributions		350	
		$ 830	
Special exemption allowable			800
TAXABLE INCOME			$13,328
INCOME TAX on $13,328			$ 3,551.81
less REBATES and ADJUSTMENTS:			
(a) Wife rebate $(1,300-600)x$0.10		70.00	
(b) Young family rebate $(17,600-14,128)x$0.06		208.32	
(c) Family rebate $(19,160-14,728)x0.075		332.40	

(d)	Residential Rates Lesser of: (i) $25, or (ii) $152 paid	25.00	
(e)	Donations and school fees Lesser of: (i) $187.50, or (ii) 40.5% of ($30 + 70)	40.50	
(f)	Mortgage interest on first home. Lesser of: (i) $1,000, or (ii) 40.5% of $2,800	1,000.00	
Total Rebates			$ 1,676.22
INCOME TAX PAYABLE			$ 1,875.59
less tax already paid:			
	PAYE tax deductions	2,012.00	
	Provisional tax paid	40.00	
			2,052.00
REFUND DUE			$ 176.41

6.5 TAXATION OF COMPANIES

A limited liability company pays tax in its own right (i.e. it is separate and distinct from its shareholders), and the basic rate of tax on income derived by New Zealand resident companies is 45 cents for every dollar. The basic rate for non-resident companies is 50 cents for every dollar of income. Taxable income generally means business profits (in the normal accounting sense), less any taxation incentives applicable to that company. Dividends received by a company are generally regarded as exempt income, and companies are not entitled to tax rebates or special exemptions.

Companies are provisional taxpayers; they generally pay provisional tax in two instalments, and may be required to pay terminal tax. (For further details refer to section 6.2.3 - The Provisional Tax System, and Appendix I - Dates for payment of provisional and terminal tax.)

The IR 4 Company Return of Income is usually due by 7 September following the company balance date, although if the company balances between 8 June and the following 30 September (inclusive), the return is due two months after balance

date. Returns must be filed, including accounts, irrespective of whether a profit or loss is disclosed for the year.

Losses can be carried forward and deducted from the first available assessable incomes until extinguished provided 40% of the shareholding is held by or on behalf of the same persons at the beginning and end of each year. This requirement is relaxed in the case of public companies listed on the Stock Exchange but not where one person or group of "associated" persons acquires more than 10% of the shareholding.

Special considerations apply where relatives (i.e. associated persons) of the shareholders or directors receive remuneration from the company. These may affect arrangements to split income between family members, and it would be advisable to seek professional advice under these circumstances.

6.6 TAXATION OF PARTNERSHIPS

6.6.1 Overview

A partnership is not a taxpaying entity and is not itself liable to pay tax. However, the partners must file a separate "partnership" return of income (IR 7) covering their joint income (irrespective of profit or loss) and detailing the distribution amongst the various partners. The partnership accounts or the supplementary return forms IR 3B or IR 3F should also be furnished.

Each partner is liable for tax as an individual and must add their share of the net partnership income to their income from other sources. Income from a partnership does preserve its identity in the hands of the recipient partners as interest and dividends (up to $200 exempt), and ordinary assessable income. (Refer to section 6.4 Taxation of Individuals). Partnership losses should always be allocated to the constituent partners and cannot be carried forward by the partnership itself.

6.6.2 Family Partnerships

The use of family partnerships, often including trusts for infants, has long been a common device for splitting income among family members, thereby avoiding the high tax brackets. To counteract loss of revenue through this type of income splitting, the Income Tax Act lays down five requirements before a family partnership is deemed to be acceptable for taxation purposes.

(a) There must be a contract of partnership in writing or by deed signed by all parties;

(b) No partner can be under 20 years of age;

(c) The agreement must bind the partners for at least three years;

(d) Each partner must have real and effective control of their remuneration; and

(e) No part of the remuneration or share of profits would be regarded as a gift and thereby subject to Gift Duty.

In determining whether a gift exists, consideration would be given to the following factors, amongst others:

(i) The nature and amount of the capital contributions or the value of the services performed.

(ii) The proportions of such contributions to the remuneration or share of profit between partners.

(iii) Whether the arrangement would be acceptable under normal commercial standards; etc.

Where the above five requirements are not satisfied and the Commissioner of Inland Revenue believes that the remuneration or share of profits paid to the relative is excessive, he has the power to reallocate the partnership income for taxation purposes between the partners in such shares as he considers reasonable, having regard to the capital and services contributed by the partners and other relevant matters.

6.7 TAXATION OF TRUSTS

A trust is an equitable obligation binding on a person (who is called a trustee) to deal with property over which he has control (which is called the trust property), for the benefit of persons (who are called the beneficiaries) of whom he may himself be one, and any one of whom may enforce the obligation.

It is not necessary that a trust be in writing, as a valid trust can be created by an oral agreement or by the conduct of the parties concerned. It must be emphasised, however, that it is desirable to evidence a trust in writing by a Deed

of Trust, or inclusion in a will, or by some other trust instrument.

6.7.1 Classification of Trusts

The Income Tax Act distinguishes between two types of trust:

(a) Specified Trusts

Generally speaking, these are trusts created during the lifetime of the settlor (i.e. an inter vivos trust) on or after 19 July 1968; and

(b) Other Trusts.

6.7.2 Liability for Income Tax

A trust is a separate legal entity, and as such all the income of a trust is liable for income tax in the hands of the trustee, either as "Trustees' Income" or as "Beneficiaries' Income" where the trustee acts as the agent of the beneficiary although the primary liability remains with the beneficiary.

In the case of "Beneficiaries' Income" (see section 6.7.3 below), the taxation liability is determined by providing for the special exemptions and rebates which the beneficiary himself is eligible for. Obviously, if the beneficiary derives additional income a personal return of income should be filed incorporating his trust income and the tax already paid by the trustee on his behalf.

"Trustees' Income" is any income other than Beneficiaries' Income and the trustee is assessed for tax on the income in one sum as follows:

(i) Specified Trusts:
Taxed at 35 cents per dollar of taxable income or at the basic rates applicable to individuals, whichever is the greater. No special exemptions are granted.

(ii) Other Trusts:
Taxed at the basic rates applicable to individuals after deducting a special exemption of $100.

Tax on the income of a trust will normally be paid on a provisional basis, the return of income for the trust (IR 5A) being filed by the trustee(s). Trust income is taxed once only so that a distribution to a beneficiary is not taxed if the trustee has paid tax on the income previously.

6.7.3 Classification of Income

Income derived by a trustee during an income year is classified as Beneficiaries Income for the same year under any of the following conditions:

(a) Where an adult beneficiary of any trust is entitled to income under a specific provision of the trust deed or by the discretionary act of the trustee; or

(b) Where an under-age beneficiary of an 'other' trust is entitled to income under a specific provision of the trust: or

(c) Where the trustee pays or applies income to or on behalf of the beneficiary of a trust during or within six months after the income year by a genuine transaction which places the income beyond the possession and control of the trustee in his capacity as trustee of that trust, provided that if the beneficiary of a specified trust is under-age, the income must remain out of the trust or any business in which the trust is interested whilst the beneficiary is under-age.

Any other income not coming within the above is then Trustees' Income.

It should be noted that the test for Beneficiaries' Income stresses the physical parting of possession and/or control over the funds.

6.8 TAXATION OF FARMERS

6.8.1 Liability for Income Tax

All farmers are liable for income tax as provisional taxpayers. The appropriate return form depends on the entity involved:

Individual	-	IR 3 plus either completed accounts or the supplementary return from IR 3F.
Companies	-	IR 4 plus accounts.
Trusts	-	IR 5A plus accounts.
Partnership	-	IR 7 plus accounts. Each partner must also file an IR 3 return.

Generally, provisional tax is paid in two instalments (for payment dates see Appendix I), although a farmer may pay in three equal instalments, the last days for payment being 7 September, 7 March and 7 June, in that order, provided all the following conditions are met:

(i) Balance date is between 1 April and 30 September (inclusive);

(ii) More than half of the assessable income regularly comes from farming or an agricultural business; and

(iii) Half or more of the gross cash income is regularly received after 7 February.

Certain features of the taxation system apply specifically to agriculture because of its place in the economy. These provisions are intended to encourage capital investment, development, increased stock numbers, etc. as well as providing facilities to smooth the large fluctuations in income which are inherent in the agricultural industry.

The department accepts that any of the following are carrying on their activities for farming or agricultural purposes:

- livestock farmers (e.g. sheep, cattle, deer, pigs, goats, horses).
- dairy farmers including sharemilkers.
- grain and seed growers.
- apiarists.
- poultry farmers.
- orchardists.
- horticulturists (e.g. market gardeners, tomato growers, berry fruit growers, flower growers).
- viticulturists.

The Department does not regard dealing in farming stock as an agricultural or farming business.

6.8.2 Farm Income

The assessable income of a farmer will include the following:

(i) Business profits from trading operations - i.e. the generally accepted accounting definition of profit, being SALES less PURCHASES, plus or minus CHANGES IN VALUE OF STOCK ON HAND at the end of the year (increases are added, decreases are subtracted).

(ii) The value of meat and produce consumed domestically.

(iii) Income from contracting.

(iv) Rents received from leasing farm property, including grazing fees.

(v) Receipts from the hire of livestock and plant, including stud fees.

(vi) Insurance proceeds in respect of the loss of crops or stock.

(vii) Prize money from A & P shows, less entrance fees and other related expenses.

(viii) Compensation for stock condemned.

(ix) Refunds from Income Equalisation scheme.

(x) Decreases in the number of livestock held at Nil Value (see section 6.8.4 Valuation of Livestock).

(xi) Net Income from the sale of timber.
Provisions relating to farm forestry are contained in section 6.8.8.

6.8.3 Farm Expenses

Private expenses in the nature of household stores, domestic wages, repairs to household equipment etc. are to be treated as private drawings, and must not be charged against farm income. Similarly, the private portion of domestic expenses, electricity and car depreciation should also be regarded as drawings.

In addition to the appropriate business expenses, farm expenses will include the following:

(i) Legal expenses incurred in arranging finance for the purchase of, or in arranging for the lease or renewal of a lease of, income producing assets.

(ii) Legal expenses incurred in borrowing or renewing loan moneys employed as capital in the production of assessable income.

(iii) Telephone (excluding personal toll calls).

(iv) Proportion of car expenses (including depreciation) applicable to business use, on the basis of:

(a) Half, where farmer has both car and truck. (It should be noted that the costs associated with the truck are deductible in full.)

(b) Three-quarters, where farmer has a car only.

(v) Stores and rations provided to employees.

(a) Supplied to an outside employee (including a partner with less than 20% interest): the farmer can claim the actual cost if accurate records are kept, otherwise the deduction is limited to $10 per employee per week. This applies where these costs have not already been claimed as a tax deductible farm expense.

(b) Supplied to related married employees or part proprietor employees: the actual cost of stores and rations supplied is tax deductible.

(vi) Accommodation supplied to employees.

(a) Supplied to all employees except a partner-manager: depreciation at appropriate rate(s) and all expenses (e.g. mortgage interest, repairs, maintenance, etc.) are deductible in full.

(b) Supplied to a partner/manager: the partnership can claim 25% of the costs of the dwelling (refer paragraph (viii), below).

(vii) Depreciation - see section 6.8.5 below.

(viii) One quarter of total expenditure on the farm dwelling if situated on the farm - e.g. repairs and maintenance, depreciation, domestic power etc.

(ix) Repairs and Maintenance costs on sheep yards, sheep dips and fencing. Depreciation may NOT be claimed on these assets, but the outlay costs on these items are usually claimed as development expenditure.

(x) Cost of papers and magazines containing farming information.

(xi) Wages paid to wife.

(a) Payments for cooking duties in respect of permanent employees (including adult members of the farmer's family employed full-time) will be allowed on the basis of:

1 permanent employee - $12 per week.
2 permanent employees - $18 per week
and thereafter an additional $3 per employee per week.

It is necessary that the requirements for the payment of wages from husband to wife are met i.e. declaration that the wages are for

genuine services, IR 12 completed, regular cash payments, tax and Accident Compensation levy deducted and accounted for.

This payment is in addition to any special arrangements made in respect of seasonal or part-time employees, e.g. shearers.

(b) Payments for work performed on, or on behalf of, the farm may be deductible if the Commissioner of Inland Revenue has given his prior consent to such payments. Before consent is granted, the Commissioner must be satisfied that the payment is for genuine services rendered in producing assessable income for the year.

An application for approval must contain certain details (the Inland Revenue Department provides appropriate declaration forms), but subsequent to approval only written confirmation that wages are still being paid on the agreed basis is required. The declaration should be filed before (or at least as soon as possible after) the wife's employment commences.

(xii) Cost of transporting employees' children to school. The cost of transporting the farmer's own children is regarded as private and therefore not deductible.

(xiii) Accident Compensation Levy

All persons who suffer injury by accident in New Zealand (and in certain cases, outside New Zealand) and who are employees or self-employed at the time of the accident, have cover under the Earners' Scheme of the Accident Compensation Act.

The scheme is funded by a levy paid by employers and self-employed persons. These levies are a tax-deductible expense.

LEVIES ON EMPLOYERS

Every employer, whether an individual, a partnership, trust, company or club, must pay an annual levy by 30 June each year, based on the amount of leviable earnings paid to employees during the year ended 31 March. Levy rates vary according to the industrial activity of the employer.

For example:

Industrial Activity	Class No.	Levy Per $100
Agricultural Contracting (Fencing, sheep dipping, spraying, harvesting, hay-making, baling, hedge cutting)	104	1.70
Agricultural Contracting (Scrub cutting, grubbing, burning, stumping and clearing)	124	3.15
Shearing	105	1.75
Cereal growing	101	1.20
Drainage or Sewer System	104	1.70
Construction on agricultural land		
Non-mechanised	104	1.70
Mechanised	507	1.90
Eel farming	130	1.75
Fencing-erecting and repairing	104	1.70
General farming	100	1.70
Fish farming	130	1.75
Hop growing	101	1.20
Market gardening	101	1.20
Orchards - including berry fruit	101	1.20
Poultry farming	101	1.20
Spraying - agricultural excluding aircraft	104	1.70
Stock buying	831	0.60
Tobacco growing	101	1.20
Aerial work - fixed wing aircraft	702	1.65
- helicopters	703	4.20

LEVIES ON THE SELF-EMPLOYED

Generally, owner-operators, partnerships and share-milkers are all regarded as self-employed for accident compensation purposes. The levy payable is 1.07% of the year's taxable farm (business) income, with a maximum levy of $200.30 and a minimum levy of $55.64 (based on the assumption that farm income is at least $5,200). If his leviable earnings are less than $12,234 he may elect to join the optional levy scheme in which case his minimum levy will be $131.87 (based on 1.07% of assumed earnings of $12,234). The minimum levy for a part-time self-employed person is $10. Further considerations apply where dual

earnings are received (i.e. a person is both self-employed and an employee). This levy must be paid by 7 March each year.

The above is a general introduction only, and queries regarding levies should be directed to the Inland Revenue Department. Queries regarding compensation claims should be directed to the State Insurance offices except in Dunedin where queries should be directed to the Accident Compensation Commission itself.

(xiv) Energy Conservation Expenditure

The total cost of acquiring and installing new plant, machinery or equipment for the purpose of energy conservation may be written off in the year the expenditure is incurred. (This excludes expenditure of a private nature such as to the family residence.) In addition, the cost of improving or altering plant, as insulating such assets or buildings for the purposes of energy conservation will also qualify for the 100% first year write-off. This deduction has been replaced by a loans scheme as from 1 April 1982. Binding contracts made before that date will continue to qualify for the deduction.

(xv) Various incentives, income levelling schemes etc (see below).

6.8.4 Valuation of Trading Stock

1. General Principles

Trading stock includes anything produced or manufactured; anything acquired or purchased for purposes of manufacture, sale or exchange; livestock; but excludes land.

In the case of any business owned or carried on by the taxpayer, the value of the trading stock at the beginning and at the end of every income year must be detailed in the taxpayer's accounts (or tax return). The value on hand at the end of the year is included in assessable income; the value on hand at the beginning of the year is deducted from assessable income.

In general, the taxpayer has the option of valuing his trading stock at:

(i) cost price; or
(ii) market selling value; or
(iii) replacement price.

However, the Commissioner of Inland Revenue may approve a lower valuation for trading stock other than livestock where obsolescence or other special considerations materially affect its value.

2. Consumable Aids

Items consumed in the production of trading stock but which do not form part of the final product are regarded as consumable aids and not as trading stock. Therefore, expenditure on items such as fuel, farm chemicals, fertiliser held for spreading and hay held for winter use would be fully deductible in the year the expenditure is incurred, even although some unconsumed stocks may be held at the end of the year.

3. Growing Crops, Fruit and Vegetables

Crops, fruit and vegetables, standing timber and other products which grow from the land and are attached to the land are regarded as part of the land itself, i.e. a capital asset. Growing crops are not regarded as trading stock unless and until they are harvested or severed from the land.

4. Valuation of Livestock

Livestock is regarded as ordinary trading stock and the taxpayer has the following options:

1. Cost price, market selling value, or replacement price.

2. Standard Value.

A "standard value" is the value selected by the farmer and approved by the Inland Revenue Department, for each particular class of livestock. This value is maintained over time, irrespective of actual cost or subsequent market value. Generally the market value will greatly exceed standard value, but the farmer does not have to revalue or adopt market value where he continues his farming operation.

Standard values may be altered but only with the approval of the Commissioner. In practice, however, a note attached to the accounts is sufficient where the increase is to an amount less

than current market value.

It should be noted that the Inland Revenue Department has now established minimum standard values as follows:

- Sheep, mixed	$ 6	
- Cattle, dairy and beef		
- rising one year	$ 30	
- others	$ 70	
- Deer		
	Red/Wapiti	Fallow/Sika
All female animals	$200	$100
All male animals	$150	$ 75
- Goats		
Angora does	$ 30	
Milking does	$ 30	
Others	$ 6	

These values apply to persons who commenced farming on or after 1 July 1980 for sheep and cattle, 25 October 1979 for deer and 1 April 1981 for goats.. It is proposed to review these standard values every three years.

Standard values are not available to dealers in livestock or for high priced stud stock (which should be valued at purchase price, with annual revaluations downwards over its useful life).

In addition:

(a) New farmers, and existing farmers who develop or purchase additional land, will be required to write down the value of new or additional (i.e. excluding replacement) livestock purchased in that year or the subsequent 3 years from cost price to standard value in equal instalments over a period of 3 years.

A farmer is not bound to adopt standard values. There is no reason why he cannot adopt either cost, market or replacement values until such time as he elects to adopt standard values. Once he adopts standard values, however, the write down over the 3 years period commences.

Prior to the 1983 income year, the farmer could adopt standard value(s), but maintain cost price (or market or replacement value) for up to three years and then write down to

standard value over no more than three further years.

(b) Reliefs are available by allowing the spreading of resultant large incomes either forward or backward over three years in the event of a sale occasioned by death, retirement, adverse events, expiry of lease etc.

(c) For income tax purposes, gifts of livestock to children who are at least 18 years old and who use those stock in a farming operation, may be made at a reasonable standard value, i.e. not unduly low. Note, however, that if gift duty is payable it is assessed on market value less consideration paid (if any).

3. Nil Value Scheme

The nil value scheme is an incentive scheme aimed at deferring the tax liability on increases in certain livestock numbers over a basic number until the stock is sold or otherwise disposed of, or revalued. The scheme is optional and applies to any taxpayer carrying on a farming business on land in New Zealand.

Main features of the scheme are as follows:

(a) Applies only to cattle, sheep, pigs, deer and goats.

(b) The "basic number" of the herd or flock is the greatest number of a particular class of stock held in the four income years prior to the year when the farmer elects to join the scheme. (Prior to the 1983 income year, the period for determining basic livestock numbers was two years.)

(c) At the end of each income year, all or part of the excess over the basic number in respect of each class may be valued at nil.

(d) Any decrease in livestock numbers below the basic number of one class can be offset against any increase over the basic number in the other classes on the basis of "specified equivalents".

Where 1 head of cattle is equivalent to 6 sheep or 6 goats or 4 pigs or 4 deer.

All categories within each class of livestock are regarded as equal, e.g. ewes, lambs, wethers etc. all have the same equivalent rating.

(e) The Commissioner has power to make an equitable adjustment where there is a change in the basic nature of the farming operation, or an adverse event effects the farm, or other special circumstance.

Example:

A sheep and cattle farmer with a balance date of 30 June, elects to join the scheme at 1 July 1982. His year of first election is therefore the year ended 30 June 1983.

His basic number is calculated as follows:

	Stock on Hand			
	30/6/79	30/6/80	30/6/81	30/6/82
Sheep	3,100	4,000	3,905	3,975
Cattle	160	140	151	148

His basic number is the greatest of the numbers for each class of livestock.

i.e. Sheep 4,000 @ $ 5 Std. Value
Cattle 160 @ $50 Std. Value

Year Ended 30/6/83

Closing Stock: Sheep 4,300, Cattle 160
Valued as:

Sheep -	basic number at s.v.	4,000 @ $5
	increase over basic no.	300 @ Nil
Cattle -	basic number at s.v.	160 @ $50

Year Ended 30/6/84

Closing Stock: Sheep 4,500, Cattle 120

The decrease in cattle below the basic number in this year will necessitate a reduction to the 'increase' in sheep numbers closing stock, the reduction being made at the specified equivalent of 1 head of cattle = 6 sheep.

Sheep numbers	4,500	
less decrease in cattle at specified equivalent 40 cattle x 6	240	Valued @ s.v.
	4,260	
less basic number	4,000	Valued @ s.v.
Net Increase over basic number	260	Valued at Nil

Valued as:

Sheep -	number at s.v.	4,240 @ $ 5
	increase over basic no.	260 @ Nil
Cattle -	number at s.v.	120 @ $50

Year Ended 30/6/85

Closing Stock: Sheep 5,000, Cattle 240

Valued as:

Sheep -	basic number at s.v.	4,000 @ $ 5
	increase over basic no.	1,000 @ Nil
Cattle -	basic number at s.v.	160 @ $50
	increase over basic no.	80 @ Nil

If the farmer wished to value part of the increase over Basic Number at Nil Value, the number valued at standard value is the Basic Number plus the additional stock not valued at Nil. The Basic Number, however, is not altered.

6.8.5 Depreciation

Depreciation is an allowance for loss in value of a fixed asset due to fair wear and tear, obsolescence, etc. Not all assets are depreciable - for example, assets which are not used to produce assessable income, or assets which are not subject to wear and tear (such as land), and under no circumstances can depreciation extend beyond cost. Where an asset has a part business and part private use, depreciation is calculated at the schedule rate and then apportioned between business and private (e.g. car depreciation).

There are two basic types of depreciation:

1. FIRST YEAR DEPRECIATION ALLOWANCES

   A single first year allowance will be deductible in the year in which certain assets are first used in the production of assessable income, and include:

(a)	New or used plant and machinery	25%
(b)	New farm buildings, extensions and capital alterations (not dwellings) (40% prior to 22 June 1979)	20%
(c)	Employee accommodation (22% prior to 22 June 1979)	20%

2. ORDINARY DEPRECIATION ALLOWANCES

   In the second and subsequent years, ordinary depreciation will be allowed as a deduction from assessable income provided adequate records are maintained. Depreciation is usually calculated as a fixed percentage of either the cost price of the asset (CP method) or the diminishing book value (DV method), and the Inland Revenue Department specifies both the rate and method of depreciation. These schedule rates are the maximum allowable for income tax purposes, although a lesser rate may be claimed if desired.

   Selected examples of Schedule Rates of Ordinary Depreciation.

ITEM	%	
Barns - loafing and wintering	10	CP
Bridges - wooden	2.5	CP
- other	2	CP

Buildings - reinforced concrete	1	CP
- brick, stone, concrete	2	CP
- wooden	2.5	CP
- "temporary buildings"	10	DV
Chainsaws	50	DV
Crates - sheep and cattle	15	DV
Dams and Reservoirs - reinforced concrete	1	CP
- other	Maintenance	
Dips - shower type	10	DV
Effluent disposal units on farms	10 or Development	DV
Electric Fences	10	DV
Ensilage Pits - concrete walls with sliding roof	10	DV
Feeding out units for cattle	4	CP
Freezers - for dog meat	10	DV
Glasshouses - wooden framed	5	CP
- metal framed	3	CP
- P.V.C. Tunnel House	7.5 and Maintenance	CP
Irrigation plant	10 or Development	DV
Milking Sheds - built before 1/4/66	4	CP
- built after 1/4/66	10	CP
- conversion to herringtone	10	CP
- herringbone or rotary	10	CP
Motor Vehicles, trucks, bikes and scooters	20	DV
Pig Houses - all types	10	CP
Plant and machinery - motorised	20	DV
- non-motorised	10	DV
Poultry		
Battery type cages	10	DV
Colony houses with wooden frames, iron roofs and netting sides and bases	10	DV
Fowl Houses		
Steel framed	2.5	CP
Wooden framed	5	CP
Silos - erected on farm	10	DV
Slaughterhouses on farms -		
concrete	5	CP
timber and concrete	6	CP
timber	10	CP
Tractor Safety Frames	100	CP
Trailers	At the rate of the towing vehicle.	

6.8.5 (i) Depreciation of Cars

For tax purposes, the depreciable cost of motorcars and station-wagons (excluding utility vehicles, e.g. land-rover, and vehicles of a "specialised nature", e.g. hearse) has been limited to:

$11,000 if purchased after 31 March 1981.
$8,000 if purchased between 31 March 1978 and 31 March 1981.
$7,000 if purchased between 31 March 1977 and 31 March 1977.
$6,000 if purchased between 23 October 1974 and 31 March 1977.
Actual cost if purchased before 23 October 1974.

6.8.5 (ii) Beekeepers

The cost of frames for supers and hives of a new apiarist or for additional supers and hives of an established apiarist is capital expenditure and not deductible. Ordinary depreciation is not allowable, but first year depreciation may be claimed. However, the full cost of repairs and the cost of replacement frames is a tax-deductible expense.

6.8.5 (iii) Assets Acquired During the Income Year

If first year depreciation is not claimed, then ordinary depreciation may be claimed as follows:

(a) BUILDINGS - Depreciation is allowable on the cost of the building only (excluding land) for each whole or part month used.

(b) OTHER ASSETS - A full year's depreciation is allowable if the asset was used for more than 6 months of the year or more than half a season if used for seasonal work; otherwise half of the year's depreciation is allowable.

6.8.5 (iv) Assets Sold During the Income Year

(a) AT A LOSS (i.e. sales price is less than book value).

(i) Buildings: Any loss on sale is not tax deductible. However, if no depreciation has been previously claimed, then accumulated depreciation at schedule rates can be claimed in the year of sale.

(ii) Other Assets: Any loss on sale is deductible in the year of sale. If no depreciation has been previously claimed, the total loss (i.e. cost less sales price) can be claimed when the asset is sold.

(b) AT A PROFIT (i.e. sales price exceeds book value).

(i) Buildings: Ordinary depreciation recovered is not assessable, but if owned for less than 10 years, any write-back for tax purposes is merely to the extent that the disposal proceeds over and above book value represents a recovery of special, additional, or first year depreciation.

(ii) Other Assets: Any depreciation recovered is assessable in the year of sale, although it can be used to offset (i.e. reduce) the cost of a replacement asset. If the depreciation recovered exceeds $1,000, the taxpayer may elect to spread the amount recovered over the year of sale and up to three years back.

It should also be remembered that any excess of disposal proceeds above cost price represents a capital gain which is not taxable.

6.8.6 Farming Investment Allowance

20% of the cost of new plant and machinery used for farming or agricultural purposes may be deducted from assessable income in the year the asset is first used.

The allowance is available to lessees provided the asset qualifies for the allowance, the lease period is not less than 3 years, and both the cost price and the residual value (viz: cost less depreciation at tax rates) are specified.

The allowance is not available for cars, office equipment or any asset which is secondhand, costs less than $500, has been claimed as development expenditure (see 6.8.7), or where another investment allowance has been claimed for that asset.

The allowance does not affect first year or ordinary depreciation, and is in addition to depreciation claims. This means that the 20% investment allowance enables 120% of cost to be written off over the working life of the asset.

Where the asset, or an interest or share in the asset, is sold, disposed of, or ceases to be used (which includes the termination of a lease agreement) within 12 months of the date of first use, then that asset, or the portion disposed of, no longer qualifies for the investment allowance. If the allowance has already been claimed, then the tax assessment(s) involved would be amended by the Department.

The provision concerning the disposal of an interest or share in an asset is particularly important in the case of the formation, dissolution, or variation of the membership of a partnership.

6.8.7 Development Expenditure

(i) Development Expenditure

Certain expenditures incurred during an income year which normally would be regarded as capital expenditures and therefore not deductible, may be treated as a tax-deductible expense.

Such expenditure may be deferred in whole or in part and claimed at the written election of the taxpayer in the year of expenditure and over not more than nine succeeding years. The types of expenditure which qualify are:

(a) Any expenditure incurred in any income year in:

(i) The eradication or extermination of animal or vegetable pests on the land;

(ii) The felling, clearing, destruction, and removal of timber, stumps, scrub, or undergrowth on the land;

(iii) The destruction of weeds or plants detrimental to the land;

(iv) The preparation of the land for farming or agriculture including the cultivation and grassing thereof, but excluding items specified in (b) below.

(b) Any expenditure incurred on or before 31 March 1984, in:

(i) The draining of swamp or low-lying lands;

(ii) The construction of access roads or tracks to or on the land;

(iii) The construction of dams, stopbanks, irrigation or stream diversion channels, or other improvements for the purpose of conveying water for use on the land or for preventing or combating soil erosion;

(iv) The repair of flood or erosion damage;

(v) The sinking of bores or wells for the purpose of supplying water for use on the land;

(vi) The construction of aeroplane landing strips to facilitate aerial topdressing of the land;

(vii) The construction on the land of fences, including the purchase of wire netting for the purpose of making new or existing fences rabbit proof;

(viii) The erection on the land of electric power lines or telephone lines;

(ix) The construction on the land of feeding platforms, feeding yards, plunge sheep dips, or self-feeding ensilage pits;

(x) The construction on the land of supporting frames for growing crops;

(xi) The construction of earthworks, ponds, settling tanks, or other similar improvements primarily for the purpose of the treatment of waste products in order to prevent or combat pollution of the environment.

Such expenditure incurred after the above terminating date may be regarded as development expenditure provided the necessary steps have been taken before that date to enter into a binding contract involving substantial expenditure as part of a development plan which has been approved by the Commissioner of Inland Revenue.

Where the taxpayer ceases to carry on business before the total amount is deducted, the taxpayer has the option of:

(a) deducting the balance remaining in the year he ceased business, or

(b) reapportioning the amount over the year incurred, and the other years in which he carried on the farming business.

(ii) Fertiliser and Lime

Expenditure on the purchase and application of fertiliser and/or lime may be deferred in whole or in part, and claimed at the written election of the taxpayer in the year of expenditure and over not more than four succeeding years.

(iii) Tree Planting

Expenditure on planting or maintaining trees which have been planted to provide shelter or to prevent erosion or otherwise for agricultural or pastoral purposes, or in erecting or maintaining fences to protect any such trees, is tax-deductible in the year the expenditure is incurred. This deduction is not to be allowed in relation to expenditure for which the farmer receives a Forestry Encouragement Grant.

6.8.8 Recovery of Development Expenditure and Interest

The position up to 31 March 1983:

When farming or agricultural land is sold at a profit within 5 years of acquisition, any development expenditure previously allowed as a tax deduction can be recovered. Similarly, any development expenditure allowed on assets purchased (e.g. fish farm assets) can also be recovered if the asset is sold within 5 years of acquisition.

The position from 1 April 1983:

When farm land or a marine lease/licence is sold at a profit within 10 years of acquisition, any development expenditure and/or interest on money borrowed for purchase or development purposes which was previously allowed as a tax deduction can be recovered. The amount regarded as assessable income is the lesser of the profit made or the tax deductions allowed for development and interest. This amount is assessable in the year of sale or it may be spread over the year of sale and up to 4 years back.

This provision does not apply to a sale where, within 12 months, the taxpayer purchases a replacement farm which is owned until 10 years have elapsed since the original farm was acquired (i.e. the sale of a "stepping stone" farm);

land sold under a compulsory acquisition order; disposal upon death of the owner; certain disposals by a spouse who inherits the farm; disposals under a Court order; and certain disposals where the profit on sale would already be regarded as assessable income of that taxpayer.

6.8.9 Limitation of Tax Losses from Farming or Landowning

As from the 1984 or subsequent income years, a taxpayer may not offset against other income any loss (or losses) in excess of $10,000 per year where that loss was incurred in the activities of livestock farming, growing trees or plants (excluding annual crops), viticulture,oyster/mussel /scallop/fresh water fish farming, or property owning. Unused losses can be carried forward for use in later year(s) in line with the above principles.

Exemptions from this restriction are as follows:

.. An existing farmer who carries on an established or a related activity.

"Established" is as at 11 October 1982 where that activity (those activities) constitute the livelihood of the taxpayer, and his principal source of income. For example, if a livestock farmer commenced growing asparagus in 1983, then any loss from his livestock operation would be exempt from the $10,000 rule, but not losses from his asparagus growing operation.

.. Hardship (Stepping stone farmer)

Four conditions must be met before the Commissioner may exercise his discretionary power to offset more than the $10,000 limit on farming/rental losses against other income derived from personal exertion. These are:

(1) The farming activity must constitute the livelihood of the taxpayer or is being established as the taxpayer's livelihood; and

(2) The taxpayer derives income from personal exertion other than from exempt farming activities or renting; and

(3) This income from personal exertion is necessary to maintain the taxpayer and/or family, or to ensure the continuance of the farming activity; and

(4) The taxpayer would suffer hardship if the $10,000 tax loss offset limitation were applied.

Transitional provisions are available to farmers who were farming on 11 October 1982. These provisions enable any extra tax payable as a result of the $10,000 loss limit arising for the 1984-1986 income years, to be paid in three equal instalments in the following year(s). Interest, at the rate of 1.25% per month is charged on the tax which is deferred. This interest is itself tax-deductible.

6.8.10 Farm Forestry

1. Overview

The net profit from the sale of timber will be assessable income, i.e. sale proceeds less the 'cost' of the timber. Where the actual cost is not known, the general position is as follows:

(a) The assessable profit is the value of the timber when sold less the estimated value of the timber when the land was purchased; or

(b) Where significant quantities of native timber are involved, the cost may be calculated as the difference in value between land with standing timber and the same land when cleared.

For income tax purposes, a sale of land with standing timber on it will be regarded as a sale of timber. Under these circumstances, the Commissioner can determine the sale price of the timber and include that value in the vendor's assessable income. (The 'cost' of that timber is an allowable deduction, however.) This provision does not apply:

(a) Where the trees were planted to provide shelter, prevent erosion, or for other agricultural purposes on the farm; or

(b) To trees planted or maintained under a forestry encouragement agreement under the Forestry Encouragement Act 1962.

<u>Spreading the cost of timber.</u>

The cost of timber is ordinarily deductible in the year the timber is sold. Where income from the sale of timber is derived in two or more financial years,

the total cost of that timber may be apportioned and claimed over the years of sale.

Spreading income derived from timber.

Income from farm forestry qualifies for the Farm Income Equalisation scheme (refer section 6.8.8 (ii)), except where the timber sold was from trees:

(a) planted to provide shelter or prevent erosion for an agricultural or farming business; or

(b) planted or maintained under the Forestry Encouragement Act 1962.

when the income may be spread over the year of sale and up to four succeeding years provided the taxpayer makes written application within 12 months after the end of the year of sale.

2. Forestry Encouragement Loans
(Made under the Forestry Encouragement Act 1962)

Under this scheme, farmers were granted loans to meet the cost of establishing and maintaining limited areas of plantations on farms for commercial purposes. The object of these loans was to encourasge the planting of woodlots on "difficult" land with a view to ensuring an adequate supply of timber for the future. The incentives offered included low interest rates and the remission of half the loan moneys where all obligations are carried out successfully.

Tax implications are as follows:

1. Loan moneys when received are not assessable.

2. Tax-deductible costs allowable are:

   (a) Expenditures incurred in planting and maintaining trees in excess of any advance made under the agreement.

   (b) Interest paid under the agreement.

   (c) Repayments of principal of the loan.

   Any taxpayer can claim against income from salary, wages, business or farming, the difference between the amount spent on the woodlot and the advance obtained under the loan scheme.

3. The amount of the loan written off (i.e. remitted) is not assessable income, nor is it tax deductible. However when the timber is eventually sold, the cost of timber is reduced by the amount written off.

4. Where the taxpayer has been relieved of his liability for unpaid interest and the interest has not been claimed as a tax deduction, the amount so relieved does not form part of his assessable income.

3. Forestry Encouragement Grants (1970 and 1981)

The grants scheme has replaced the loan scheme with respect to farm woodlots under this scheme, the landholder receives a cash grant of 50% of the qualifying expenditure (which includes the labour of the landholder and his family) where trees are planted for commercial purposes in approved woodlots (refer section 1.5).

Tax implications are as follows:

1. The amount received (if any) in respect of labour of the taxpayer and/or his family will be regarded as assessable income of that taxpayer for that year.

2. The amount received (if any) in respect of 'qualifying expenditure' will not be assessable income. Qualifying costs include:

   (a) Expenditures incurred in planting or maintaining trees on the land or in preparing or otherwise developing the land for forestry operations; or

   (b) Rent, rates, land tax, insurance premiums and other like expenses; or

   (c) Interest on money borrowed for forestry business.

3. Qualifying expenditure in excess of 150% of the amount of the grant can be claimed for tax purposes. This excess expenditure is not tax-deductible in the year the expenditure is incurred: it must be carried forward and deducted under the "cost of forest formula" which is a means whereby the costs of establishing, managing, and developing a forest are capitalised and

carried forward until final yield or clear felling begins, when they can be progressively claimed as costs gainst income in proportion to the area felled each year.

A forestry company has two other alternatives as well as carrying the cost forward - deduct from general income, if any, or carry forward as a loss.

Other costs not qualifying for a grant may nonetheless be tax deductible, such as:

(a) Depreciation of assets not directly associated with management of tree crop such as administration buildings and workshops.

(b) Repairs to and maintenance of permanent assets, including permanent roads, bridges, fences and buildings.

(c) Capital costs of assets other than land and roading, such as machinery and equipment directly associated with management of the tree crop. (Treat under "cost of forest formula". Note that depreciation is unnecessary under this method.)

The following items also represent costs, which do not qualify for the grant. Those of a capital nature will be added to the value of the appropriate asset, and may be depreciated for tax purposes (except land). Where alternative treatments may be available, the Inland Revenue Department or your accountant should be consulted. Examples of these costs are as follows:

(a) Land, as well as legal, survey and valuation fees and mortgage expenses.

(b) Initial consultancy fees relating to the feasibility of a forestry project.

(c) Permanent buildings erected or purchased.

(d) Machinery and equipment not directly associated with the management of the tree crop, e.g. roading equipment.

(e) Permanent roads and bridges. (If road formation is on a permanent access route or is to be used during the life of the crop and for successive crops, it is a capital improvement to the land.)

4. Conversion of 'Loan' to 'Grant'

Farmers who have established woodlots under a Forestry Encouragement Loan may convert to the Forestry Encouragement Grants Scheme. When converted the following provisions apply:

(a) The outstanding balance of the loan is written off. It is not regarded as assessable income, nor is it tax-deductible. However, when the timber is eventually sold, the cost of timber is reduced by the amount written off.

(b) Accumulated interest on the loan is written off.

(i) Interest previously claimed as a tax deduction is added back to assessable income.

(ii) Unpaid interest not claimed as a tax deduction is written off. It is not regarded as assessable income nor is it tax-deductible.

(c) Future expenditure on the woodlot qualifies for the cash grant under the normal provisions of the Grants scheme.

6.8.11 Income Levelling Schemes

Several schemes are available to taxpayers who derive income from agriculture which may serve to dampen the fluctuations inherent in farm incomes and subsequent taxation payments.

1. Farm Income Equalisation Scheme

This schemes allows a farmer to smooth his income from year to year by permitting him to reduce his assessable income by the amounts which he deposits with the Inland Revenue Department. These deposits are retained in the Farm Income Equalisation Reserve Account in the farmer's name at the Reserve Bank. When amounts are withdrawn at a later date, they become assessable income.

Deposits.

(i) Assessable income is reduced by the amount deposited during a year. Deposits may, however, be used to reduce the income of the immediately preceding year upon the taxpayer's written election, provided the deposit is made with the shorter of:

* 6 months after balance date; or
* 1 month after the due date for filing the return of income.

(ii) The maximum amount of deposits in any one year is the assessable farm income for that year, and each deposit must be a minimum of $200 (except the last deposit to make up the maximum).

(iii) The minimum period of deposit is one year (able to be relaxed under certain circumstances) and the maximum period for any one deposit is five years.

(iv) Generally no deposit can be made in a year when the farmer voluntarily withdraws funds from his reserve account.

(v) 3% interest is paid on deposits held from 1/4/77 (except those withdrawn within one year), and credited to the appropriate deposit.

Refunds.

(i) Compulsory refunds are made if a deposit reaches the maximum term of five years, and voluntary refunds (withdrawals) can be made upon the taxpayers written application.

(ii) All refunds become assessable income in the income year when the application is made, or the immediately preceding year on the same conditions as for deposits.

(iii) A refund will not attract more tax than the deposit saved.

(iv) Refunds are made from the oldest deposits first.

(v) The minimum refund is $200 unless the account balance is smaller; the maximum is the account balance.

(vi) Special rules apply where the refund is due to the retirement, death, or bunkruptcy of the farmer.

2. Deferral of Expenditures on Development and Fertiliser and Lime

- refer to section 6.8.7.

3. Nil Value of Livestock

- refer to section 6.8.4.

4. Livestock Incentive Scheme

The tax option provides limited flexibility for the smoothing of income - refer to Section 1 of this Manual.

5. Estimates of Provisional Income

A provisional taxpayer can estimate his provisional income, and pay provisional tax accordingly. Re-estimates can be made up to the due date of the last instalment of provisional tax - refer to section 6.2.

6.9 HORTICULTURE

The following provisions relate specifically to horticulture, but readers should also familiarise themselves with the general farming provisions.

1. Purchase of land, including conveyancing fees, is capital expenditure, and is not deductible. However, legal fees incurred in arranging finance to purchase the land, or in arranging to lease the land, will be tax deductible.

2. Buildings are capital expenditure and subject to depreciation allowances as for a farm (refer section 6.8.5).

i.e. New farm buildings and employee accommodation	First year and ordinary depreciation
Taxpayer's dwelling	25% ordinary depreciation

3. Shelter belts.
The cost of planting and maintaining shelter trees is tax deductible (refer section 6.8.7 (iii)).

4. Development expenditure.

The cost of preparing land for agricultural purposes, including the cost of original fencing, is tax deductible as development expenditure (refer section 6.8.7 (i)). Note that this applies to the preparation of the land only. Thus the cost of fruit trees and of planting them would be capital expenditure of a fruitgrower as it is

not regarded as preparation of the land, but rather is part of the operation of fruit growing.

5. Recurring annual costs until production.

   Where there is a period between establishment and the production of the first crop, the annual recurring expenses would be tax deductible when incurred notwithstanding that they are incurred to earn profits in future years. For example, an orchardist would be entitled to deduct expenditure on cultivation, pruning, spraying, rates, insurance, depreciation, etc. until the trees reach fruit bearing age.

6. Hail Damage - compensation payments received by orchardists for hail damage made to fill a gap in the profits are assessable income in the year received.

7. Growing crops of fruit, vegetables etc. are a capital asset and are only regarded as trading stock when they are harvested or severed from the ground (refer section 6.8.4).

8. Horticulturists qualify for the Farm Income Equalisation Scheme (refer section 6.8.11 (i)) and the Farming Investment Allowance (refer section 6.8.6).

9. Schedule Rates of Depreciation

ITEM		%
Agricultural plant, and equipment including tractor drawn implements.	10	DV
Self-propelled equipment	20	DV
Cloches	Replacement or Annual Revaluation or Standard Value	
Irrigation/Frost protection plant - pumping unit, sprinklers, and standards	10 or Development pipelines.	DV
Glass houses - wooden framed	5	CP
- metal framed	3	CP

Hop frames	Replacement or Annual Revaluation or Standard Value or Development	
Hop kilns	15	DV
Plastic pots for tomato growing	Standard Value (20c each)	
P.V.C. Tunnel houses	7.5 plus maintenance	CP
Spray plant (orchardists)		
Self propelled and air-blast units	20	DV
Others	10	DV
Tomatoes-structure for shading plants	5	CP
Trickle irrigation equipment in glasshouses.	25	DV

6.10 FISHING INDUSTRY

The following provisions relate specifically to the fishing industry but readers should also familiarise themselves with the previous sections.

In general 'fish' includes shellfish and crustaceans.

6.10.1 Spreading of Repair Costs on Fishing Boats

Expenditure incurred in making repairs or alterations necessary to obtain a certificate of survey under the 'Shipping and Seamen Act 1952' may be deferred in whole or in part and claimed at the written election of the taxpayer in the year of expenditure and up to four succeeding years. The expenditure covers repairs and alterations to the hull, equipment or machinery, and must be ordinarily deductible as 'repairs and maintenance' (i.e. would not be regarded as capital expenditure).

6.10.2 Depreciation

1. First Year Depreciation

Allowances available to the fishing industry include:

(a)	New or used plant and machinery	25%
(b)	New buildings or building improvements required for fish export hygiene purposes	30%
(c)	Employee Accommodation	20%

2. Ordinary Depreciation

In addition to the relevant items specified in section 6.8.5, the following schedule rates may apply.

ITEM	%	
Cool stores and freezing chambers		
Buildings	3	CP
Plant	10	DV
Fishing Vessels		
Registered Hull, including fixed gear and refrigeration rooms.	10	DV
Deck machinery, winches and motors	15	DV
Main engine	20	DV
Fish Processing Buildings	4	CP
Fish Processing Plant	15	DV
Wooden fish boxes and plastic fish containers	Replacement only or Standard Value or Annual Revaluation	
Radio - Receivers	20	DV
- Telephones	20	DV
- Testing equipment	20	DV
- Transmitters	20	DV

3. Additional Depreciation on Certain Capital Expenditure on Fishing Boats.

Capital expenditure arising from compulsory surveys of fishing boats carried out by the Marine Department may be written off at the rate of 25% of the expenditure in the year incurred and acquiring, installing or extending equipment or machinery for use in a fishing boat.

It is necessary that the taxpayer keeps full and satis-

factory accounts.

6.10.3 Fishing Investment Allowance

40% of certain expenditures incurred prior to 31 March 1983 may be claimed as a tax deduction.

Expenditures which qualify include the cost of new fishing boats (including a small boat belonging to a fishing boat), new plant and machinery permanently on a fishing boat, or new plant and machinery used in rock oyster farming, mussel farming, or fresh water fish farming, may be deducted from assessable income in the year the asset is first used. Expenditure on converting or making structural alterations to a fishing boat to enable it to be used or continue to be used as a fishing boat also qualifies.

The allowance is available to lessees provided the asset qualifies for the allowance, the lease period is not less than 3 years, and both the cost price and the residual value (viz: cost less depreciation at tax rates) are specified.

The allowance is not available for road vehicles, buildings, wharves, jetties and shore installations; office equipment; nets, baskets, ropes, buoys etc; containers, assets costing less than $500; any asset which is second-hand; where the expenditure has been claimed as development expenditure; or where another investment allowance has been claimed for that asset.

The allowance does not affect first year or ordinary depreciation and is in addition to depreciation claims.

6.10.4 Development Expenditure - Fish Farming

Certain capital expenditure by rock oyster or mussel farmers or freshwater fish farmers may be claimed as a tax deduction if incurred prior to 31 March 1984. Such expenditure may be deferred in whole or in part and claimed at the written election of the taxpayer in the year of expenditure and up to nine succeeding years. The types of expenditure which qualify are:

(a) Rock Oyster Farming

(i) Acquisition and preparation of spatting sticks;

(ii) Construction and erection of posts, rails, or other structures for the holding of spatting stocks during spat catching and maturing;

(iii) Construction of fences (including breakwater fences).

(b) Mussel Farming

(i) Acquisition, preparation and mooring of pontoons, rafts, or other floating structures for collecting spat;

(ii) Acquisition, mooring and outfitting of moored floating platforms from which the collected spat is suspended for subsequent growth;

(iii) Collecting and depositing of shell or other suitable material on the sea bed to create spatting surfaces;

(iv) Acquiring, outfitting and mooring of the special long lines on which mussels are cultivated.

(c) Scallop Farming

(i) Acquisition, preparation and mooring of floating structures for collecting spat.

(ii) Acquisition, mooring and outfitting of long-lines from which the collected spat is suspended for subsequent growth.

(d) Freshwater Fish Farming

(i) Ground testing and drilling of water bores;

(ii) The draining of land and the excavating of sites for ponds, tanks and races;

(iii) The construction of races, sluices, ponds, settling ponds, and tanks of impervious materials to conduct and contain water.

(iv) The supply and installation of pipes for water reticulation;

(v) The construction of walls, embankments, walk-ways, service paths, and access paths;

(vi) The supply and installation of baffles and

screens for the containing or excluding of fish;

(vii) The construction of fencing on the fish farm;

(viii) The construction of effluent ponds and channels.

All provisions relating to deductibility of farm development expenditure apply similarly to this expenditure, including the position on termination of the qualifying period where the taxpayer has embarked on an approved "development plan" before that date, as well as recovery of development expenditure allowed if the area is sold within ten years (refer section 6.8.7 and 6.8.8).

6.10.5 Income Equalisation Scheme

Taxpayers engaged in the business of fishing are able to make deposits under the farm income equalisation scheme, and for this purpose "fishing" includes rock oyster farming, mussel farming, and freshwater fish farming. For details refer to section 6.8.11(i).

6.11 EXPORT INCENTIVES

The following section outlines the major incentives which could apply to primary producers who are involved in exporting. For reasons of brevity, only selected aspects have been included, and care must be exercised when applying these guidelines to any particular circumstance. Your accountant or the appropriate authority should be consulted regarding queries.

The following table summarises the previous export incentives:

* Increased exports incentive deduction.
  Terminates on 31 March 1983, although exporters may irrevocably adopt the export performance incentive for qualifying goods before that date.

* New markets exports incentive.
  Terminated on 31 March 1981, although exporters may irrevocably adopt the export performance incentive for qualifying goods before that date.

* Exports incentive schemes for qualifying services and/or projects.
  Terminated on 31 March 1980, and replaced by the tax credit schemes for qualifying services and/or projects.

* Export market development expenditure-(ordinary claim)
  Terminated on 31 March 1980, and replaced by the tax credit scheme for export-market development incentive.

* Export-market development activities - (self-employed persons)
  Terminated on 31 March 1980, and replaced by the tax credit scheme for export-market development activities for self-employed persons.

The following summarises the tax credit export performance incentives which have been operative since 1 April 1980. All of these incentives currently terminate on 31 March 1985.

* Export performance incentive for qualifying goods.

* Export performance incentive for qualifying services and/or projects.

* Export-market development incentive.

* Export-market development incentive for self-employed taxpayers.

6.11.1 Increased Exports Incentive

The increased exports incentive is intended to encourage the exporting of certain goods (other than the traditional basic primary products) by allowing a tax deduction based on the value of the increased export sales made in an income year up to the terminating date of 31 March 1983.

The amount of the deduction is the greater of:

(i) 25% of the increase in export sales; or

(ii) an amount calculated as $\frac{X}{Y} \times Z$

where "X" is the value of export sales for the current year.
"Y" is the value of export sales for the preceding year.
"Z" is 25% of the previous year's increase in

export sales.

The "increase in export sales" for an income year is the excess of the value of the taxpayer's export sales in that income year over the average annual exports in his "base period". The base period is the first three years of the seven income years immediately preceding the income year under consideration.

The deduction may be claimed by any "exporter" or "export merchant" of "qualifying goods" except a co-operative dairy company, a co-operative milk marketing company, a co-operative pig marketing company, or a mineral or petroleum mining company.

An "exporter" is a manufacturer, producer or processor of qualifying goods who must have:

(a) Exported the goods from New Zealand; and
(b) Sold or otherwise disposed of the goods to an overseas purchaser; and
(c) Been the owner of the goods at the time of the sale or disposal.

He can engage a commission agent to export the goods on his behalf so long as he remains the owner of the goods up to the point of sale to the overseas purchaser; but if the goods are sold or otherwise disposed of to the agent then it is the agent and not the manufacturer who can claim the incentive deduction.

An "export merchant" is the person or firm that:

(a) Purchases goods from the manufacturer or other supplier and directly contracts the sale of those goods with an overseas buyer; and

(b) Is responsible to the overseas purchaser for the quality, quantity and delivery of the goods sold; and

(c) Is entitled to receive payment for the goods from the overseas purchaser; and

(d) Is actively engaged in seeking out export opportunities for new zealand products.

Qualifying goods.

In general all manufactured goods (i.e. goods incorporating a significant degree of domestic processing) qualify for the incentive but there are specific exclusions.

These are:

(a) Goods sent overseas by way of gift.

(b) Goods exported with the intention that they will be returned to New Zealand.

(c) Goods imported and subsequently exported from New Zealand after being processed, packed, graded, sorted, or incorporated with another product in New Zealand unless the duty free selling price exceeds the original landed cost by at least 35%.

(d) Goods re-exported from New Zealand without processing, packing, grading, or sorting in New Zealand.

Goods derived from primary industries and unprocessed goods are excluded from the incentive under four categories.

(a) Animals and animal products and by-products (including fish, dairy produce, meat, meat products, wool, and their respective by-products).

(b) Agricultural and horticultural products and by-products.

(c) Forest products and by-products.

(d) All minerals, metals occurring in their natural state, metal ores, raw scrap metal, and primary aluminium and aluminium alloys.

There are, however, certain processed products which specifically qualify for the incentive despite their being excluded under one of the above general headings. These are listed in Appendix iii.

Example:
An exporter has achieved export sales during the years ended 31 march as follows:

	Year	Export Sales	
	1971	$ 6,000	Base Period
Base Period	1972	7,000	1978
for 1979	1973	8,000	
	1974	12,000	7 years
	1975	14,000	immediately
7 years	1976	16,000	preceding
immediately	1977	18,000	1978
preceding 1979	1978	15,000	
	1979	12,000	

The value of export sales for 1979 is $12,000. The base period for the 1979 year is the 1972 to 1974 years, during which the total export sales were $27,000.

The increase in export sales for the 1979 year is therefore:

$$\$12,000 - \frac{27,000}{3} = 12,000 - 9,000$$
$$= \$3,000$$

The value of export sales for 1978 was $15,000. The base period for the 1978 year is the 1971 to 1973 years, during which the total export sales were $21,000. The increase in export sales for the 1978 year is therefore:

$$\$15,000 - \frac{21,000}{3} = 15,000 - 7,000$$
$$= \$8,000$$

The increased exports incentive deduction for 1979 will be the greater of the amounts calculated as follows:

(i) 25% of $3,000 = $750.00

or

(ii) $\frac{12,000}{15,000}$ x (25% of $8,000) = $1,600.00

The deduction is therefore <u>$1,600</u>.

New Exporters.

Where there have been no previous export sales, exporters qualify for the additional 25% deduction on all their qualifying export sales in an income year until a base period has been established, i.e. until the sixth year of export.

6.11.2 New Markets Increased Exports Incentive

Exporters who export qualifying goods in more than token quantities before 1 April 1981, to new markets as approved by the Department of Trade and Industry, will qualify for a 15% deduction from assessable income for increases in export sales to a new market in each of the first 2 years of the market development. The deduction is in addition to the basic 25% allowance for the increased exports incentive (above) and applies to the same exporters and range of goods that qualify for that incentive.

A "new market" is an area which the Department of Trade

and Industry considers to be a district and separate market, and to which no New Zealand exporter has sent more than token quantities of similar goods in the previous 3 years. A new market can thus include:

* an existing product to a new market, or
* a new product to an existing market.

The allowable deductions are:

(i) For the first 12 consecutive month's export sales of particular kinds of goods to new markets, the deduction will be 15% of the value of those export sales, and should be claimed in the income year in which the first 12 months are completed.

(ii) For the second 12 month period, the deduction will be 15% of the increase in export sales of those goods over the export sales of the same goods in the first 12 month period, and should be claimed in the income year in which the second 12 months are completed.

Example:

A taxpayer with a 31 March balance date.

Product	Approved New Market	Date of First Sale	1st 12 months ends	Sales 1st 12 months
A	X	1/ 8/75	31/ 7/76	$100,000
B	Y	1/12/75	30/11/76	$ 50,000
C	Z	1/ 6/76	31/ 7/77	$160,000

Product	2nd 12 months ends	Sales 2nd 12 months
A	31/ 7/77	$140,000
B	30/11/77	$ 40,000
C	31/ 5/78	$200,000

The first 12 months sales of products A and B expires within the 1977 income year. Therefore the incentive deduction allowable is:

Product A	15% of	$100,000	=	15,000
B	15% of	50,000	=	7,500
				$22,500

1978 Income Year.

The second 12 months sales of products A and B expires during the 1978 income year, and the incentive deduction is based upon the increase in sales over the first 12 month period, for each product. The increse in sales for product A is $40,000, while the increase in sales for product B is nil.

Also, the first 12 month's sales for product C expires within the 1978 income year.

The allowable deduction is therefore:

Product A	15% of	$40,000	=	6,000
B	15% of	$160,000	=	24,000
				$30,000

1979 Income Year.

The second 12 month's sales of product C expires during the 1979 income year. The incentive deduction is based on the increased sales of product C, and the deduction would be Product C 15% of $40,000 = $6,000.

6.11.3 Tax Credit Scheme for Exporters

Where an exporter or export merchant is eligible for the increased exports incentive or the increased new markets exports incentive but is unable to receive the full tax saving because of a loss situation or having insufficient assessable income, the taxpayer can convert the lesser of the value of the incentives or the loss for the current income year into a refundable tax credit of 45c in the dollar. This tax credit is paid to the taxpayer as though it was refund of tax overpaid. Alternatively, the taxpayer can carry forward the loss in the normal manner.

6.11.4 Export Performance Incentive for Qualifying Goods

This incentive basically applies to the same goods and the same exporters and export merchants who qualify for the increased exports incentive and the new markets increased exports incentive. The incentive commenced on 1 April 1980, and allows exporters to choose between the 'new' export performance incentive and the existing increased exports and new markets export incentives (which terminate on 31 March 1983). Once made, the election to adopt the export performance incentive is irrevocable.

The incentive allowance is given as a refundable tax credit, the rate of which varies according to the local domestic content of the goods exported. The amount of tax credit is calculated by multiplying the total value of f.o.b. export sales for a particular product by the specified rate of tax credit. The specified rate of tax credit is found in a schedule prepared by the Department of Trade and Industry which lists export commodities and their associated value added band and the rate of tax credit. The following table shows the domestic value added bands and rates of incentive allowance:

Band	Domestic Value Added	Rate of Tax Credit
A	80 - 100%	11.9
B	70 - 80	10.5
C	60 - 70	9.1
D	50 - 60	7.7
E	40 - 50	6.3
F	20 - 40	4.2
G	0 - 20	1.4

Example:

Assume qualifying goods exported were:

Band	A f.o.b. sales	$100,000
	B f.o.b. sales	$200,000
	C f.o.b. sales	$300,000

Export Performance Incentive is calculated as:

$100,000 x 11.9%	=	11,900
200,000 x 10.5%	=	21,000
300,000 x 9.1%	=	27,300
Total incentive tax credit		$60,200

6.11.5 Export Performance Incentive for Qualifying Services and/or Projects

As from 1 April 1980, any taxpayer who provided professional or technical services overseas will be entitled to a refundable tax credit of 11.9% of the net foreign currency earnings which are either remitted back to New Zealand or are paid out of funds held in New Zealand. Qualifying services are defined and include advisory

services relating to the establishment or development of any farming, agricultural, horticultural, fishing, or forestry project.

Example:

Gross fees from qualifying services	$20,000	
less overseas expenditure	5,000	
Net foreign currency earnings	$15,000	
Net foreign currency earnings transferred to New Zealand through the N.Z. banking system	$10,000	
Tax Credit is 11.9% of $10,000 i.e.		$ 1,190

6.11.6 Export-Market Development Expenditure Incentive

As from 1 April 1980, any taxpayer who incurs qualifying export-market development expenditure will be entitled to refundable tax credit of 67.5% of such qualifying expenditure.

To qualify for the incentive, the export promotion expenditure must:

(i) be tax-deductible under general taxation law (i.e. capital expenditure would not qualify); and

(ii) have been incurred primarily and principally for the purposes of seeking markets (including the retention of existing markets) or the obtaining of market information or market research, or creating or increasing demand for the export of goods that have been manufactured, produced, assembled, processed or packed or graded and sorted in New Zealand. "Services" means services in relation to construction projects, courses of educational training or the furnishing of technical advice or assistance.

Qualifying expenditures in general, are only those costs which are incurred outside New Zealand in promoting exports, and include, amongst others:

* Overseas travel and accommodation expenses.

* Salaries and wages paid to New Zealand based employees in respect of the time spent outside New Zealand.

* Expenses (including those incurred in New Zealand) of advertising outside New Zealand.

* Direct costs of providing samples or technical information to persons outside New Zealand, reduced by any consideration received.

* Costs incurred outside New Zealand in the preparation or submission of tenders or quotations, or in sales promotion activities or campaigns.

* Payments to overseas agents for the purposes of activities carried on outside New Zealand.

Expenditures which do not qualify for the incentive include:

* Entertainment expenses.

* Director's fees.

* Salaries and wages paid in respect of employee's time within New Zealand.

* Payments to agents for work carried out within New Zealand.

* Costs of advertising inside New Zealand.

* Commissions on sales.

* Expenditure in respect of which an Export Program Grant has been received. However, the proportion of expenditure not reimbursed by the grant will be allowed as an ordinary deduction from assessable income.

Where the tax incentive credit is allowed in respect of qualifying expenditure, the same expenditure cannot be deducted from assessable income.

Example:

Assume that the taxpayer has received an export program grant (of $12,800) in respect of qualifying expenditure of $20,000.

Qualifying Expenditure:	
Salaries and Wages	$17,000
Overseas travel and accommodation	5,250
Net cost of samples	750
Advertising overseas	2,000
Total qualifying expenditure	25,000

less Qualifying expenditure in respect of which a grant was made	20,000
Expenditure which qualifies for the tax credit	$ 5,000
Tax Credit is 67.5% of $5,000, i.e.	$ 3,375

6.11.7 Export Market Development Activities Incentive for Self-Employed Taxpayers

As from 1 April 1980, any taxpayer (not being a company) who is in business on his own account or as a member of a partnership who has engaged in market research, securing publicity or soliciting business, or supplying services outside New Zealand in relation to construction projects, education training courses, or technical advice or assistance, will be entitled to a refundable tax credit of 67.5% of the "value of time" spent on these export-market development activities outside New Zealand.

The "value of time" is calculated as:

$$\frac{(a \times b) - (c \times \frac{100}{64})}{2}$$

where:

a is half the minimum hourly rate usually charged by the principal of a New Zealand firm for the particular profession or occupation of the taxpayer. If there is no customary rate, the Commissioner may determine a reasonable rate.

b is the number of complete hours spent on export-market development activities in the income year.

c is the amount of any export program grant or export market development grant received in respect of the time spent by the taxpayer in export market development activities.

Example:

Assuming:

(i) the taxpayer spent 1,000 hours on qualifying export-market development activities;

(ii) the minimum charge-out rate for the taxpayer's profession is $20 per hour; and

(iii) during the year, the taxpayer received an Export Program Grant in respect of the value of time of $1,920, then the value of time will be:

$$\frac{(\frac{\$20}{2} \times 1{,}000) - (\$1{,}920 \times \frac{100}{64})}{2}$$

$$= \$3{,}500$$

Tax Credit is 67.5% of $3,500 i.e. $2,362.50

6.11.8 Export Program Grants Scheme

This incentive scheme is to replace both the export-market development grants and the new markets export development grants schemes as from 1 April 1980. The export program grants scheme is formulated to encourage thorough and co-ordinated research into the development and marketing of New Zealand goods and services overseas.

The export program grants scheme provides a cash grant of 64% of the agreed amount of qualifying expenditure for the coming program year. The grant is not assessable for tax purposes, but will reduce the expenditure deductible for tax purposes. The remaining expenditure may be claimed as an ordinary tax deduction. Expenditure which is the subject of a grant does not qualify for the export market development taxation incentive.

Eligible expenditure $100	
Export program grant	$64.00
Tax saving on balance (at normal company rates) is $100-64) x .45	16.02
Overall level of assistance	$80.20

Grants will be available for a period of up to three years in respect of any one program with payments being made in annual instalments in advance. At the end of each program year an adjustment will be made to the amount of the following year's grant (or the final grant in the case of the last year in the program) in such a way that the total rate of the incentive on actual expenditure is maintained at 80.2 cents in the dollar.

Expenditure qualifying for the grant includes all expenditures eligible for the export market development taxation incentive, plus costs incurred within New Zealand such as salaries and wages and value of time in promoting overseas

markets. To qualify under the grants scheme the overseas markets must be approved by the Department of Trade and Industry as having potential for future development.

6.12 APPENDICES

6.12.1 Appendix I

Last Days for Payments
By Provisional Taxpayers

Balance Month	Provisional Tax 1st Instalment	Provisional Tax 2nd Instalment	Terminal Tax Companies	Terminal Tax Others
Oct 19A1	7 Mar 19A1	7 Sept 19A1	7 Nov 19A2	7 Mar 19A3
Nov 19A1	7 Mar 19A1	7 Sept 19A1	7 Nov 19A2	7 Mar 19A3
Dec 19A1	7 Apr 19A1	7 Oct 19A1	7 Dec 19A2	7 Mar 19A3
Jan 19A2	7 May 19A1	7 Nov 19A1	7 Jan 19A3	7 Mar 19A3
Feb 19A2	7 Sept 19A1	7 Mar 19A2	7 Feb 19A3	7 Mar 19A3
Mar 19A2	7 Sept 19A1	7 Mar 19A2	7 Mar 19A3	7 Mar 19A3
Apr 19A2	7 Sept 19A1	7 Mar 19A2	7 Mar 19A3	7 Mar 19A3
May 19A2	7 Sept 19A1	7 Mar 19A2	7 Mar 19A3	7 Mar 19A3
June 19A2	7 Sept 19A1	7 Mar 19A2	7 Mar 19A3	7 Mar 19A3
July 19A2	7 Nov 19A1	7 May 19A2	7 Mar 19A3	7 Mar 19A3
Aug 19A2	7 Mar 19A2	7 Sept 19A2	7 Mar 19A3	7 Mar 19A3
Sept 19A2	7 Mar 19A2	7 Sept 19A2	7 Mar 19A3	7 Mar 19A3

6.12.2 Appendix II

Rates of Income Tax for Individuals
1983 Income Year

Taxable Income		Amount and Rate of Tax		
$	$	$		$
1	- 5,500		17.25% of income	
5,501	- 6,000	948.75 plus	27.5% of excess over	5,500
6,001	- 12,600	1,086.25 plus	33.0% "	6,000
12,601	- 17,600	3,264.25 plus	39.5% "	12,600
17,601	- 22,000	5,239.25 plus	43.0% "	17,600
22,001	- 24,000	7,131.25 p.us	45.5% "	22,000
24,001	- 30,000	8,041.25 plus	52.55% "	24,000
30,001	- 38,000	11,194.25 plus	58.05% "	30,000
38,001	upwards	15,838.25 plus	63.0% "	38,000

N.B. These rates include the temporary surtax of 10% to the tax rates on taxable incomes in excess of $24,000, which was introduced in the 1982 Budget.

1984 Income Year

(a) Excluding the temporary surtax.

Taxable Income			Amount and Rate of Tax		
$	$	$			$
1	- 6,000		20.0%	of income	
6,001	- 24,000	1,200.00 plus	31.0%	of excess over	6,000
24,001	- 30,000	6,780.00 plus	41.0%	"	24,000
30,001	- 38,000	9,240.00 plus	51.0%	"	30,000
38,001	upwards	13,320.00 plus	60.0%	"	38,000

(b) Including the temporary surtax.

Taxable Income			Amount and Rate of Tax		
$	$	$			$
1	- 6,000		20.0%	of income	
6,001	- 24,000	1,200.00 plus	31.0%	of excess over	6,000
24,001	- 30,000	6,780.00 plus	45.1%	"	24,000
30,001	- 38,000	9,486.00 plus	56.1%	"	30,000
38,001	upwards	13,974.00 plus	66.0%	"	38,000

6.12.3 Appendix III

Goods which Specifically Qualify for the Increased Exports Incentive

Part A

Reconditioned or rebuilt secondhand plant and machinery.
Flat galvanised steel products.

Part B

Farmed salmon.
Fats and oils of fish, canned and bottled fish, prepared fish dinners, prepared consumer fish packs, fish paste, fish balls, fish cakes, fish fingers, fish sausages, fish extracts, fish soups and fishmeal.
Fish and shellfish of the following species: Barracouta, Black Bream, Blue Hake, Creamfish (Leather Jacket), Hoki (Whiptail), Kahawai, Kingfish, Ling, Mao Mao, Mackerel, Moki, Monkfish, Mullet, Pilchard, Red Cod, Southern Blue Whiting, Trevally, Warehou, Octopus, Squid, Mussel,

(farmed or cultivated), Pacific Oysters, and Rock Oysters.
Smoked fish, excluding Snapper and Blue Cod.
Whole smoked eels and smoked eel fillets.
Comb honey in consumer packs and honey dew.
Extracted honey in consumer packs weighing 3 kilograms net or less.
Pollen
Propolis in cake form
Refined beeswax
Chilled or frozen retail consumer packs principally comprising edible meat portions, which have been processed beyond the primal cut stage, have a minimum packing standard of clipped, tied, or sealed wrapping, and are sold for retail consumption without further processing or packaging.
Chilled or frozen retail consumer packs comprising edible poultry portions only, which have a minimum packing standard of clipped, tied, or sealed wrapping and are sold for retail consumption without further processing or packaging.
Chilled or frozen portion controlled cuts of meat, which have been processed beyond the primal cut stage, have been produced with an exacting weight tolerance, and are sold for consumption without further processing or packaging.
Chilled or frozen edible fancy meats (including poultry fancy meats) which are sold for consumption without further processing or packaging.
Dried, concentrated, or evaporated meat or poultry products (other than canned goods) which are sold for consumption without further processing or packaging.
Manufactured meat or poultry smallgoods (other than canned goods)
Animal gland or organ extracts and chemicals resulting from the same or from dairy products or dairy waste, for use in the pharmaceutical industry or for research purposes.
Beef powder
Catgut processed to a quality suitable for use for surgical, sporting, or musical purposes
Cholic acid, and products and by-products of cholic acid
Denatured and processed lamb caeca
Dried mucosa
Dried and processed deer by-products
Edible powders of, or edible powdered offal from, meat or poultry or fish
Frozen fertilised ova
Lactose and products and by-products of lactose
Leather and leather products
Pet foods not fit for human consumption
Prepared dinners containing either meat and vegetables or game and vegetables
Processed cheese
Processed deep frozen semen

Selected and tubed natural sausage casings derived from animals other than pigs
Sera derived from animal blood
Soup stock
Spray-dried goat milk powder
Taxidermy products
Wool grease and products of wool grease
Woollen and worsted yarns
Infant milk formulas having a protein content per 100 calories of reconstituted powder not exceeding 4.0 grams or not less than 1.8 grams, a sodium content not exceeding 80 milligrams or not less than 20 milligrams, and a calcium/phosphorus ratio not greater than 2:1 and not less than 12:10.

Part C

Any produce, being fruit, legumes, vegetables, or milled cereals, (including extracts, fats, oils, concentrates, powders, soups, juices, jams, jellies, pastes or purees derived from fruit, legumes, vegetables, or milled cereals) which has been canned, dried, dehydrated, evaporated, individually quick frozen, or otherwise incorporates a significant degree of local processing.
Block frozen berry fruit
Bulbs
Fresh cut flowers
Fresh fruit (other than apples or pears)
Fresh vegetables
Retail packet seeds
Trees and shrubs
Wine and grapejuice

Part D

Pulp, paper (including newsprint), sawn timber, wood chips, and manufactured articles of wood and reconstituted wood

Part E

Kauri gum
Pottery clay body
Precious and semi-precious stones (excluding greenstone) which has been fully worked and cut for use in jewelry or goldsmith's or silversmith's wares
Processed bentonite
Pure dried vacuum salt

SECTION 7

ESTATE AND GIFT DUTY

M.B. CLARK, M. Com., A.C.A.
SENIOR LECTURER IN AGRICULTURAL ACCOUNTING
LINCOLN COLLEGE

CONTENTS

7. ESTATE AND GIFT DUTIES

7.1 INTRODUCTION

Both estate duty and gift duty are levied under the Estate and Gift Duties Act 1968 as amended. Both are administered by the Inland Revenue Department.

7.2 ESTATE DUTY

7.2.1 Introduction

In broad terms, estate duty is a tax on the total value of property that was owned by a person who has died as that passes from one person to another because of his death.

Estate duty is calculated according to the following general relationship:

	Estate Assets
plus	Notional Estate
less	Exempt Assets
	Dutiable Estate
less	Allowable Debts
less	Matrimonial Home Allowance
less	Charitable Allowance
	FINAL BALANCE

- calculation -	Estate Duty
	less Reliefs
	NET DUTY

7.2.2 Property Liable to Estate Duty

1. All property situated in New Zealand. (Property is used in the widest sense to cover all assets including land, cash, proceeds of life insurance policies, etc.)

2. All property outside New Zealand if the deceased was domiciled in New Zealand at the date of death. A credit is allowed in respect of estate duty paid overseas.

3. "Notional Estate", being:

   (a) Dutiable gifts (i.e. gifts which are or may be liable to gift duty) made within 3 years of

death. Gifts which are exempt from gift duty are also exempt from estate duty - refer section 7.3.3.

(b) Gifts made before death where the donor has reserved an interest for his lifetime (i.e. gifts with strings attached).

(c) Property disposed of before death where a benefit passes back to the estate upon his death.

(d) The deceased's share or interest in any property held jointly, other than a joint family home.

(e) Where all or part of the deceased's interest in a policy of life insurance on his life has been disposed of to a relative by the deceased within 3 years of death, a proportion of the gross benefits payable at death is included in the dutiable estate. This provision does not apply to a genuine disposition for full consideration to non-relatives.

The value to be included in the dutiable estate is calculated according to the following formula.

$$\frac{\text{Premiums up to disposition}}{\text{Total Premiums to death}} \times \text{Gross Proceeds} \times \text{Proportion of interest disposed of}$$

Allowance is then made for any consideration paid to the deceased when the policy was assigned.

Example:

Policy taken out by deceased in 1968. Annual premium $200. Assigned by way of sale to his wife in 1976 for the surrender value of $2,000. Deceased dies in 1978, and the policy realises $5,500.

Amount to be included in the dutiable estate is:

$$\frac{\text{Premiums to date of assignment}}{\text{Total premiums during term}} \times \text{Proceeds}$$

$$= \frac{(8 \times \$200)}{(10 \times \$200)} \times \$5{,}500 = \$4{,}400$$

less consideration paid on assignment	2,000
Amount to be included	$2,400

If the deceased has continued to pay the premiums after assignment, then the annual premiums so paid would be treated as gifts within three years of death and included in the notional estate - see (a) above.

(f) The value of any pensions payable to a survivor on the death of the deceased.

7.2.3 Exemptions

1. Non-dutiable gifts made absolutely.

2. The first $2,000 p.a. of any pension or annuity payable to the surviving spouse of the deceased from a group superannuation scheme.

3. The total of any such annuity payable to a child of the deceased until the child attains the age of twenty years.

4. Accrued War Pensions and Social Security benefits.

5. Personal chattels.

   The following exemptions apply to estates of all persons dying on or after 1 June 1978.

   (a) The total value of personal chattels which pass to the surviving spouse.

   (b) Up to $6,000 for personal chattels which pass to other beneficiaries.

   (Between 30 May 1974 and 1 June 1978, the maximum exemption for all personal chattels was $4,000.)

6. The deceased's share of a residence registered as a joint family home. (Applies to the estate of the first spouse to die.)

7.2.4 Allowable Debts

Debts which are owing by the deceased at the time of his death may be deducted from his estate. It does not matter whether the debt was incurred in New Zealand, or overseas.

Reasonable funeral expenses and income tax on income to date of death are regarded as allowable debts. However,

no allowance should be made for any expenses of administering the estate or remuneration of the executor(s).

The amount of any debt owing under any mortgage, charge, or other encumbrance over the joint family home is not an allowable debt.

7.2.5 Matrimonial Home Allowance

In the case of a matrimonial home, the allowance is in respect of the value of the family residence (i.e. the matrimonial home), or other property if the home does not pass to the surviving spouse. The allowance is restricted to one home only, and does not apply to a joint family home.

Value of the Allowance:

(a) Where the matrimonial home passes to the surviving spouse, the value of the home is the matrimonial home allowance.

(b) Where property other than the matrimonial home passes to the surviving spouse, the allowance is the lessor of:

(i) the value of the matrimonial home; or

(ii) the value of the other property passing.

NOTE: Debts secured over the matrimonial home or equivalent property reduce the value of the allowance.

As from 9 December 1982 <u>all</u> debts incurred in order to purchase the matrimonial home or equivalent property, irrespective of whether or not they are secured over that home or property will reduce the value of the matrimonial home allowance.

7.2.6 Charitable Allowance

The charitable allowance applies only to estates of persons dying on or after 21 June 1979. Estates of persons who died before that date qualified for the charitable succession relief rather than the charitable allowance.

The level of exemption, however, is the same whichever method of calculation is followed.

Value of the Allowance:

The charitable allowance is the lesser of:

(i) The value of the charitable succession(s), or
(ii) $25,000.

7.2.7 Valuation of Estate

All property included in the dutiable estate will be valued as at the date of death, except that gifts will be valued as at the date of gift. In general, the same principals apply to valuations for both estate duty and gift duty purposes. (Refer to section 7.3.2 - Valuation of Gift).

The value of land and buildings is determined by a special Government valuation, and specifically excludes the timber value of any growing trees. All other property should be valued by persons competent to value the assets concerned. However, it is not necessary to value personal chattels where they have all been exempted from duty. (Refer section 7.2.3.)

Special provisions apply regarding the valuation of annuities, pensions etc. for estate duty purposes, and care should be exercised in assessing such values. Calculation is necessary to establish the value of pensions etc. and reference must be made to the tables contained in the Second Schedule to the Estate and Gift Duty Act. There are four tables in all, and these refer to life expectancies for males and females, expectancy of widowhood for females of various ages, and financial factors for specific time periods. These are reproduced as Tables A,B,C, and D, respectively, in Appendix II (section 7.4). Reference should be made to the Valuation of Succession (section 7.2.8) and to the Example of Estate Duty Assessment (section 7.2.12).

7.2.8 Valuation of Successions

The whole of the estate is divided into various successions (i.e. inheritances) as at the date of death, and each succession, whether it be property, an annuity, or some other future interest, must be valued. The general rules of valuation are outlined in section 7.2.7 (above). In calculating the value of each succession no deduction should be made for administration expenses, the administrators' commission or remuneration, the estate duty payable, or any mortgage or encumbrance where the bene-

ficiary has a right to be reimbursed in respect of such charge. Also, it should be noted that where a matrimonial home allowance has been made, the succession of the surviving spouse is reduced by the amount of that allowance.

Valuation of Annuities, Life Interests, etc.

Where an annuity or some other form of future interest is involved, the value of each inheritance is calculated using the tables in Appendix II and the total estate then apportioned between the beneficiaries. Thus if a widow is to receive an annuity for the rest of her life, the value of that annuity is calculated (based on her life expectancy), and this value is the widow's succession; the balance goes to the remainderman. The combined total of the two equals the value of the estate.

An annuity is a fixed sum of money payable each year for a number of years or for life. An annuity may commence as at date of death, or some time thereafter, such as after a certain number of years or upon the happening of some specific event.

Example:

> Son aged 45 is left an annuity of $2,000 for life. Value of his succession would be:
> Present value of $1 per annum for life of a male aged 45 (from Table A) is $14.92971.
> Present value of $2,000 pa = $2,000 x 14.92971
> = $29,859

A life interest is the right to receive the income for life from a certain fund, or specified assets, or to have the use of an asset for life. The successor entitled to this is the life tenant.

Example:

> A dies on 18 November 19A3 leaving a final balance of $100,000. Under his will his widow (age 63) receives income for life and on her death estate assets pass to surviving children.

Widows:	Present value of income on capital of $1 for life of a female age 63 (from Table B) is $0.54800. Present value of income on $100,000 is	$54,800
Remainderman:	Present value of interest	$45,200
		$100,000

Interests may terminate otherwise than on death. Common examples would include:

(1) Income from residue of estate during her widowhood. Table C should be used.

(2) Income from estate's farming activities to widow until the youngest child attains the age of 21. Table D should be used.

(3) Annuity of $1,040 to son until he attains age of 25. Table D should be used.

7.2.9 Calculation of Estate Duty

Estate duty is assessed on the final balance of the estate at the rate set out in Appendix I (section 7.4). The allowance reliefs are then deducted in order to obtain the actual estate duty payable.

7.2.10 Reliefs

Reliefs are deducted from the estate duty assessed, where applicable. Available reliefs include the following:

1. Relief from Successive Estate Duties (i.e. Quick Succession)

   If the estate of a deceased person includes property which was inherited within 5 years of death, relief from duty may be given in the second estate in order to reduce the effect of a double impact of estate duty.

   The reduction is applied to the lesser of the duty payable on the particular property in the first and second estates. The reduction is graduated according to the period which has passed between the two dates

of death, as shown in the following table.

Period between Death of Successor and Predecessor	Duty Reduced by
0 - 4 months	75%
4 - 8 months	60%
8 - 12 months	50%
1 - 2 years	40%
2 - 3 years	30%
3 - 4 years	20%
4 - 5 years	10%

2. Relief for Gift Duty Paid

Where gifts have been included in the notional estate, the gift duty paid plus interest at 3% p.a. from the date the gift duty was paid to the date of death, will be refunded to the person who paid it. If the donor (i.e. the deceased) paid the gift duty, the amount of gift duty refunded (excluding any interest) is included in his dutiable estate. The total refund under these circumstances is first applied towards the payment of any estate duty and then any excess is refunded to the administrator of the deceased donor's estate.

7.2.11 Assessment and Collection

The administrator must file an Administrators' Statement together with various supporting forms within six months after the grant of administration. The forms prescribed for filing are available from the Inland Revenue Department.

An assessment is issued immediately after the accounts are filed, but this assessment may be amended as a result of the Department's examination or from further information received. After any queries have been satisfied, the Department then certifies the final balance and that duty is, or is not, payable.

Once this notice of assessment has been issued, any estate duty payable should be paid within three months after which a penalty of 5% of the unpaid duty is imposed.

Interest at 5% p.a. is charged on the amount of duty unpaid after six months from the date of death. Interest at 5% p.a. is also charged on any unpaid penalty on estate duty calculated from the date the penalty became payable.

7.2.12 Example of Estate Duty Assessment

Mr Green died on 30 October 1982 and his estate included the following property (at market value):

Matrimonial home	$ 65,000
Investments	54,000
Personal chattels	7,000
Cash at P.O.S.B.	3,250
Interest accrued at P.O.S.B.	50
Car and boat	20,000
Mortgage over son's farm	120,000
Interest accrued on mortgage	2,000
Holiday home	30,000

His liabilities were:

Mortgage over matrimonial home	15,000
Accounts payable	1,300
Income tax assessed to date of death	1,400
Funeral expenses	1,200

In May 1959, Green took out a policy of life assurance which has annual premiums of $300. In June 1979 he sold a half interest in the policy to his wife for $7,000 which was half the then surrender value. Green continued to pay the premium until his death. The gross proceeds of this policy at death were $20,000. Green also had a second insurance policy which had a death cover of $50,000.

Green had also contributed to a superannuation scheme which, on his death, would provide his widow with $5,000 per annum for the remainder of her life.

In addition, Green had forgiven debts to his son as follows:

1 January 1977	$10,000	1 January 1978	$10,000
1 January 1979	$10,000	1 January 1980	$20,000
1 January 1981	$10,000	1 January 1982	$10,000

Gift duty of $180, $180, $180, $250, Nil and Nil respectively, had been paid by Green's son. (Refer to section 7.3.4, Calculation of Gift Duty.)

In his will, Green made the following bequests:

To son John, aged 25, debt forgiven	$25,000
To daughter Sue, aged 19, cash	$50,000
To St John Ambulance Association	$ 5,000

To wife Alice, aged 65 - the residue of the estate.

The final balance on which duty would be assessed is calculated as follows:

Estate Assets:	$		$
Matrimonial home	65,000		
Investments	54,000		
Personal chattels	7,000	(1)	
P.O.S.B. - cash plus accrued interest	3,300		
Car and boat	20,000		
Mortgage and accrued interest	122,000		
Proceeds of insurance policy - no. 1	10,000	(2)	
- no. 2	50,000		
			331,300
plus Notional Estate:			
Dutiable gifts to son	40,000	(3)	
Interest in life policy disposed of	1,696	(4)	
Superannuation payable to widow	30,908	(5)	
			72,604
			403,904
less Exempt Assets:			
Personal chattels to widow		(1)	7,000
			396,904
less Allowable Debts:			
Mortgage over home	15,000		
Accounts payable	1,300		
Income tax	1,400		
Funeral expenses	1,200		
	18,900		
Matrimonial Home Allowance			
Matrimonial Home 65,000			
less Mortgage 15,000			
	50,000		
Charitable Allowance			
Value of bequest	5,000		
			73,900
FINAL BALANCE			$323,004

Value of Successions:		
Final balance of estate		$323,004
Matrimonial Home Allowance		50,000
Charitable Allowance		5,000
Net Value of the Estate		$378,004
Successions:		
Son (John)		
Gifts	40,000 (3)	
Bequest	25,000	
		65,000
Daughter (Sue)		
Bequest		50,000
St John Ambulance Association		5,000
Widow (Mrs Alice Green)		258,004
Net Value of the Estate		$378,004

ESTATE DUTY CALCULATION:

Estate duty on final balance		$ 9,201.60
less Reliefs:		
Credit for gift duty paid: (6)		
(i) Duty on gift dated 1.1.80	250.00	
plus interest @ 3% on $250 for 2 years 302 days	21.19	
		271.19
NET ESTATE DUTY PAYABLE		$ 8,930.41

NOTES:

1. The value of personal chattels passing to the widow is totally exempt from estate duty. Thus the $7,000 could be omitted from the calculation.

2. Green had sold a half interest in the insurance policy to his wife in 1979, so only half the proceeds belong to the estate.

3. Only dutiable gifts made within 3 years of death are included.

4. Green's interest in the life policy is calculated as:

$\frac{20 \times 300}{23 \times 300}$ x 50% of $20,000	=	$8,696
less consideration received		7,000
Amount included as notional estate		$1,696

5. The value is calculated as:

Superannuation to widow	$5,000 p.a.
less exemption	2,000 p.a.
Dutiable	$3,000 p.a.

Life expectancy for a female aged 65 is 14.84 years, and the present value of $1 p.a. for her life is $10.3027 (from Table B). The value of the superannuation is therefore calculated as $3,000 x 10.3027 = $30,908.

6. The gift duty paid is not included in the notional estate as it was paid by the son. The estate, however, does receive a credit for the gift duty paid to be offset against the estate duty payable. Similarly the interest due by the Crown on the gift duty paid, although strictly payable to the son, will be offset against the estate duty payable. The estate should account to the son, John, for these accounts.

7.3 GIFT DUTY

7.3.1 Definitions

A gift is any disposition of property made otherwise than by will, without fully adequate consideration in money or money's worth passing to the donor (the person making the gift).

"Disposition of property" is used in its widest sense to cover any alienation of property, such as any conveyance, transfer, settlement or assignment, including transactions which diminish the value of one estate to the betterment of another. It includes all gifts of property in New Zealand and all gifts of foreign property if the owner is domiciled in New Zealand.

"Consideration" is what one party in a transaction gives to the other party. The most common form is money, but it could be a promise to do or not to do something, or

another form of property. Whatever form is involved, its value is calculated in monetary terms.

7.3.2 Valuation of Gift

The value of a gift is the monetary value of the property gifted less any consideration paid. The value of land and buildings is determined by agreement between the donor and the Commissioner of Inland Revenue, or by the Valuer-General. All other property is at market value as assessed by a competent valuer.

7.3.2 (i) Date of Valuation

A gift (and any consideration) is valued as at the date the gift is made, which is taken to mean the date at which the donor has put himself in the position where the gift cannot be revoked (i.e. the gift is complete).

The completion dates of some of the more common forms of gift are illustrated in the following chart:

Description of Gift	When Complete
Cash	On delivery to the beneficiary.
Cheques	When the cheque has been cashed. (Until then it can be revoked.)
Land	Except where a valid trust is created, the earlier of the dates on which - (a) the instrument of transfer is registered in the Land Transfer Office; or (b) the beneficiary has possession of all the necessary documents to enable the registration to be effected.
Shares	As for land, except that the instrument of transfer is registered by the company.
Chattels	Where there has been effective delivery of the chattels or there has been a deed of assignment.

Release and forgiveness of debt	Normally the execution of a legally effective deed of release or forgiveness will be required.

7.3.3 Exemptions from Gift Duty

A dutiable gift is any gift which is or may be liable to gift duty. However, certain gifts are specifically excluded from gift duty, and include:

1. Small gifts, not exceeding an aggregate of $1,000 ($400 prior to 1 January 1979) to the same beneficiary in the same calendar year, are not taken into account if they are made in good faith as part of the normal expenditure of the donor.

2. Gifts made towards the maintenance or education of a relative provided the gift is not excessive having regard to the obligation of the donor.

3. Gifts made to charitable bodies.

4. Special exemptions including:

   * certain superannuation elections.
   * contributions by an employer to superannuation fund.
   * certain gratuitous payments to employer to employee.
   * settlement of a joint family home.

7.3.4 Calculation of Gift Duty

Gift duty does not become payable until the value of any dutiable gifts over any twelve month period exceeds $15,000 in total value. (Prior to 30 July 1976, gift duty did not become payable until the aggregated value exceeded $4,000. Between 30 July 1976 and 21 June 1979 (inclusive), this amount was increased to $8,000). Rates of Gift Duty are detailed in Appendix III (section 7.4).

If more than one dutiable gift is made within a twelve month period, the duty is apportioned to each dutiable gift involved in accordance with the following formula:

$$\frac{a}{b} \times c$$

where - (a) is the value of the dutiable gift.

(b) is the total value of this gift and all other dutiable gifts made within twelve months.

(c) is the amount of gift duty payable on item (b).

It should be noted that the 12 month period is chosen so as to maximise the amount of gift duty payable.

7.3.5 Aggregation of Gifts

It is important to note that although gift duty is charged on each individual dutiable gift, the rate of gift duty charged on any such individual gift depends upon the aggregation of the value of all dutiable gifts made at the same time or within twelve months subsequently or previously by the same donor (not being a gift exempted from duty, e.g. to a charity). The day the gift is made is included in the twelve month period, so that gifts completed on the same day each year cannot be aggregated. Furthermore, all dutiable gifts are aggregated, irrespective of the identity of the recipient (donee).

Example 1:

Gift to A of $12,000 made on 1 August 1980.
Gift to B of $13,000 made on 31 July 1981.

These gifts would be aggregated and be liable to gift dtuy of $750, even though each gift is below the exemption level of $15,000. Note that if the gift to B was made on 1 August 1981, no aggregation would occur as the gifts are not within a twelve month period.

Example 2:

Gift to C of $18,000 made on 1 August 1980 - duty of $150 paid.
Gift to D of $15,000 made on 1 January 1981.

These gifts would be aggregated and duty of $1,850 on the sum of $33,000 would be payable, less the $150 already paid.

Special transitional provisions apply where the twelve month period includes gifts made before 22 June 1979. Where the aggregated figure does not exceed $15,000, the

duty on these aggregated gifts will not change. Where the aggregated figure exceeds $15,000, the duty on the gift made prior to 22 June 1979 will be assessed at the rates applying at the time of the gift, i.e. at the old rates.

Example:

Dutiable gift made before 22 June 1979 aggregates with a gift made after that date, together totalling more than $15,000.

Gift of $10,000 made on 6 June 1979 - duty of $180 paid.
Gift of $18,000 made on 24 December 1979.

Total gifts during 12 month period	$28,000	
Duty on $28,000 at old rate is	$ 2,700	
Therefore duty on $10,000 is		
$\frac{\$10,000}{\$28,000}$ x $2,700 =		$ 964.28
Duty on $28,000 at new rates is	$ 1,050	
Therefore duty on $18,000 is		
$\frac{\$18,000}{\$28,000}$ x $1,050 =		$ 675.00
		$1,639.28
less duty paid		$ 180.00
Duty Payable		$1,459.29

7.3.6 Assessment and Collection

If the value of a gift exceeds $8,000 or if the aggregated value of this gift and all other gifts made over the previous twelve months exceeds $8,000, a Gift Statement (form IR 635) must be delivered to the Commissioner by the donor within three months of making the gift.

If the donor fails to deliver the Gift Statement within the specified time, the donee has an extra month to do so.

If gift duty remains unpaid within six months of making a dutiable gift, a penalty of 5% will be added to the unpaid duty.

Interest at 5% p.a. on the duty payable, and subsequently on any penalty levied, will be added to any duty unpaid within three months of making a dutiable gift.

The donor is primarily liable to pay gift duty, but the Inland Revenue can obtain payment from the donee. Unless the terms of the gift provide otherwise, the donee is entitled to recover such duty paid from the donor.

7.3.7 Example of Gift Duty Assessment:

Gift made to D on 14 August 1979 of $12,000
Gift made to E on 18 November 1979 of $12,000
Gift made to F on 31 October 1980 of $25,000
Duty assessment is as follows:

Gifts to D and E aggregated - $24,000
Gift to E and F aggregated - $37,000

Duty on gift to D is calculated as:

$$\frac{12,000}{24,000} \times 650 = \$325.00$$

Duty on gift to E yields more revenue when aggregated with gift to F, being charged with duty at a higher rate that if aggregated with gift to D.

Therefore, duty on gift to E is

$$\frac{12,000}{37,000} \times 2,650 = \$\ 859.46$$

Duty on gift to F is

$$\frac{25,000}{37,000} \times 2,650 = \$1,790.54$$

Total gift duty for gifts to D, E, and F: $2,975.00

This calculation has been performed with hindsight, after all gifts are known. However, it must be realised that Gift Statements would be filed for each gift (as they exceed $8,000), and that gift duty would be assessed on those statements. On a progressive basis, therefore, the duty assessment is as follows:

14 August 1979

Total gifts	$12,000	
Gift Duty payable	Nil	

18 November 1979

Total gifts for previous 12 months were $24,000		
Gift Duty payable apportioned:	$ 650.00	
Gift to D:		
$\frac{12,000}{24,000}$ x 650.00 =		$ 325.00
Gift to E:		
$\frac{12,000}{24,000}$ x 650.00 =		$ 325.00

31 October 1980

Total gifts for previous 12 months were $37,000		
Gift duty payable apportioned:	$ 2,650	
Gift to E:		
$\frac{12,000}{37,000}$ x 2,650 =	$ 859.46	
less duty already paid =	$ 325.00	
		$ 534.46
Gift to F:		
$\frac{25,000}{37,000}$ x 2,650.00 =		$1,790.54
Total gift duty for gifts to D, E and F:		$2,975.00

As can be seen, the total gift duty is unaltered.

7.4 APPENDICES

Appendix I.

Rates of Estate Duty

PART A

PERSONS DYING BETWEEN 1 APRIL 1980
AND 31 MARCH 1981 (inclusive)

Final Balance	Amount and Rate of Duty
Up to - $150,000	Nil
$150,000 - $250,000	$0 plus 35% of excess over $150,000
Over $250,000	$35,000 plus 40% of excess over $250,000

PART B

PERSONS DYING BETWEEN 1 APRIL 1981
AND 31 MARCH 1982 (inclusive)

Final Balance	Rate of Duty
Up to $250,000	Nil
Over $250,000	40% of excess over $250,000

PART C

PERSONS DYING BETWEEN 1 APRIL 1982
AND 31 MARCH 1983 (inclusive)

Final Balance	Rate of Duty
Up to $300,000	Nil
Over $300,000	40% of excess over $300,000

PART D

PERSONS DYING ON OR AFTER 1 APRIL 1983

Final Balance	Rate of Duty
Up to $350,000	Nil
Over $350,000	40% of excess over $350,000

TABLES FOR VALUATION OF PENSIONS ETC.

Table A

Present Value of Annuity or Other Interest for Life of MALE or Expectant on Death of MALE

Years of Age	Expectation of Life of Male	Present Value of $1 per Annum	Present Value of $1 Payable on Death	Present Value of Income on Capital of $1 for Life
	Years	$	$	$
0	68.29	19.28531	0.03573	0.96427
1	69.03	19.31080	0.03446	0.96554
2	68.17	19.28117	0.03594	0.96406
3	67.27	19.24885	0.03756	0.96244
4	66.33	19.21357	0.03932	0.96068
5	65.39	19.17665	0.04117	0.95883
6	64.44	19.13758	0.04312	0.95688
7	63.48	19.09622	0.04519	0.95481
8	62.53	19.05334	0.04733	0.95267
9	61.56	19.00747	0.04963	0.95037
10	60.60	18.95988	0.05201	0.94799
11	59.63	18.90948	0.05453	0.94547
12	58.66	18.85664	0.05717	0.94283
13	57.69	18.80124	0.05994	0.94006
14	56.74	18.74441	0.06278	0.93722
15	55.79	18.68488	0.06576	0.93424
16	54.86	18.62391	0.06880	0.93120
17	53.92	18.55941	0.07203	0.92797
18	53.00	18.49340	0.07533	0.92467
19	52.07	18.42335	0.07883	0.92117
20	51.15	18.35084	0.08246	0.91754
21	50.23	18.27503	0.08625	0.91375
22	49.32	18.19663	0.09017	0.90983
23	48.40	18.11378	0.09431	0.90569
24	47.48	18.02716	0.09864	0.90136
25	46.56	17.93660	0.10317	0.89683
26	45.63	17.84085	0.10796	0.89204
27	44.70	17.74068	0.11297	0.88703
28	43.76	17.63473	0.11826	0.88174
29	42.83	17.52505	0.12375	0.87625
30	41.89	17.40904	0.12955	0.87045

Table A - continued

Present Value of Annuity or Other Interest for Life of MALE or Expectant on Death of MALE - continued

Years of Age	Expectation of Life of Male	Present Value of $1 per Annum	Present Value of $1 Payable on Death	Present Value of Income on Capital of $1 for Life
	Years	$	$	$
31	40.96	17.28896	0.13555	0.86445
32	40.03	17.16314	0.14184	0.85816
33	39.10	17.03125	0.14844	0.85156
34	38.17	16.89325	0.15534	0.84466
35	37.24	16.74887	0.16256	0.83744
36	36.32	16.59947	0.17003	0.82997
37	35.40	16.44326	0.17784	0.82216
38	34.48	16.27992	0.18600	0.81400
39	33.57	16.11105	0.19445	0.80555
40	32.65	15.93259	0.20337	0.79663
41	31.74	15.74811	0.21259	0.78741
42	30.83	15.55535	0.22223	0.77777
43	29.92	15.35394	0.23230	0.76770
44	29.02	15.14570	0.24271	0.75729
45	28.13	14.92971	0.25351	0.74649
46	27.25	14.70681	0.26466	0.73534
47	26.38	14.47697	0.27615	0.72385
48	25.52	14.24019	0.28799	0.71201
49	24.67	13.99650	0.30018	0.69982
50	23.83	13.74593	0.31270	0.68730
51	23.00	13.48857	0.32557	0.67443
52	22.18	13.22161	0.33892	0.66108
53	21.38	12.95106	0.35245	0.64755
54	20.59	12.67399	0.36630	0.63370
55	19.82	12.39437	0.38028	0.61972
56	19.06	12.10793	0.39460	0.60540
57	18.32	11.81622	0.40919	0.59081
58	17.60	11.52338	0.42383	0.57617
59	16.89	11.22607	0.43870	0.56130
60	16.19	10.92067	0.45397	0.54603
61	15.50	10.60871	0.46959	0.53044
62	14.82	10.29307	0.48535	0.51465
63	14.16	9.97560	0.50122	0.49878
64	13.52	9.65621	0.51719	0.48281
65	12.90	9.34054	0.53297	0.46703
66	12.29	9.01705	0.54915	0.45085

Table A - continued

Present Value of Annuity or Other Interest for Life of MALE or Expectant on Death of MALE - continued

Years of Age	Expectation of Life of Male	Present Value of $1 per Annum	Present Value of $1 Payable on Death	Present Value of Income on Capital of $1 for Life
	Years	$	$	$
67	11.71	8.70177	0.56491	0.43509
68	11.14	8.38437	0.58078	0.41922
69	10.59	8.06670	0.59666	0.40334
70	10.05	7.75097	0.61245	0.38755
71	9.53	7.43320	0.62834	0.37166
72	9.01	7.11396	0.64430	0.35570
73	8.51	6.79196	0.66040	0.33960
74	8.03	6.48255	0.67587	0.32413
75	7.57	6.17217	0.69139	0.30861
76	7.13	5.87436	0.70628	0.29372
77	6.71	5.58028	0.72099	0.27901
78	6.31	5.29600	0.73520	0.26480
79	5.92	5.01599	0.74920	0.25080
80	5.55	4.73990	0.76300	0.23700
81	5.19	4.47126	0.77644	0.22356
82	4.84	4.20411	0.78979	0.21021
83	4.51	3.94555	0.80272	0.19728
84	4.19	3.69482	0.81526	0.18474
85	3.89	3.45545	0.82723	0.17277
86	3.60	3.21687	0.83916	0.16084
87	3.33	2.99474	0.85026	0.14974
88	3.07	2.78084	0.86096	0.13904
89	2.83	2.57640	0.87118	0.12882
90	2.60	2.37771	0.88111	0.11889
91	2.39	2.19631	0.89018	0.10982
92	2.19	2.02354	0.89882	0.10118
93	2.01	1.86805	0.90660	0.09340
94	1.84	1.71429	0.91429	0.08571
95	1.68	1.56916	0.92154	0.07846
96	1.53	1.43311	0.92834	0.07166
97	1.39	1.30612	0.93469	0.06531
98	1.27	1.19728	0.94014	0.05986
99	1.15	1.08844	0.94558	0.05442
100	1.05	0.99773	0.95011	0.04989

Table B

Present Value of Annuity or Other Interest for Life of FEMALE or Expectant on Death of FEMALE

Years of Age	Expectation of Life of Female	Present Value of $1 per Annum	Present Value of $1 Payable on Death	Present Value of Income on Capital of $1 for Life
	Years	$	$	$
0	72.43	19.41600	0.02920	0.97080
1	72.90	19.42934	0.02853	0.97147
2	72.05	19.40521	0.02974	0.97026
3	71.12	19.37756	0.03112	0.96888
4	70.18	19.34831	0.03258	0.96742
5	69.23	19.31737	0.03413	0.96587
6	68.26	19.28427	0.03579	0.96421
7	67.30	19.24994	0.03750	0.96250
8	66.33	19.21357	0.03932	0.96068
9	65.35	19.17505	0.04125	0.95875
10	64.37	19.13464	0.04327	0.95673
11	63.39	19.09226	0.04539	0.95461
12	62.41	19.04779	0.04761	0.95289
13	61.42	19.00067	0.04997	0.95003
14	60.44	18.95172	0.05241	0.94759
15	59.47	18.90092	0.05495	0.94505
16	58.50	18.84765	0.05762	0.94238
17	57.53	18.79180	0.06041	0.93959
18	56.56	18.73325	0.06334	0.93666
19	55.60	18.67252	0.06637	0.93363
20	54.64	18.60887	0.06956	0.93044
21	53.67	18.54147	0.07293	0.92707
22	52.71	18.47156	0.07642	0.92358
23	51.75	18.39830	0.08008	0.91992
24	50.79	18.32154	0.08392	0.91608
25	49.83	18.24110	0.08795	0.91205
26	48.87	18.15682	0.09216	0.90784
27	47.92	18.06947	0.09653	0.90347
28	46.96	17.97698	0.10115	0.89885
29	46.01	17.88108	0.10595	0.89405
30	45.06	17.78043	0.11098	0.88902
31	44.11	17.67502	0.11625	0.88375
32	43.16	17.56461	0.12177	0.87823
33	42.21	17.44898	0.12755	0.87245
34	41.26	17.32787	0.13361	0.86639
35	40.32	17.20238	0.13988	0.86012

Table B - continued

Present Value of Annuity or Other Interest for Life of FEMALE or Expectant on Death of FEMALE - continued

Years of Age	Expectation of Life of Female	Present Value of $1 per Annum	Present Value of $1 Payable on Death	Present Value of Income on Capital of $1 for Life
	Years	$	$	$
36	39.38	17.07102	0.14645	0.85355
37	38.44	16.93352	0.15332	0.84668
38	37.50	16.78959	0.16052	0.83948
39	36.57	16.64058	0.16797	0.83203
40	35.64	16.48470	0.17576	0.82424
41	34.71	16.32162	0.18392	0.81608
42	33.79	16.15293	0.19235	0.80765
43	32.88	15.97856	0.20107	0.79893
44	31.97	15.79638	0.21018	0.78982
45	31.06	15.60540	0.21973	0.78072
46	30.17	15.40991	0.22950	0.77050
47	29.29	15.20817	0.23959	0.76041
48	28.41	14.99774	0.25011	0.74989
49	27.54	14.78078	0.26096	0.73904
50	26.68	14.55732	0.27213	0.72787
51	25.82	14.32456	0.28377	0.71623
52	24.98	14.08804	0.29560	0.70440
53	24.14	13.83998	0.30800	0.69200
54	23.31	13.58470	0.32077	0.67923
55	22.49	13.32253	0.33387	0.66613
56	21.67	13.05019	0.34749	0.65251
57	20.87	12.77449	0.36128	0.63872
58	20.08	12.49093	0.37545	0.62455
59	19.30	12.19839	0.39008	0.60992
60	18.53	11.89933	0.40503	0.59497
61	17.77	11.59402	0.42030	0.57970
62	17.02	11.28238	0.43588	0.56412
63	16.28	10.95993	0.45200	0.54800
64	15.56	10.63620	0.46819	0.53181
65	14.84	10.30270	0.48487	0.51513
66	14.14	9.96598	0.50170	0.49830
67	13.45	9.62085	0.51896	0.48104
68	12.77	9.27160	0.53642	0.46358
69	12.11	8.92159	0.55392	0.44608
70	11.46	8.56256	0.57187	0.42813

Table B - continued

Present Value of Annuity or Other Interest for Life of FEMALE or Expectant on Death of FEMALE - continued

Years of Age	Expectation of Life of Female	Present Value of $1 per Annum	Present Value of $1 Payable on Death	Present Value of Income on Capital of $1 for Life
	Years	$	$	$
71	10.83	8.20702	0.58965	0.41035
72	10.22	7.85036	0.60748	0.39252
73	9.63	7.49459	0.62527	0.37473
74	9.07	7.15080	0.64246	0.35754
75	8.53	6.80486	0.65976	0.34024
76	8.01	6.46966	0.67652	0.32348
77	7.52	6.13833	0.69308	0.30692
78	7.05	5.82022	0.70899	0.29101
79	6.59	5.49499	0.72525	0.27475
80	6.16	5.18940	0.74053	0.25947
81	5.74	4.88168	0.75592	0.24408
82	5.34	4.58319	0.77084	0.22916
83	4.96	4.29814	0.78509	0.21491
84	4.59	4.00823	0.79959	0.20041
85	4.24	3.73400	0.81330	0.18670
86	3.91	3.47191	0.82640	0.17360
87	3.60	3.21687	0.83916	0.16084
88	3.31	2.97829	0.85109	0.14891
89	3.04	2.75616	0.86219	0.13781
90	2.78	2.53320	0.87334	0.12666
91	2.54	2.32588	0.88371	0.11629
92	2.32	2.13584	0.89321	0.10679
93	2.12	1.96307	0.90185	0.09815
94	1.93	1.79592	0.91020	0.08980
95	1.75	1.63265	0.91837	0.08163
96	1.59	1.48753	0.92562	0.07438
97	1.45	1.36054	0.93197	0.06803
98	1.31	1.23356	0.93832	0.06168
99	1.19	1.12472	0.94376	0.05624
100	1.07	1.01587	0.94921	0.05079

Table C

Present Value of Annuity or Other Interest for Widowhood or Expectant on Termination of Widowhood

Years of Age	Expectation of Widowhood	Present Value of $1 per Annum For Widowhood	Present Value of $1 Payable on Termination of Widowhood	Present Value of Income on Capital of $1 for Widowhood
	Years	$	$	$
Up to 20	7.5	6.12479	0.69376	0.30624
21	8.2	6.59213	0.67039	0.32961
22	8.9	7.04336	0.64783	0.35217
23	9.8	7.59895	0.62005	0.37995
24	10.7	8.13101	0.59344	0.40656
25	11.5	8.58483	0.57076	0.42924
26	12.2	8.96931	0.55153	0.44847
27	12.8	9.28751	0.53562	0.46438
28	13.3	9.54509	0.52275	0.47725
29	13.7	9.74712	0.51264	0.48736
30	14.1	9.94674	0.50266	0.49734
31	14.4	10.09104	0.49545	0.50455
32	14.9	10.33156	0.48342	0.51658
33	15.3	10.51709	0.47415	0.52585
34	15.8	10.74614	0.46269	0.53731
35	16.3	10.96866	0.45157	0.54843
36	16.9	11.23044	0.43848	0.56152
37	17.6	11.52338	0.42383	0.57617
38	18.2	11.76874	0.41156	0.58844
39	18.8	12.00617	0.39969	0.60031
40	19.5	12.27376	0.38631	0.61369
41	20.3	12.56989	0.37151	0.62849
42	20.9	12.78526	0.36074	0.63926
43	21.4	12.95789	0.35211	0.64789
44	21.8	13.09463	0.34527	0.65473
45	22.0	13.16300	0.34185	0.65815
46	22.1	13.19556	0.34022	0.65978
47	22.2	13.22811	0.33859	0.66141
48	22.2	13.22811	0.33859	0.66141
49	22.1	13.19556	0.34022	0.65978
50	22.0	13.16300	0.34185	0.65815
51	21.8	13.09463	0.34527	0.65473
52	21.6	13.02626	0.34869	0.65131
53	21.3	12.92370	0.35381	0.64619
54	20.9	12.78526	0.36074	0.63926
55	20.5	12.64168	0.36792	0.63208
56	20.0	12.46221	0.37689	0.62311
57	19.6	12.31145	0.38443	0.61557

Table C - continued

Present Value of Annuity or Other Interest for Widowhood or Expectant on Termination of Widowhood - continued

Years of Age	Expectation of Widowhood	Present Value of $1 per Annum For Widowhood	Present Value of $1 Payable on Termination of Widowhood	Present Value of Income on Capital of $1 for Widowhood
	Years	$	$	$
Up to 58	19.1	12.12301	0.39385	0.60615
59	18.5	11.88745	0.40563	0.59437
60	18.0	11.68959	0.41552	0.58448
61	17.4	11.44028	0.42799	0.57201
62	16.8	11.18681	0.44066	0.55934
63	16.1	10.88140	0.45593	0.54407
64	15.4	10.56290	0.47186	0.52814
65	14.6	10.18725	0.49064	0.50936

For widows 66 years of age or over, the expectations of life and widowhood are deemed to be identical, and Table B applies for both purposes.

Table D

Present Value of Annuity or Other Interest for Period Other Than Life or Expectant on Event Other Than Death

Years	Present Value of $1 per Annum for Period	Present Value of $1 Payable After Period	Present Value of Income on Capital of $1 for Period
	$	$	$
1	0.95238	0.95238	0.04762
2	1.85941	0.90703	0.09297
3	2.72325	0.86384	0.13616
4	3.54595	0.82270	0.17730
5	4.32948	0.78353	0.21647
6	5.07569	0.74622	0.25378
7	5.78637	0.71068	0.28932
8	6.46321	0.67684	0.32316
9	7.10782	0.64461	0.35539
10	7.72173	0.61391	0.38609
11	8.30641	0.58468	0.41532
12	8.86325	0.55684	0.44316
13	9.39357	0.53032	0.46968
14	9.89964	0.50507	0.49493
15	10.37966	0.48102	0.51898
16	10.83777	0.45811	0.54189
17	11.27407	0.43630	0.56370
18	11.68959	0.41552	0.58448
19	12.08532	0.39573	0.60427
20	12.46221	0.37689	0.62311
21	12.82115	0.35894	0.64106
22	13.16300	0.34185	0.65815
23	13.48857	0.32557	0.67443
24	13.79864	0.31007	0.68993
25	14.09394	0.29530	0.70470
26	14.37518	0.28124	0.71876
27	14.64303	0.26785	0.73215
28	14.89813	0.25509	0.74491
29	15.14107	0.24295	0.75705
30	15.37245	0.23138	0.76862
31	15.59281	0.22036	0.77964
32	15.80268	0.20987	0.79013

Table D - continued

Present Value of Annuity or Other Interest for Period Other Than Life or Expectant on Event Other Than Death - continued

Years	Present Value of $1 per Annum for Period	Present Value of $1 Payable After Period	Present Value of Income on Capital of $1 for Period
	$	$	$
33	16.00255	0.19987	0.80013
34	16.19290	0.19035	0.80965
35	16.37419	0.18129	0.81871
36	16.54685	0.17266	0.82734
37	16.71129	0.16444	0.83556
38	16.86789	0.15661	0.84339
39	17.01704	0.14915	0.85085
40	17.15909	0.14205	0.85795
41	17.29437	0.13528	0.86472
42	17.42321	0.12884	0.87116
43	17.54591	0.12270	0.87730
44	17.66277	0.11686	0.88314
45	17.77407	0.11130	0.88870
46	17.88007	0.10600	0.89400
47	17.98101	0.10095	0.89905
48	18.07716	0.09614	0.90386
49	18.16872	0.09156	0.90844
50	18.25592	0.08720	0.91280
51	18.33898	0.08305	0.91695
52	18.41807	0.07910	0.92090
53	18.49340	0.07533	0.92467
54	18.56514	0.07174	0.92826
55	18.63347	0.06833	0.93167
56	18.69854	0.06507	0.93493
57	18.76052	0.06197	0.93803
58	18.81954	0.05902	0.94098
59	18.87575	0.05621	0.94379
60	18.92929	0.05354	0.94646
61	18.98027	0.05099	0.94901
62	19.02883	0.04856	0.95144
63	19.07508	0.04625	0.95375
64	19.11912	0.04404	0.95596
65	19.16107	0.04195	0.95805

Table D - continued

Present Value of Annuity or Other Interest for Period Other Than Life or Expectant on Event Other Than Death - continued

Years	Present Value of $1 per Annum for Period	Present Value of $1 Payable After Period	Present Value of Income on Capital of $1 for Period
	$	$	$
66	19.20102	0.03995	0.96005
67	19.23907	0.03805	0.96195
68	19.27530	0.03623	0.96377
69	19.30981	0.03451	0.96549
70	19.34268	0.03287	0.96713
71	19.37398	0.03130	0.96870
72	19.40379	0.02981	0.97019
73	19.43218	0.02839	0.97161
74	19.45922	0.02704	0.97296
75	19.48497	0.02575	0.97425
76	19.50949	0.02453	0.97547
77	19.53285	0.02336	0.97664
78	19.55510	0.02225	0.97775
79	19.57628	0.02119	0.97881
80	19.59646	0.02018	0.97982
81	19.61568	0.01922	0.98078
82	19.63398	0.01830	0.98170
83	19.65141	0.01743	0.98257
84	19.66801	0.01660	0.98340
85	19.68382	0.01581	0.98419
86	19.69887	0.01506	0.98494
87	19.71321	0.01434	0.98566
88	19.72687	0.01366	0.98634
89	19.73987	0.01301	0.98699
90	19.75226	0.01239	0.98761
91	19.76406	0.01180	0.98820
92	19.77529	0.01124	0.98876
93	19.78599	0.01070	0.98930
94	19.79618	0.01019	0.98981
95	19.80589	0.00971	0.99029
96	19.81513	0.00924	0.99076
97	19.82394	0.00880	0.99120
98	19.83232	0.00838	0.99162
99	19.84030	0.00798	0.99202
100	19.84791	0.00760	0.99240

Appendix III

RATES OF GIFT DUTY

PART A

GIFTS MADE BETWEEN 30 JULY 1976 AND 21 JUNE 1979 (inclusive)

Value of Dutiable Gifts Made Within 12 months	Amount and Rate of Duty
$ 1 - 8,000	Nil
8,001 - 10,000	$ 0 plus 9% of excess over $ 8,000
10,001 - 12,000	180 " 10% " 10,000
12,001 - 14,000	380 " 11% " 12,000
14,001 - 16,000	600 " 12% " 14,000
16,001 - 18,000	840 " 13% " 16,000
18,001 - 20,000	1,100 " 14% " 18,000
20,001 - 22,000	1,380 " 15% " 20,000
22,001 - 24,000	1,680 " 16% " 22,000
24,001 - 26,000	2,000 " 17% " 24,000
26,001 - 28,000	2,340 " 18% " 26,000
28,001 - 30,000	2,700 " 19% " 28,000
30,001 - 32,000	3,080 " 20% " 30,000
32,001 - 34,000	3,480 " 21% " 32,000
34,001 - 36,000	3,900 " 22% " 34,000
36,001 - 38,000	4,340 " 23% " 36,000
38,001 - 40,000	4,800 " 24% " 38,000
Over $40,000	5,280 " 25% " 40,000

PART B

GIFTS MADE ON OR AFTER 22 JUNE 1979

Value of Dutiable Gifts Made Within 12 months	Amount and Rate of Duty
$ 1 - 15,000	Nil
15,001 - 20,000	$ 0 plus 5% of excess over 15,000
20,001 - 30,000	250 " 10% " 20,000
30,001 - 40,000	1,250 " 20% " 30,000
Over $40,000	3,250 " 25% " 40,000

INDEX

B

C

D

E

F

G

H

I

K

L

M

N

O

P

Q

R

S

T

U

V

W

Y

Z

NOTES

NOTES

Purchase orders to: Accounts Office,
Lincoln College,
Canterbury,
New Zealand.