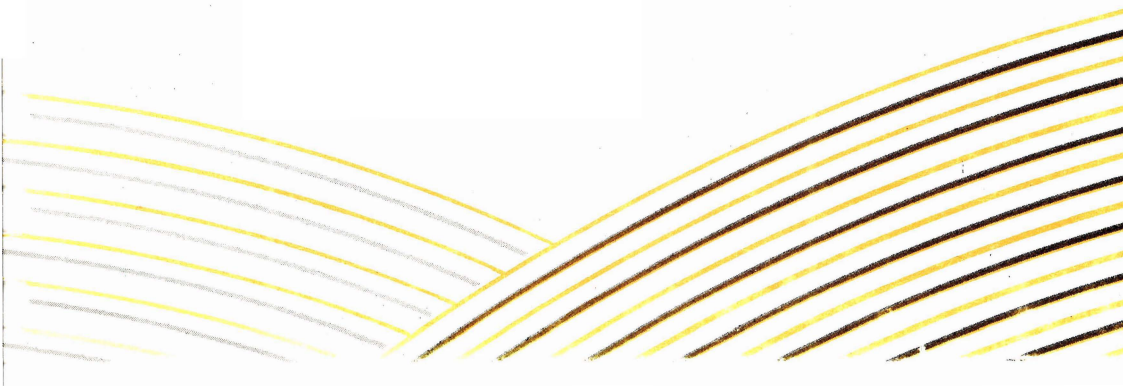
Lincoln College
Department of Farm Management and Rural Valuation

Farm Budget Manual 1971



PREFACE

The Lincoln College Farm Budget Manual is revised and published annually to assist people involved in the preparation of farm budgets. This 1971 edition has been heavily revised and a considerable amount of new material added. Whilst no claim is made that the contents are exhaustive they are, we feel, quite comprehensive. In a period of rapid cost inflation and short term price freeze the expenditure section has been especially hard to prepare. To the best of our knowledge the prices quoted were those operating at 9th February 1971.

Most of the credit for the quality of this publication must go to Miss A.M. Mulholland who has worked extremely conscientiously and with a great deal of initiative in compiling the material contained herein.

Acknowledgment must also be made of the contributions made by Dr K. Jagusch, and Messrs G.A.G. Frengley, A.R. McIvor, G.F. Tate, R.H.B. Tonkin.

NEIL G. GOW
Senior Lecturer in Farm Management
Editor

'Annual income twenty pounds, annual expenditure,
nineteen, nineteen, six, results happiness.
Annual income twenty pounds, annual expenditure,
twenty pounds, nought and six, result misery.'

MR MICAWBER in David Copperfield

In an era of increasing sophistication in farm management analytical techniques the budget remains the simplest and yet most versatile technique available to the farmer and his adviser. Essentially a farm budget is a written plan which formalizes an anticipated farm programme and translates it into expected financial results.

The final form of any budget will depend on the purpose for which it is to be used and the vocation and point of view of the person doing it. Thus budgets produced for the same farmer by his farm adviser and his accountant might vary quite markedly in approach and presentation. A demonstration of this can be seen by comparing the three budget layouts reproduced in the next section of this manual. All three have been designed to serve slightly different ends and thus no single one is superior to the others for all uses.

The Lincoln College budget is designed primarily as a teaching aid and thus lays considerable emphasis on formalizing the farm programme for the budget year. The Society of Accountants budget on the other hand is designed for use by accountants whose main interest lies in the finances of the farm rather than the details of the farm programme. Both of these budget layouts contain too much detail for some purposes, and for some people. The third budget—that used by the New Zealand Dairy Board is an example of a budget layout reduced to its bare bones. For a seasonal supply dairy farm with only a small number of variables to be considered it is quick to use and easy

to understand. In addition to the three layouts reproduced in this manual there are many more in use servicing the agricultural sector.

The general layout of this manual follows the layout of the Lincoln College budget. Section I is devoted to data required to plan the physical operation of the farm over twelve months. The succeeding two sections contain the revenue and expenditure data required to convert the physical programme into a financial one. Section IV contains some relevant notes on taxation as applied to farming enterprises. In the final section a considerable number of gross margins have been reproduced for the benefit of those people who may be interested in analysing individual enterprises.

LINCOLN COLLEGE

Department of Farm Management and Rural Valuation

FARM BUDGET

Name: Frederick J. Tilly **Year Ending:** 30th June 1971

Address: **Date:** 30th April 1970

CAPITAL INVOLVED $

LAND	Pdk Value	129 ac. at $130	16,770	
		400 ac. at $ 94	37,600	
		ac at $		
		529 acres		
		Buildings	9,360	
		TOTAL F.S.V.		$63,730

Value $120 per acre
$31.9 per E.E.

STOCK as at 1st July 1970

E.E.	Numbers		$ (F.S.V.)	
1839	2055	Sheep	9,575	
160	40	Cattle	1,800	
		Pigs		
		Other		
1999	2095	TOTAL STOCK		$11,375
		TOTAL PLANT		$ 3,380
		WORKING CAPITAL (5%)		$ 3,924
		TOTAL CAPITAL INVOLVED		$82,409

STOCK PERFORMANCES

Ewes to breeding ram		850	Deaths	ewes	5%
Ewes to export lamb sire		850		hoggets	3%
Lambing S/Sale		110%		cattle	– %
Export lambs	60%	F.O.M. by ../../..		Calving	– %
	10%	2nds			
	28	lbs av. wgt.	Butterfat		
	74	lbs per acre		per cow	lb
				per acre	lb

Wool Weights per Head

ewes	10	lb
hoggets	7	lb
rams	4,12	lb
others	3	lb

Wool shorn per acre 41 lb

Gals milk

per cow	gals
per acre	gals

SCHEDULE OF DEPRECIATION

DESCRIPTION	F.S.V. or Book Value to start year	Additions During year	Current Years Depreciation Rate Ordinary	Special	Amount	Book Value at end
MOTORIZED						
Fordson Tractor	1200		20%		240	960
Fergusson and Tray	300		20%		60	240
NON-MOTORIZED						
Front end loader	150		10%		15	135
Grubber	150		10%		15	135
Chisel Plough	350		10%		35	315
Drill	200		10%		20	180
Discs	100		10%		10	90
2 sets Harrows	80		10%		8	72
Roller	100		10%		10	90
Mower	100		20%		20	80
Hay Rake	150		10%		15	135
Trailer	100		10%		10	90
Shearing Plant						
2 stand,electric, grinder, wool press, table	300		10%		30	270
Tools	100		10%		10	90
TOTAL PLANT	3380				498	2882
BUILDINGS Cost Price						
Homestead	5000		2½%		125	4875
Other Bldgs	4360		2½%		109	4251
TOTAL BUILDINGS	9360				234	9126
TOTAL PLANT AND BUILDINGS DEPRECIATION					732	
ADJUSTMENTS Less Proportion of Car or Truck Charged to Personal Less Proportion of Homestead Charged to Personal ¾–					94	
TOTAL DEPRECIATION CHARGED TO FARM WORKING ACCOUNT					638	

Year Ending 30th June 1971

SHEEP ACCOUNT

Opening			F.S.V.		Std V.		Closing		F.S.V.		Std V.
E.E.	Stock	No.	Head	Total	Head	Total	Stock	No.	Head	Total	Total
1530	Ewes	1700	6.00	10,200	3.00	5100	Ewes	1700	6.00	10,200	5100
270	Ewe Hoggets	450	6.00	2,700	3.00	1350	Ewe Hoggets	450	6.00	2,700	1350
15	Wether Hoggets	25	5.00	125	3.00	75	Wether Hoggets	25	5.00	125	75
	Wethers						Wethers				
17	Rams	22	15.00	330	3.00	66	Rams	22	15.00	330	66
1832	TOTAL SHEEP	2197		13,355		6591	TOTAL SHEEP	2197		13,355	6591
	Purchases						Sales				
	Rams	6	60.00	360			2T ewes	56	6.00	336	
							Cull ewes	291	3.50	1,018	
							Lambs	1395	5.00	6,975	
						360					
	TOTAL PUR.	6		360		6591	TOTAL SAL.	1742		8,329	8329
	Nat. Increase	1870	GROSS PROFIT			7969	Killed	35			
							Deaths &		GROSS LOSS		
							Missing	99			
	TOTALS	4073				14920	TOTALS	4073			14920

BEEF CATTLE ACCOUNT

Opening			F.S.V.		Std V.		Closing		F.S.V.		Std V.
E.E.	Stock	No.	Head	Total	Head	Total	Stock	No.	Head	Total	Total
–	Breeding Cows	–	–	–	–	–	Breeding Cows				
–	R.W.B.Heifers	–	–	–	–	–	R.W.B.Heifers				
–	Rsg 2 yr Hfs	–	–	–	–	–	Rsg 2 yr Hfs				
160	Rsg 1 yr Hfs	40	45.00	1800	20.00	800	Rsg 1 yr Hfs	40	45.00	1800	800
	Rsg 2 yr strs	–					Rsg 2 yr strs				
	Rsg 1 yr strs						Rsg 1 yr strs				
	Bulls						Bulls				
	TOTAL CATTLE	40		1800		800	TOTAL CATTLE	40		1800	800
	Purchases						Sales				
	Weaner hfs	40	40.00	1600			Veal Hfs 557 lb @ 51% = 290 lb @ $0.22/lb	40	64.00	2560	
						1600					
	TOTAL PUR.	40		1600		2400	TOTAL SAL.	40		2560	2560
	Nat. Increase	–	GROSS PROFIT			960	Deaths & Missing	–	GROSS LOSS		
	TOTALS	80				3360	TOTALS	80			3360

PADDOCK UTILIZATION YEAR 1970

Pdk No.	Area	Condition	Programme	Yield Ac.	Yield Total	Seeds Ac.	Seeds Total	Lime Ac.	Lime Total	Manure Ac.	Manure Total
1	8	Lucerne	–	40	320	–	–	–	–	1½	12 S.S.
1a, 10, 14, 16, 17, 19, 20, 21, 22, 23, 25	250	Grass	–	–	–	–	–	–	–	1½	375 S.S.
2	23	Turnips & Tama	Greenfeed – Italian	–	–	1	23 bu.	–	–	1½	34 S.S.
3	14	New Lucerne	–	40	560	–	–	–	–	1½	21 S.S.
4	16	Lucerne & Prairie Grass	–	–	–	–	–	–	–	1½	24 S.S.
5	25	Mapua Oats	Lucerne	–	–	9 lb	225 lb	1	25	1½	38 S.S.
6	12	Lucerne	–	40	480	–	–	–	–	1½	18 S.S.
7	10	New Grass & turnips	Grass	–	–	–	–	–	–	1½	15 S.S.
8	14	Lucerne	–	40	560	–	–	–	–	1½	21 S.S.
9	11	Poor Grass	turnips	–	–	8oz	5½ lb	–	–	1	11 S.P.
11	(10 (20 (10 (	Tama green-feed)) Turnips & greenfeed)	barley	60	1200	2½ 1½ Tama	50 30	– –	– –	2	40 S.P.
12	5	Prairie Grass O/D Ruanui	–	–	–	–	–	–	–	1½	7 S.S.
13	4	Greenfeed	New Grass	–	–	–	–	–	–	1½	6 S.S.

PADDOCK UTILIZATION YEAR 1970 (continued)

Pdk No.	Area	Condition	Programme	Yield Ac.	Yield Total	Seeds Ac.	Seeds Total	Lime Ac.	Lime Total	Manure Ac.	Manure Total
15	10	Prairie Grass	–	–	–	–	–	–	–	1½	15 S.S.
18	12	New grass (over-drilled)	–	–	– –	–	–	–	–	1½	18 S.S.
24a	20	Poor Grass	Turnips – Lucerne	–	–	8oz	10 lb	1	20	1	20 S.P.
24b	24	Lucerne & Prairie Grass	–	–	–	–	–	–	–	1½	37 S.S.
	7	Cow Paddock									
	3	Plantation									
	6	House, yards									
	34	Waste									
Total	529										

SUMMARIES

Fertilizer Type

	tons	at $
Superphosphate	3½	$22.75
Sulphur Super 400	32	$29.45
Lime	45	$ 3.00

Grass Seed Mixtures

New Grass
20 lb Ruanui
2 lb Coxfoot
3 lb White Clover
1 lb Red Clover

Crop Rotation

LAND UTILIZATION – FEED SUPPLY

Winter 1970 May – August				Lambing Feed	
Acres	Crop	Carrying Capacity	Total E.E.	Carrying Capacity	Total E.E.
33	Turnips and Tama	22	726	–	–
39	Greenfeed	–	–	6a/100 ewes	650
12	New Grass	–	–	4a/100 ewes	300
14	New Lucerne	–	–	–	–
34	Lucerne	1	34	–	–
41	Lucerne & Prairie Grass	–	–	8a/100 ewes	513
10	Prairie Grass	–	–	8a/100 ewes	125
5	Prairie Grass and New Grass	–	–	5a/100 ewes	100
10	New grass and turnips	–	–	–	–
1500 bales	Lucerne Hay @ 40/ton	10/ton	375	–	–
200	GoodPasture	3	600	–	–
31	Poor Pasture	1	31	–	–
40	A.S.P.	8	320	–	–
10	A.S.P.	–	–	6a/100 ewes	167
7	Cow Paddock				
3	Plantation				
6	House and yards				
34	Waste				
529	TOTAL	TOTAL FEED AVAILABLE	2086 E.E.	TOTAL	1855

Winter stock requirements 1999 E.E. Lambing Requirements 1700 E.E.

LAND UTILIZATION – FEED SUPPLY (continued)

Spring 1970 September – December **Lamb Fattening Feed**

Acres	Crop	Carrying Capacity	Total E.E.	Carrying Capacity	Total E.E.
20	Ex turnips, greenfeed, to barley	–	–	–	–
25	Oats to Lucerne	–	–	–	–
23	Turnips to Greenfeed	–	–	–	–
48	Lucerne	–	–	10 lambs /a	480
41	Lucerne and Prairie Grass	10	410	–	–
10	Prairie Grass	6	60	–	–
5	Prairie Grass and Ruanui	–	–	6 lambs /a	30
4	Tama to New Grass	–	–	–	–
10	New Grass and turnips	–	–	6 lambs /a	60
262	Good Pasture	6	1572	–	–
31	Poor Pasture	3	93	–	–
7	Cow Paddock				
3	Plantation				
6	House and Yards				
34	Waste				
529	TOTAL	TOTAL FEED AVAILABLE	2135 E.E.		
				Total Lamb Fattening Fd	570
	Spring stock requirements		1999 E.E.	Lambs to Fatten	561

INCOME

						CASH	TAXATION
STOCK:							
Sheep Sales						8329	–
Sheep Gross Profit						–	7969
Cattle Sales						2560	–
Cattle Gross Profit							960
Pig Sales						–	
Pig Gross Profit							–
WOOL:							
1700	ewes	@	10lb	=	17,000		
450	hoggets	@	7lb	=	3,220		
22	rams	@	8lb	=	176		
460	lambs	@	3lb	=	1,380		
	Total Skins		21776 lbs		at 30c nett per lb	6533	6533
CROPS:		acre	yield		price		
Wheat							
Barley		20	1200		$0.95	1140	1140
Peas							
Potatoes							
Other							
SMALL SEEDS:							
Ryegrass							
Clover							
Cocksfoot							
Other							
DAIRY PRODUCE:							
Butterfat			lbs at		per lb		
Milk			gals at		per gal.		
GRAZING SOLD:							
OTHER FARM INCOME:							
Petrol Rebates						20	20
NET FARMING LOSS							
CASH FARM INCOME						18,582	–
GROSS FARM INCOME							16,622

EXPENDITURE

	CASH	TAXATION
WORKING EXPENSES:		
Wages – Manager		
– Permanent		
– Casual	200	200
Animal Health – Dip Drench	282	282
Vet. other		
Breeding Expenses – A.B. Herd Testing		
Cash Cropping – Heading, sacks and Twine	342	342
Dressing and Cert.		
Cultivation Contracts – Bulldozing		
– Gorse Cutting		
Dairy Shed Expenses		
Electricity	100	50
Feeds – Concentrates,		
Baling Grazing	387	387
Freight – N.E.I.	100	100
Fertilizer 1.	80	80
2.	942	942
3.		
Freight and Spreading	214	214
Lime	225	225
Seeds 1. Crop	263	263
2. Pasture	169	169
Shearing Expenses – Wages	577	577
Packs, General	124	124
Trees		

EXPENDITURE (continued)

			CASH	TAXATION
Water charges			60	60
Weed and Pest Control				
Repairs and Maintenance:	Dwellings			
	Buildings		225	225
	Fences, Water Supply		290	290
	Plant		100	100
Vehicle Expenses –	Car: (¾ allowable)		490	368
	Tractor	Truck	300	300
	Header	Baler		
ADMINISTRATIVE EXPENSES:				
Accountancy and Legal			140	140
F.A.S.				
Telephone and Mail			102	102
STANDING CHARGES:				
Hire Purchase				
Insurance			53	53
Rates and Land Tax			200	200
Interest O/D			138	138
Mortgage			2,763	2,763
Rent				
Stock Purchases	Sheep	6 rams	361	–
	Cattle	40 weaners	1,640	–
Selling Charges	Stock		14	14
	Wool	Crop		
Freight Income Items	Stock	40 heifers	40	40
	Wool	Crop		
TOTAL CASH FARM EXPENDITURE			10,880	
Depreciation				638
TOTAL DEDUCTIBLE EXPENDITURE				9,386
NET FARMING PROFIT				7,236

BUDGET ASSESSMENT

1. Taxation Reconciliation

Net farming profit		$7,236	
Plus additional non-farming income		$ –	
Total Assessable Income		$7,236	
Less Exemptions			
– Personal	$275		
– Wife and Children	$410		
– Deductible Insurance	$300		
– Deductible Donations	$100		
Total Exemptions		$1,085	
Tax Payable on $6,151	is		$1,899.02

Provisional Tax Payments 1970/71 Year

1st Payment	7th September 1970	(1/3rd)	$ 632.94
2nd Payment	7th March 1971	(2/3rd)	$1,266.08
Plus Terminal Tax for 1969/70 – 7th March 1971			$ –
Total Tax			$1,899.02

2. Cash Flow Statement

Total cash farming income	$18,582	
Less cash farming expenditure	$10,880	
Cash Farm Surplus	$ 7,702	
Plus additional non-farming cash receipts	$	
Plus capital inputs	$	
TOTAL DISPOSABLE CASH		$7,702.00

Less Cash Disposition

(1) Personal – Taxaton	$1,899	
– Cash Drawings	$3,000	
– Personal Insurance	$ 300	
– School Fees	$ –	
– Donations	$ 100	
Total Personal Expenses	$5,299	

BUDGET ASSESSMENT (continued)

(2)	Capital Expenses	
	– Principal Repayment	$ –
	– Capital Additions	$ –
	– Non-farming Investment	$ –
	Total Capital Expenses	$ –
	TOTAL CASH DISPOSITION	$5,299
	Leaves surplus/deficit on years trading of	$2,403

For comments on budget and results see attached pages.

BUDGET SUMMARY SHEET

		Cash	Tax'n
1. WORKING EXPENSES			
(a)	Wages	200	200
(b)	Animal Health	282	282
(c)	Breeding		
(d)	Cash Cropping	342	342
(e)	Cultivation con'ts		
(f)	Dairy Shed Exp		
(g)	Electricity	100	50
(h)	Feed	387	387
(i)	Freight (N.E.I.)	100	100
(j)	Fertiliser	1,236	1,236
(k)	Lime	225	225
(l)	Seeds	432	432
(m)	Shearing Expenses	701	701
(n)	Trees		
(o)	Water and Irrigation	60	60
(p)	Weed and Pest Control		
2. REPAIRS AND MAINTENANCE		615	615
3. VEHICLE EXPENSES		790	668
4. ADMINISTRATION		242	242

			Cash	Tax'n
1. STOCK PROCEEDS				
(a)	Sheep			
	Gross Profit		–	7,696
	Cash Sales		8,329	
(b)	Cattle			
	Gross Profit			960
	Cash Sales		2,560	
2. WOOL				
	1700 ewes @ 10lb	= 17000 lb		
	450 hoggets @ 7lb	= 3200 lb		
	22 rams @ 8 lb av.	= 176 lb		
	460 lambs @ 3 lb	= 1380 lb		
Total 21776 lbs at ave. 30c.			6,533	6,533
3. CROPS AND SMALL SEEDS				
Type	Yield	Price		
Barley	1200 bu.	$0.95	1,140	1,140

BUDGET SUMMARY SHEET (continued)

	Cash	Tax'n
5. STANDING CHARGES		
(a) Hire Purchase		
(b) Insurance	53	53
(c) Land Tax		
(d) Rates	200	200
(e) Interest	2,901	2,901
(f) Rent		
6. DEVELOPMENT		
(a) Total Development		
(b) Allowable only		
7. STOCK PURCHASES		
Sheep 360	360	
Cattle 1600	1,600	
8. SELLING CHARGES	14	14
9. FREIGHT (Inc. Items)	40	40
TOTAL CASH FARM EXPENSES	10,880	
Depreciation		9,386
CASH FARM SURPLUS	7,702	
NETT FARMING PROFIT		7,236
		16,622

	Cash	Tax'n
4. DAIRY		
lbs B'fat at		
gals milk at		
5. OTHER FARM INCOME		
Petrol Rebates	20	20
TOTAL CASH INCOME	18,582	
GROSS FARMING PROFIT		16,622

BUDGET WORKSHEETS (A)

1. Working Expenses

(a) Wages

Manager:							
General:	Permanent		weeks at $			week	
	Casual	10	weeks at $	20.00		week	200
	Other		weeks at $				

(b) Animal Health

Vet Fee		=	–
Plus	visits at $	=	–

SHEEP					CATTLE				
								B/F	238
Dipping	220	Sheep at $0.05	/ head	110	Spraying	40	Cattle at $0.4	/ head	16
Drenching		Ewes at	/ head		Drenching	40	Cattle at $0.5	/ head	20
3 x 450	=	1500 lambs at $0.05	/ head	75					
Vaccin'n		Sheep at	/ head		Vaccin'n		Cattle at	/ head	
	1870	Lambs at $0.02	/ head	37					
Docking Rings	4	Pkts $2.70	/ Pkt	11	DAIRY				
Ear tags		at	/ 100		Vaccin'n		Cows at	/ head	
Footrot					Bloat Control				
					Sundry				
			C/F	238					282
									282

(d) Cash Cropping Expenses

(I)	Spraying	20	acres of	barley	at	$4.00	=	80
	(W & P Control)		acres of		at		=	
	in S/S & Cash Crop		acres of		at		=	

BUDGET WORKSHEETS (continued)

(II) Contract Harvesting

			20	acres of	barley (1200 bu.)	at $0.12/bu	=	144
				acres of		at	=	

(III)	Sacks	23"	400	at	$0.11	=	44
		48"		at			
	In cartage			bales of sacks at			
	Twine	4	hanks at	$1.25 per lb	(2 hanks per lb)	=	3

(IV) Seed Dressing and Certification

Ryegrass	bu at	bu
Clover	lbs at	lbs

(V) Selling Expenses

Cartage:	Crops	400 (29 tons)	Sacks/tons FOR at $2.45 per ton	= 71
			Sacks/tons to store at	
	S. Seeds		Sacks/boxes to store at	
Wheat Levy			bu at per 50 bu.	

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(g) **Electricity:** Farm 100

(h)	**Feed:**	Hay baling	1920	bales at	$0.18	346
		Twine	1920	bales at	$0.011	21
		Carting		bales at		
		Hay Purchased				
		Other stock fees purchased				20
		Grazing		ac/hd at		

BUDGET WORKSHEETS (continued)

(i) Freight (Not Elsewhere Included) 100

(j) Fertiliser (ex works)

											B/F		
3½	tons	Super	at	$22.75	ton	=	80	tons	at	tons	=		
3½	tons	S.Super	at	$29.45	ton	=	942	tons	at	tons	=		1,022
	tons		at		ton	=		tons	at	tons	=		
			C/F										
Freight			tons			Miles at			ton				–
Spreading	32		tons	428		Acres at		$0.50	acre				214

(k) Lime

45 tons at $5.00 per acre applied 225

(l) Seeds

CROP

Crop	Area	Seed /ac	Total Seed	Price	Total Cost
Lucerne	25	9lbs	225lb	0.75	169
Barley	20	2½bu	50bu	1.68	84
Turnips	31	8oz	16lb	0.60	10

GRASS SEED

Species	Area	Seed /ac	Total Seed	Price	Total Cost
Tama	20	1½bu	30bu	3.00	90
Pasture –					
Ruanui	4	1bu	4bu	2.50	10
Coxfoot	4	2lb	8lb	0.25	2
White Clover	4	3lb	12lb	0.60	7
Red Clover	4	1lb	4lb	0.40	2
Italian	23	1bu	23bu	2.50	58

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BUDGET WORKSHEETS (continued)

(m) Shearing Expenses

Shearing	2000	sheep at	$18.00	per 100	=	360
	450	lambs at	$17.00	per 100	=	77
Crutching	2000	sheep at	$ 7.00	per 100	=	140
Shed hands		Men		days at	hour =	
Wool Packs	62	Packs at	$2.00	each	=	124
Wook Cartage		Packs		miles at	=	
Sundry						701

(o) Water and Irrigation

Irrigation charge	
Stock Water Charge	60
Pump Expenses (fuel only)	

2. Repairs and Maintenance

			B/F	
Dwellings		Fencing	200	
Other Buildings	225	Trees/Hedges	–	
Roads/Tracks (metal)	50	Water Supply	20	
Yards/Dip	20	Non motorized plant (1880)	100	615

3. Vehicle Expenses

		B/F	300
Tractor Repairs		Car	
500 hours @ $0.6	300	Fuel & oil 7,000 miles at $0.07	490
Header Repairs		Repairs	
Baler Repairs		Truck ck	
Fuel – petrol		Fuel & oil —— miles at $	
diesel		Repairs	
oil		Registration fees	
grease			
	C/F		790

BUDGET WORKSHEETS (continued)

4. Administrative Expenses

Accountancy Fee	$140					
General: Legal	$	Bank	$	Staty & Post	$20	
Telephone Rental	$ 80	Tolls	$	Mail	$ 2	
Advisory Fee;						242

5. Standing Charges

(a) Hire Purchase

(b) Insurances

B/F 45

Buildings	$9,360	at	0.25%	23	Public Liability	$	at	6
Mot. Plant	$1,600	at	0.50%	8	Wool	$	at	2
Plant	$1,800	at	0.25%	5	Crop	$	at	
Emp. Liab	$ 400) 500) 900			9				
				C/F 45				53

(d) Rates

County	$	
Rabbit Board	$	
Other	$	200

(e) Interest, $78,955 @ 50% = 39,477

Mortgage	$ 39,477	at	7 %	=	2,763	
Bank O/D	$ 3,940	at	3.5 %	=	138	
Firm O/D	$	at	%	=		
Other	$	at	%	=		2,901

BUDGET WORKSHEETS (continued)

7. Stock Purchases

	Class	No.	Type	From	Price	Cartage	Tot./Hd	Total		
(a)	Sheep	6	Rams		$60.00			360		
									360	
(b)	Cattle	40	Weaners		$40.00			1600		
									1600	1,960

8. Selling Charges

(a) Stock Commission

$336	2T	sales	at	3	%	$10.00		
Yarding			head	at				
Yarding			head	at				
Unloading	336	from	Trucks	at	$0.01	4.00	14	

(b) Wool Selling

Commission	$	at	%	(In income, wool is entered
Board Levy	$	bales	at	as net so this is not required
Reclassing		lbs at		for this budget)
Receiving etc.		lbs at		

(c) Commission on selling hay, produce or sundry 14

9. Freight, Income items

Stock Cartage Outward

No.	Class	To	Miles	at Rate/head	Total	
40	Heifers			$1.00	$40.00	40

BUDGETING

FOR

FARM MANAGEMENT

RECOMMENDED STANDARD FORMS

AS PRESCRIBED BY THE NEW ZEALAND
SOCIETY OF ACCOUNTANTS

SET CONSISTS OF FORMS:

	Budget Summary
AA	Livestock Reconciliation
A(1)	Sheep Trading
A(2)	Cattle Trading
B(1)	Wool Estimates
B(2)	Dairy Proceeds
B(3)	Cash Crop Estimates
C(1)	Farming Expenses
C(2)	Farming Expenses continued
D	Other Receipts and Payments
E	Calculation of Taxable Income
F	Calculation of Equity Trend

BUDGET SUMMARY

NAME FREDERICK J. TILLY — DATE PREPARED 30th APRIL 1970

PERIOD 12 months ending 30-6-71 — DATE REVISED

L/Year	Source		Budget	To Date	To Come	Revised
	REVENUE FROM FARMING					
	Sales Sheep	Form A(1) (a)	8,329			
	Sales Cattle	" A(2) (a)	2,560			
	Sales	" A( )				
	Wool and Skins	Form B(1) (a)	6,533			
	Dairy Produce	" B(2) (a)	–			
	Cash Crops	" B(3) (a)	1,140			
	Sundry	" B( )	–			
	Rebate		20			
		TOTAL X	18,582			
	REVENUE EXPENDITURE					
	Purchases Sheep	Form A (1) (b)	360			
	Purchases Cattle	" A (2) (b)	1,600			
	Farming Expenses	" C (2) (a)	8,920			
		TOTAL Y	10,880			
	REVENUE SURPLUS FROM FARMING (X - Y)		7,702			
	Plus other Receipts	Form D (b)	–			
	Less other Payments	Form D (d)	5,299			
	ESTIMATED SURPLUS ~~DEFICIT~~	Z	2,403			

WORKING CAPITAL POSITION

DETAILS	Actual 19....	Budget 19....	Actual Final		
CURRENT ASSETS					
Bank					
Savings Bank					
Stock Firm etc.					
Sub Total Bank Accounts Imp/Dec. $.....					
Sundry Debtors					
Produce Unsold					
Deferred Payments					
Tax Refund Due					
TOTAL CURRENT ASSETS (b)					
CURRENT LIABILITIES					
Bank Overdraft					
Stock Firm Dairy Co. etc.					
Sub Total Bank Accounts Imp/Dec. $.....					
Sundry Creditors					
Tax Balance Payable					
TOTAL CURRENT LIABILITIES (c)					
WORKING CAPITAL (19) (b - c)					
SURPLUS/DEFICIT for year Z					
PROJECTED WORKING CAPITAL (19)					

BUDGET 19

NAME:

FORM AA

LIVESTOCK RECONCILIATION

ESTIMATED SHEEP MOVEMENTS FOR YEAR

Opening Value	Class	Std. Value	Opening Stock	Purch.	Change of Class		Sales	Deaths Killed Missing	Closing Stock	Closing Value
$		$	No.	Add	Add	Deduct	Deduct	Deduct	No.	$
1350	EWES - 2tth.	3.00	450	–	450	380	56	14	450	1350
3750	M.A.	3.00	1250	–	380		291	89	1250	3750
	TOTAL BREEDING		1700						1700	
1350	HOGGETS - Ewe	3.00	450		450	450	–	–	450	1350
75	Wether	3.00	25		25			25	25	75
	WETHERS									
66	RAMS	3.00	22	6				6	22	66
	KILLERS									
	Sub-total		2197							
– –	LAMBS TAILED		1870	– –			1395			
6591	TOTALS		4073	6			1742	134	2197	6591
	INCREASE								DECREASE	
6591										6591

(Insert Natural Increase numbers in Opening Stock column after sub-total of Opening Stock).

ESTIMATED CATTLE MOVEMENTS FOR YEAR

Opening Value	Class	Std. Value	Opening Stock	Purch.	Change of Class		Sales	Deaths Killed Missing	Closing Stock	Closing Value
$		$	No.	Add	Add	Deduct	Deduct	Deduct	No.	$
	COWS BREEDING									
	HEIFERS - Ris 2 yr				40		40			
	TOTAL BREEDING									
	STEERS - Ris 3 yr									
	Ris 2 yr									
	Ris 1 yr									
800	HEIFERS - Ris 1 yr	20.00	40	40		40			40	800
	BULLS									
	Sub-total		40							
	CALVES MARKED			– –						
800	TOTALS		40	40			40		40	800
	INCREASE								DECREASE	
800										800

(Insert Natural Increase numbers in Opening Stock column after sub-total of Opening Stock)

BUDGET 19 Form A (1)

NAME:

SHEEP TRADING

Last Year	PERFORMANCE DETAIL -	BUDGET		ACTUAL	
	Ewes to Ram	- -	1700	- -	
	Lambing...110...% S/Sale or Flock	- -	- -	- -	- -
	Lambs Tailed	- -	1870	- -	
	DISPOSAL To Sell - Fats	1870	- -		- -
	To Sell - Stores		- -		- -
	To Retain		- -		- -
	Losses after Tailing		- -		- -
	To Kill		- -		- -
	TOTALS	1870	1870		

SHEEP SALES

Last Year No	Last Year Value	DETAILS	BUDGET No	BUDGET Price	BUDGET Total	ACTUAL No	ACTUAL Price	ACTUAL Total	Sale Date	Cum. Total
		LAMBS Fat	1395	5.00	6975					
		LAMBS Stores								
		EWES								
		Cull ewes	291	3.50	1018					
		Cull 2T	56	6.00	336					
		OTHER								
		TOTAL SALES	1742		8329 (a)					
		SHEEP PURCHASES								
		RAMS	6	60.00	360					
		OTHER								
		TOTAL PURCHASES	6		360 (b)					

BUDGET 19 Form A (2)

NAME:

CATTLE TRADING

Last Year	PERFORMANCE DETAIL	BUDGET		ACTUAL	
	Cows to Bull	- -		- -	
	Calving .....%	- -	- -	- -	- -
	Calves Marked	- -		- -	
	DISPOSAL:				
	To Sell – Steers		- -		- -
	Heifers		- -		- -
	To Retain – Steers		- -		- -
	Heifers		- -		- -
	Losses				
	TOTALS				

CATTLE SALES

Last Year		DETAILS	BUDGET			ACTUAL			Sale	Cum.
No	Value		No	Price	Total	No	Price	Total	Date	Total
		CALVES Heifer								
		Steer								
		HEIFERS								
		Veal Heifers	40	64.00	2560					
		COWS								
		STEERS								
		BULLS								
			40		2560					
		TOTAL SALES			(a)					
		CATTLE PURCHASES								
		CALVES								
		HEIFERS								
		Weaner Heifers	40	40.00	1600					
		COWS								
		STEERS								
		BULLS								
			40		1600					
		TOTAL PURCHASES			(b)					

Name: BUDGET 19 Form B (1)

WOOL ESTIMATES

Last Year	DETAILS	No.	lbs.Head	Total Weight	Price Per. lb.	Estimated Value	Actual no.shorn
	DRY SHEARING Hoggets	450	7	3220			
	Dry Ewes						
	Wethers						
	MAIN SHEARING						
	2 tooth Ewes	450	10	4500			
	M.A. Ewes	1250	10	12500			
	Rams	22	8	176			
	Lambs	460	3	1380			
	2nd SHEAR						
	TOTAL SHORN	2632					
	CRUTCHINGS						
	SKINS & DAGS						
	TOTALS	2632		21776	30c. (a)	6533	

ESTIMATED VALUE OF WOOL UNSOLD AT YEAR END $.....

ACTUAL SALES

Last Year	Sale Date	DETAILS OF WOOL	Bales	Total Weight	Average Price	Value	Cum. Total
		CURRENT SEASONS WOOL					
		SEASON'S PRODUCTION					

BUDGET 19 Form B (2)

NAME:

DAIRY PROCEEDS

LAST YEAR		MONTH		BUDGET			ACTUAL		
Quantity	Value	Factory Supply	Town Milk	Quant.	Value	Cum. Tot	Quant.	Value	Cum. Tot
		June	April						
		July	May						
		August	June						
		September	July						
		October	August						
		November	September						
		December	October						
		January	November						
		February	December						
		March	January						
		April	February						
		May	March						
		Total Advance							
		Deferred Payment			(b)				
		Season's Total			(a)				

PERFORMANCE DATA:

No. of Cows wintered .....

Cows in milk for season .....

Est. production per cow .....lbs..... gals.

Total Production .....lbs..... gals.

BUDGET 19

Form B.3

Name: _____

CASH CROP ESTIMATES

	FORECAST					ACTUAL					
CROP DETAIL	Area	Yield	Total	Price	Value	Area	Yield	Total	Price	Value	Cum. Total
BARLEY	20	60 bu.	1200	$0.95	1140						
TOTALS:	20	To Budget Summary $			1140 (a)		RECEIPTS THIS YEAR'S CROP:				

BUDGET 19 Form C (1)

NAME:

FARMING EXPENSES

L/Year	DETAILS	BUDGET
	WAGES: Permanent	
	Casual	400
	Employee's Keep	
	FARM WORKING EXPENSES:	
	Animal Health	282
	Breeding Expenses	
	Cash Crop Expenses :- Heading, sacks, twine	342
	:-	
	:-	
	Cultivating Contracts	
	Dairy Shed Expenses	
	Electricity	100
	Feed Haymaking Contracts	
	:- Baling	387
	:-	
	Freight	181
	Fertilizer	1022
	" Spreading	214
	" Freight	–
	Lime	225
	Seeds	432
	Shearing Shed Expenses	124
	Shearing Wages	577
	" Contract	
	Trees	
	Weed and Pest Control	
	Water Charges	60
	REPAIRS AND MAINTENANCE	
	Dwelling	
	House - Employee	
	Farm Buildings	225
	Drains	
	Fences	200
	Tracks	50
	Yards	20
	Plant and Machinery	100
	Water Supply	20
	Protective Clothing	
	Shoeing and Saddlery	
	Tools and Hardware	
	Carried Forward	4961

BUDGET 19 Form C (2)

NAME:

FARMING EXPENSES

L/Year	DETAILS	BUDGET				
	Brought forward	4961				
	VEHICLE EXPENSES					
	Fuel, Oil and Grease					
	Car Expenses	490				
	Motor Cycle Expenses					
	Tractor Expenses	300				
	Truck Expenses					
	Land Rover Expenses					
	ADMINISTRATION					
	Accounting	140				
	Farm Advisory Fees					
	Legal Expenses					
	Postage and Mail Fees	2				
	Printing, Stationery and Papers	20				
	Telephone and Tolls	80				
	Travelling Expenses					
	General Expenses					
	STANDING CHARGES					
	Hire Purchase Charges (excluding Principal)					
	Insurance	53				
	Land Tax					
	Rates					
	Rent					
	Interest					
	Overdraft	138				
	Mortgage	2763				
	Selling Charges	14				
	TOTAL FARMING EXPENSES (a) to Budget Summary	8961				

BUDGET 19 FORM D

NAME:

OTHER RECEIPTS

L/Year	DETAILS	Budget	To Date	To Come	Revised
	REVENUE:				
	Interest				
	.....				
	.....				
	Dividend				
	.....				
	.....				
	.....				
	Sub Total Revenue (D (a))				
	NON-REVENUE:				
	Loan From				
	Sales of Assets				
	.....				
	.....				
	TOTAL OTHER RECEIPTS to Budget Summary (b) $				

OTHER PAYMENTS

		Budget	To Date	To Come	Revised
	PERSONAL Drawings	3000			
	Life Insurances (own)	300			
	" " (family)	–			
	School Fees /Donations	100			
	.....				
	Sub Total Personal (c)	3400			
	TAXATION on BUDGETED INCOME	1899			
	DEBT REPAYMENT				
	Mortgage				
	.....				
	Hire Purchase (Principal only)				
	CAPITAL EXPENDITURE				
	Plant				
	Buildings				
	Development				
	Shares				
	TOTAL OTHER PAYMENTS to Budget Summary (d) $	5299			

BUDGET 19 Form E

NAME:

CALCULATION OF TAXABLE INCOME

L/Year	DETAILS	Details	Budget	Revision	
	REVENUE SURPLUS FROM FARMING (from Budget Summary X-Y)		7702		
	ADD:				
	LIVESTOCK INCREASES @ Stand. Values				
	Sheep (AAa)				
	Cattle (AAb)				
	DEFERRED BUTTERFAT & REBATE PAYMENTS 19....				
	NON-DEDUCTIBLE EXPENSES -				
	Personal Ppn. House Repairs				
	Car Expenses (25%)		122		
	Car Depreciation				
	House Depreciation		94		
	Electricity (50%)		50		
	Produce Used for House	$	$ 7968		
	DEDUCT:				
	LIVESTOCK DECREASES @ Stand. Values				
	Sheep (AAa)				
	Cattle (AAb)				
	DEF. BUTTERFAT & REBATE PAYMENTS 19.. B (2) (b)				
	DEPRECIATION		732		
	SUB-TOTAL:		$ 7236		
	ADD OTHER INCOME (REVENUE D (a))				
	ESTIMATED TAXABLE INCOME:		$ 7236		
	ESTIMATED TAX THEREON	(a)	$ 1899.02		

TAXATION SUMMARY

(1) TAX POSITION AT START OF BUDGET PERIOD -

Last Years Balance 19..... (from Balance Sheet).

TO PAY MARCH 19.... $ *

OVERPAID $ (** To carry forward
(or
(To be refunded

(2) ACTUAL TAX PAYMENTS DURING BUDGET PERIOD -

PAYABLE	SEPT. 19	MAR. 19	TOTAL
Provisional (19 / .)	632.94	1266.08	1899.02
Less Overpaid Last Year **			
Add Last Year's Balance *			
(Do not include these figures in Budget)	632.94	1266.08	1899.02

(3) ESTIMATED TAX POSITION AT END OF BUDGET PERIOD -

	$	$
Estimated Tax on BUDGET Income (a) above	1899.02	-
Less Provisional Tax to be paid during current year	-	
++ = BALANCE PAYABLE MARCH 19.....	-	
++ OR TAX OVERPAID ON PROVISIONAL		-
	1899.02	

++ These figures to WORKING CAPITAL SUMMARY.

BUDGET 19 Form F

NAME:

CALCULATION OF EQUITY TREND

REVENUE SURPLUS FROM FARMING (from Budget Summary)X-Y	7702	
ADD LIVESTOCK INCREASES at Est. Market Value	–	
Sheep (Calculate below) (a)	–	
Cattle " " (a)	–	
"		
" OTHER INCOME (D (a))		7702
DEDUCT LIVESTOCK DECREASES at Est. Market Value		
Sheep (Calculate below) (b)	–	
Cattle " " (b)	–	
.....		
DEPRECIATION	732	732
.....		
ANTICIPATED NETT INCOME before Tax		6970
DEDUCT EST. TAXATION on Budget Income (E (a))		1899
		5071
DEDUCT DRAWINGS ETC. (D (c))	1	3400
ANTICIPATED CHANGE IN EQUITY INCREASE/DECREASE		1671

(Excluding changes in value of fixed assets etc.)

ESTIMATED MARKET VALUATION OF LIVESTOCK

SHEEP

Classes	Opening Stock			Closing Stock		
	Nos.	M.V.	$	Nos.	M.V.	$
Ewes	1700	6.00	10,200	1700	6.00	10,200
Hoggets	450	6.00	2,700	450	6.00	2,700
Wethers	25	5.00	125	25	5.00	125
Rams	22	15.00	330	22	15.00	330
Totals	2197		13,355	2197		13,355
Value Increase		(a)	–	Decrease (b)		–
			$ 13,355			$ 13,355

CATTLE

Classes	Opening Stock			Closing Stock		
	Nos.	M.V.	$	Nos.	M.V.	$
Cows						
Heifers	40	45.00	1800	40	45.00	1800
Steers						
Bulls						
Totals	40		1800	40		1800
Value Increase		(a)	–	Decrease (b)		–
			$ 1800			$ 1800

NAME: A. & N. Farmer ADDRESS: Main Road
Erewhon

FARM DETAILS AND STOCK RECONCILIATION

70 acres
72 cows to calve
1 MT)
1 death) at calving
69 calves born alive
18 calves for rearing (heifers)
1 Bull calf kept
47 calves bobbied

Note for Mr A.N. Farmer
$1,520 paid on:
debt to father 1000
now payable 220
Pump shed 300
– you still have the value of these capital items at end of year.

Last Year **INCOME**

70	cows at 300 lb BF/cow = 21,000 lb		
21,000	lb BF at advance payment of 25 c/lb		5,250
21,000	lb BF at deferred payment of 6 c/lb		1,260
47	bobby calves	@ $ 10	470
13	cull cows	@ $ 50	650
	bulls	@ $	–
Surplus or stud dairy stock			–
Pigs			–
Beef 10 15-month steers 500 lb @ $20 per 100			1,000
Sheep 200 lb Wool (killers) 30c/lb			60
Other farming income Pinetrees, less mill charges			150
			X $8,840

EXPENDITURE

Purchases dairy cattle	–
Purchases other stock 10 Friesian bull calves @ $15	150
Farm expenses from page 2	2,700
	Y $2,850
Cash Surplus From Farming (X – Y)	$5,990

Plus other RECEIPTS (interest, dividends,etc.)

		Farm Cottage Rent add	150
			$6,140

Less other PAYMENTS

Drawings	3,500		
Life Insurance	100		
Taxation	250		
Debt Repayment	1,000	(A.N. Farmer Snr)	
Capital Expenditure Plant	220	(Hayrake)	
buildings	300	(pumpshed)	
development		$5,370 total of other payments to Deduct	$5,370
		Estimated surplus/ deficit	$ 770

FARM EXPENSES

FARM WORKING EXPENSES

Wages	– Permanent	–
	– Casual	–
Animal Health 70 cows @ 2.00		140
Bloat 70 cows @ 60c		42
Herd Improvement	Breeding – A.B.	120
	Herd Testing PRT	35
Contractors		–
Shed Expenses		60
Electricity		140
Haymaking 1500 bales @ 10 cents		150
Silage Making		–
Purchased feed (dairy stock) 1 ton dairy meal (less subsidy) $35 + molasses 50		85

Last Year	Purchased feed (pigs)	–
	Shearing 20 Killers	5
	Grazing	–
	Fertilizer 14 ton 30% Potassic $20 per ton	280
	Lime	–
	Freight	–
	Seeds 120 lb Ariki (oversowing) @ 40c per lb	48
	Weeds and Pests, Porina Control 25 acres @ $4 per acre	100
	REPAIRS AND MAINTENANCE	
	Dwelling, Paint	120
	Buildings, Cement and Shingle –cowshed floor repairs	80
	Drains, Cleaning	30
	Races and Tracks	–
	Fences/Hedges, $80 fencing materials, $70 Hedge cutting	150
	Plant and Machinery	50
	Water supply	–
	VEHICLE EXPENSES	
	Fuel and Oil	–
	Car	300
	Tractor	110
	Gnat	50
	ADMINISTRATION	
	Accountancy	50
	Phone, mail, bank charges, subscriptions, etc.	120
	Legal Expenses (re Ragwort prosecution)	50
	STANDING CHARGES	
	Insurance	15
	Interest 1st Mortgage to A.N. Farmer (Senior)	300

Last Year	Interest	–
	Rates	70
	Rent	–

FARM EXPENSES

(transfer to page 1 **$2,700**

SECTION 1

GENERAL AND PHYSICAL DATA

(1) TOTAL CAPITAL INVOLVED

(a) Land and Buildings

Where a recent Government Valuation is available this is probably the best guide there is to the overall value of the property. If the Government Valuation is three or four years old then some adjustment of the figures may be necessary. This should be done in the light of the movement in land values since its release and include any major improvements made on the farm since the last Valuation. The Unimproved Value is useful in assessing Land Tax where this is not known but the important figure is the Capital Value of the property as a whole.

For budget purposes this is split up between Land and Buildings. If varying grades of land are found on the property then the land value may be split up into several sections valued differently, the total of these summing to the overall Paddock Value. The Capital Value is usually also expressed as a figure per acre of the farm, and per stock Unit carried on the farm or per unit of production (e.g. per lb butterfat) for comparative purposes.

(b) Stock

The numbers to be used in assessing capital tied up in stock should include only the normal breeding animals and replacements which will be carried. Thus fattening lambs or cull boner dairy cows still on hand when a property was visited in April would be included in Capital Stock. The value used per head should be autumn clearing sale or Ewe Fair values interpreted on a reasonably conservative basis. As stock numbers are written down the overall carrying capacity in stock units can also be determined.

(c) Plant

Valuations of plant should also be made on the basis of local clearing sales interpreted conservatively. The up-to-date price list for new equipment is very useful in assisting with these assessments.

(d) Working Capital

This is a part of the necessary capital needed to run the property but is often forgotten by people when purchasing a property. On sheep farms and certain types of horticultural properties (e.g. tobacco) income is concentrated

in one part of the year but expenses must be met throughout the year and money for this purpose must either be set aside or borrowed. On dairy properties incomes is fairly evenly spread and this difficulty is not met to the same extent.

There are two sources of working capital:

(1) Farmer's own cash.

(2) Borrowed money. In this case working capital is largely provided by stock firms and Banks. The amount of working capital needed for any one particular farm is a function of total expenditure and the time pattern of income.

With stock firm and bank advances interest is charged on the day to day balance of the account hence the average level of the advance is the working capital figure required for budget purposes. It should not be forgotten however that some farming enterprises reach a peak of advances at certain times of the year much greater than their average level. This may well present financial problems which are not immediately obvious when the average figure is assessed.

Working capital requirements are difficult to assess accurately. Each property and each farming type tend to have their own individual characteristics. The table below presents a rough guide only. It is constructed by considering the working capital requirements as a percentage of the value of land, buildings, stock and plant.

Table I **Working Capital Requirements of Various Farm Types**

Farm Type	Percentage of Value of Land, Building Stock and Plant
Dairying (Intensive)	2%
Dairying and Mixed	3%–4% depending on comparative size of dairy enterprise
Sheep and Cropping	4%–5% depending on amount of crop and small seeds

Table I (Continued)

Farm Type	Percentage of Value of Land, Building, Stock and Plant
Sheep (Intensive Fat Lamb)	5%
Sheep (Hill Country Store)	6%
Poultry	5%
Market Gardening	5%–10% depending on spread of sales
Orchard or Nursery	10%–15% depending on spread of sales
Tobacco and Hops, etc.	10%–15% depending on spread of sales

At the end of the set out of capital a summary is usually made showing the total capital involved in the farm. This figure is used later to assess efficiency and it is a very useful guide for later work on farm finance.

(e) Working Capital Profile

This is the term used to describe the way a farmer's net monthly balance of income and expenditure moves over the period of a year. It is important for students to realize that although two farms may have the same average working capital requirements the monthly patterns of these may be entirely different. Some examples of different working capital profiles are given below.

Farm A

Town Supply Dairy Farm – 170 cows, 220 acres
(Buying in Feed October and December)

Month	Income	Expenditure	Monthly Balance	Working Capital Profile
				0
July	$ 3,401	$ 1,497	$ 1,904	$ 1,904
August	2,349	1,506	843	2,747
September	2,645	1,423	1,222	3,969
October	2,921	5,776	– 2,855	1,114
November	4,016	3,097	919	2,033
December	4,057	7,177	– 3,120	– 1,087
January	2,028	713	1,315	228
February	2,855	3,176	– 321	– 93
March	2,355	2,596	– 241	– 334
April	3,635	1,328	2,307	1,973
May	2,915	2,301	614	2,587
June	4,477	4,566	– 89	2,498
TOTAL	**37,654**	**35,156**		

Farm B

Hill country sheep farm – 1200 acres, 2300 ewe, 900 hoggets
50 breeding cows, pre lamb shearing

Month	Income	Expenditure	Monthly Balance	Working Capital Profile
				0
July	–	1,257	– 1,257	–1,257
August	–	745	– 745	– 2,002
September	5,385	1,235	4,150	2,148
October	–	1,706	– 1,706	442
November	3,816	1,936	1,880	2,322
December	986	4,395	– 3,409	– 1,087
January	55	1,665	– 1,610	– 2,697
February	4,186	1,298	2,888	191
March	–	1,976	– 1,976	– 1,785
April	6,544	1,009	5,535	3,750
May	1,288	4,968	– 3,680	70
June	1,357	662	695	765
TOTAL	**23,617**	**22,852**		

Farm C

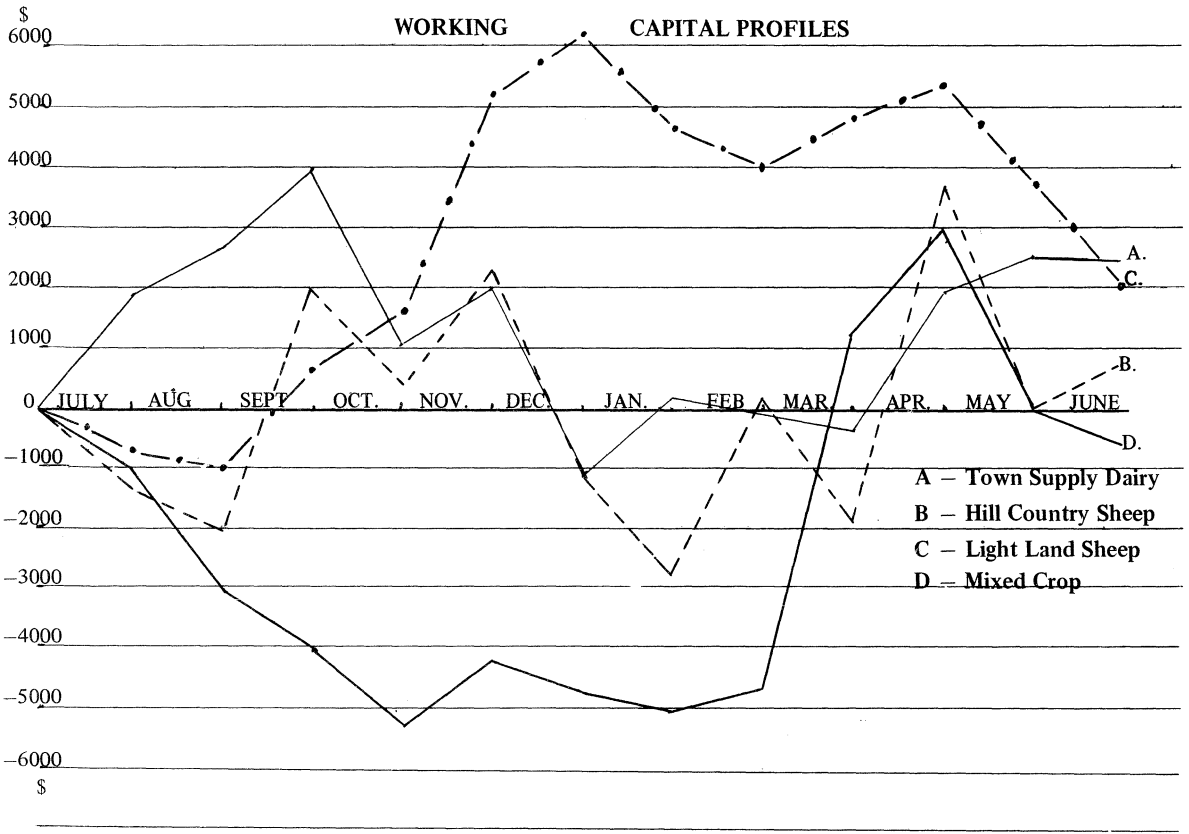
Light land Sheep farm – 950 acres, 2200 Ewes, 600 ewe hoggets
July and October Shearing

Month	Income	Expenditure	Monthly Balance	Working Capital Profile 0
July	60	751	– 691	– 691
August	729	1,029	– 300	– 991
September	3,190	1,550	1,640	649
October	1,836	870	966	1,615
November	5,723	2,115	3,608	5,223
December	3,818	2,767	1,051	6,274
January	–	1,563	– 1,563	4,711
February	1,040	1,695	– 655	4,056
March	2,418	1,594	824	4,880
April	2,570	2,049	521	5,401
May	–	1,604	– 1,604	3,797
June	620	2,259	– 1,639	2,158
TOTAL	**22,004**	**19,846**		

Farm D

Mixed cropping farm – 340 acres, 150 acres grain, 50 acres peas 50 acres ryegrass seed, 50 acres white clover, 500 ewes

Month	Income	Expenditure	Monthly Balance	Working Capital Profile
				0
July	541	1,513	– 972	– 972
August	44	2,063	– 2,019	– 2,991
September	437	1,465	– 1,028	– 4,019
October	–	1,182	– 1,182	– 5,201
November	4,686	3,627	1,059	– 4,142
December	790	1,309	– 519	– 4,661
January	1,086	1,387	– 301	– 4,962
February	1,670	1,335	335	– 4,627
March	8,070	2,165	5,905	1,278
April	4,943	3,192	1,751	3,029
May	2,512	5,533	– 3,021	8
June	1,713	2,236	– 523	– 515
TOTAL	**26,492**	**27,007**		


WORKING CAPITAL PROFILES
$
6000
5000
4000
3000
2000
1000
0
−1000
−2000
−3000
−4000
−5000
−6000
$
JULY
AUG
SEPT
OCT.
NOV.
DEC.
JAN.
FEB
MAR
APR.
MAY
JUNE
A.
C.
B.
D.
A – Town Supply Dairy
B – Hill Country Sheep
C – Light Land Sheep
D – Mixed Crop

(2) STOCK RECONCILIATIONS

In constructing a budget for a twelve monthly period it is necessary to isolate the total stock production for the year in question. This is done in a stock reconciliation which sets out:

1. the number of stock in the varying age groups which are on the property at the beginning of the period (usually taken at 1 July)
2. the numbers of stock bred or bought during the period
3. an estimate of the deaths likely during the year
4. an estimate of the numbers of stock likely to be killed for the house or for dog tucker during the year
5. the numbers of sale stock disposed of during the period
6. leaving the stock on hand in each age group at the end of the period. An example of this is presented further on.

From the sales column of the stock reconciliation it is then possible to extract sale stock numbers for the year which are used in estimating gross income for the year. Similarly from the stock purchases column the necessary figures are extracted to be used in calculating gross expenditure.

Where stock numbers are static this reconciliation will give the normal annual numbers of stock bought and sold but where stock numbers are being increased a false picture of unusually low annual sales or high annual purchases will be obtained. Conversely where stock numbers are falling the opposite effect will occur and annual income as calculated in the Budget will be artificially high.

Breeding Table

Time of Service		Calving Date		Lambing Date		Farrowing Date	
July	9	April	17	December	5	October	31
July	23	May	1	December	19	November	14
August	6	May	15	January	2	November	28
August	20	May	29	January	16	December	12
September	3	June	12	January	30	December	26
September	17	June	26	February	13	January	9
October	1	July	10	February	27	January	23
October	15	July	24	March	13	February	6
October	29	August	7	March	27	February	20
November	12	August	21	April	10	March	6
November	26	September	4	April	24	March	20
December	10	September	18	May	8	April	3
December	24	October	2	May	22	April	17
January	8	October	17	June	6	May	2
January	22	October	31	June	20	May	16
February	5	November	14	July	4	May	30
February	19	November	28	July	18	June	13
March	5	December	12	August	1	June	27
March	19	December	26	August	15	July	11
April	2	January	9	August	29	July	25
April	16	January	23	September	12	August	8
April	30	February	6	September	26	August	22
May	14	February	20	October	10	September	5
May	28	March	6	October	24	September	19
June	11	March	20	November	7	October	3
June	25	April	3	November	21	October	17

Sheep: 5 months less 4 days. Cows: 9 months plus 9 days.

Table of Oestrum

	Duration of Oestrum	Return after Parturition	Recurrence if not impregnated
Ewe (Merino)	36–48 hrs	60–150 days if no suckling, otherwise, 4–6 months.	17 (12–19) days
Cow	14 hrs (10–18 hrs)	41–60 days	21 (18–24) days
Mare	4½–9 days	9–14 days	21 (13–25) days
Sow	2–3 days	7 days after weaning	21 (14–26) days
Bitch	4–13 days	5–6 months	5–6 months

Periods of Gestation

	Shortest Period	Usual Period	Longest Period
	Days	Days	Days
Mare	322	347	419
Ass	365	380	391
Cow	240	283	321
Ewe	146	154	161
Sow	109	115	143
Goat	150	156	163
Bitch	55	60	63
Cat	48	50	56
Rabbit	20	28	35
Turkey sitting) Hen	27	24	28
on the eggs) Duck	24	27	30
of the ..) Turkey	24	26	30
Hen sitting on) Duck	26	30	34
the eggs of the) Hen	19	21	24
Duck	28	30	32
Goose	27	30	33
Pigeon	16	18	20

(3) SHEEP PERFORMANCES

Lambing Percentage

There are two common methods of calculation

1. $\frac{\text{Number of Lambs Docked}}{\text{Number of Ewes Put to Ram}} \times \frac{100}{1}$

2 $\frac{\text{Number of Lambs Docked}}{\text{Number of Ewes alive at Docking}} \times \frac{100}{1}$

The first method is the more usual but the second method is used by some farmers. The first is the only true basis and students should be careful to obtain and calculate the correct figure on each property.

Mortality

An average figure for a ewe flock on low country is 4 to 5 per cent (usually 5 per cent for budget work). In hard country death rates become much higher and less regular from season to season. Deaths in lambs are irregular. Evidence suggests that they are of the order of 15 per cent of the total ewe flock on Plains land between dropping and docking and there is an opportunity here for better farm management. In budget work this loss is neglected and death rates are considered from docking to sale. Store lambs are normally sold at weaning and fats partly off mothers and partly off feed. Average death allowances are 2–3% for stores and 3–4% for fats.

Lambing Survival

A useful budget approach is to include deaths from docking to sale in a blanket calculation of a lambing survival percentage known as "Percentage Survival to Sale or Flock." This figure will usually be 2–3% less than a farmers tailing percentage.

Flock Replacements

The useful life of a breeding ewe varies considerably depending on the type of country on which it is being carried. Eventually ewes must be culled to breed on easier country, or (apart from a few used for dog tucker) sent to

the freezing works. It is necessary to make provision for replacement of the total annual loss from the flock (which includes death as well as culls) if static flock numbers are to be maintained.

Age Ear-Mark and Cast-for-Age

On many hill properties an age ear-mark is applied at docking as well as the registered ear-mark. Such properties usually set cast ewes as "guaranteed Four Year Olds" or "guaranteed Five Year Olds" meaning they have produced 3 and 4 crops of lambs respectively and these sheep command a premium at ewe fairs. Other hill properties discard solely on an inspection of the mouths in the autumn and these lines command prices in direct relation to their mouths and general appearance. In many cases there is doubt as to the genuineness of the title "Four Year Old" or "Five Year Old" given to these lines at ewe fairs or main saleyards.

Culling

It is usual to cull to some extent in hill breeding ewe flocks using Romney, Corriedale or Half-Bred rams and unusual to cull much in fat lamb flocks using the Down type of ram. Culling is heavy in ewe lambs and 2 tooth ewes. Usually total numbers of ewe lambs are sufficient to allow fairly heavy culling in selection of ewe lambs to go into winter and culls will have a ready sale as ewe lambs to Plains buyers. Even so it is normal to take at least 110% of 2 tooth ewes plus deaths into the winter as ewe hoggets and often 120 to 125%. Ewe lambs winter differently and for this reason it is desirable to be able to cull to some extent as 2 tooth ewes the following autumn. These cull 2 tooths are sold in truck lots at ewe fairs and often bring high prices.

In large ewe flocks on hill country it is the practice to cull in the autumn at the 4, 6 and 8T stage for such things as bearing trouble, bad udders, poor constitution etc., and small lines of 4, 6 and 8T ewes may be offered at ewe fairs. Usually these are a particularly bad buy for Plains farmers.

Home Killing and Dog Tucker

On sheep properties an allowance of ½ a sheep per household per week is an approximate guide. Where single men are employed this allowance should be stepped up. It is usual to carry over cull lambs for house meat but

wether hoggets may be bought. On small properties dogs will be fed on household scraps, offals from home killings and an occasional old ram or ewe. On larger holdings more dogs are needed and a proportion of old ewes will be killed for dog tucker.

Rams

It is usual to purchase rams as "one-shear" at local ram fairs. Ram fairs are stud or flock and the average farmer purchases at "flock" fairs. Rams will last "on average" 4 breeding season and are usually disposed of by killing for dogs. The usual allowance is 5 per 200 ewes with more rams on harder country and perhaps as low as 1 per 100 ewes on the best flats and lowlands where the country is good and rams are tested by a veterinary surgeon before the season starts.

Sheep Reconciliation and Methods of Calculating Annual Draft Necessary to Maintain the Ewe Flock

It is essential in any budgetary estimate to state the number and performance of the sheep flock on the property and to tie this up in a stock reconciliation covering a twelve month period. An example is given here of a store sheep unit carrying 2,000 ewes and breeding own replacements. Ewes last 5 seasons and 100 per cent of lambs survive to weaning. Mortality in the ewe flock is 5 per cent and approximately 5 per cent of the 4, 6 and 8 tooth ewes and the 5 years ewes are culled each year. Twenty per cent of the 2 tooth ewes are culled before going into the ewe flock.

Procedure is as follows:

1. Establish the total loss from the ewe flock annually which is 5% deaths and 5% culling or approximately 200.
2. Ewes are kept 5 seasons so divide this total loss by 5 to get the approximate loss in each age group of the flock $200 \div 5 = 40$. There are more sheep in the younger age groups but stock losses tend to increase with age after the 2T year so equal annual losses have been allowed.
3. In a flock being kept for 5 season, more than 1/5th of the sheep are 2T, more than 1/5th are 4T, approximately 1/5th 6T, less than 1/5th are 8T and less again are 5 year olds because of deaths. The flock composition

is found by taking 1/5th of the total flock and calling this 6T ewes,
e.g. 2,000 x 1/5th = 400 6T ewes
The number of sheep in each other age group is then found by adding or subtracting the appropriate number of annual losses per age group,
e.g. number of 2T ewes =

$$400 + (2 \times 40) = 480 \text{ 2T}$$

4. Flock Composition:

480 2T ewes
440 4T ewes
400 6T ewes
360 8T ewes
320 5 year ewes

2,000

5. Cull mixed age ewes for sale. These make up half of the annual loss per age group, e.g. $\frac{40}{2}$

$\therefore$ 20 4T ewes
20 6T ewes
20 8T ewes
20 5 year ewes

80 for sale annually

6. Cast for age ewes for sale are 320 less half the annual loss per age group (deaths only, as they are all being culled.)

e.g. $320 - \frac{40}{2}$

= 300 less say 20 for dog tucker

= 280 C.F.A. ewes to sell

7. Two tooth ewes required are sufficient for 20% culling.

$\therefore$ $480 \times \frac{120}{100} = 576$ of which 96 will be culled.

Ewe lambs to be kept at weaning to ensure this number of 2T ewes allowing 5% death rate in ewe hoggets.

= $576 \times \frac{100}{95} = 607$, say 610 and cull 99 2T

8. Lamb disposal: 100% survival to sale or flock

∴ 1,000 wether lambs to sell less 50 killers
1,000 ewe lambs less 610 to flock gives 390 to sell
Less 20 culls for house mutton and dog tucker
= 370 ewe lambs to sell

9. This stock performance will now be formally summarized in a stock reconciliation. (over page).

10. Summary of Sales:

Wether Lambs:	Prime fat off the mothers	9%	= 90		
	Second fat off the mothers	1%	= 10		
	Prime fat off Feed	50%	= 500		
	Seconds fat off Feed	35%	= 350	=	950
Ewe Lambs				=	370
2T Ewes				=	99
Mixed Age Ewes (Culls)				=	80
Cast for Age Ewes				=	280

Summary of Sheep Killed:

49 Wether hoggets and 2T wethers for the houses
20 Ewe hoggets (some for the house, rest for the dogs)
20 Old thin ewes for dogs
10 Old rams for dogs

Stock Reconciliation

Class of Stock	No. at 1st July	Stock Bought	Natural Increase	Stock Sold	Deaths and Miss'g	Kill for House or D.T.	Trans-fers within flock	Sub-total	Stock at 30 June
Wether Lambs	–	–	1000*					1000	
				950	–	–	50	1000	–
Ewe Lambs	–	–	1000*					1000	
				370	–	–	630	1000	–
Ewe Hoggets	630	–	630					1260	
				99	31	29	480	630	630
2T Ewes	480	–	480					960	
				20	20	–	440	480	480
4T Ewes	440	–	440					880	
				20	20	–	400	440	440
6T Ewes	400	–	400					800	
				20	20	–	360	400	400
8T Ewes	360	–	360					720	
				20	20	–	320	360	360
5 year Ewes	320	–	320					640	
				280	20	20	–	320	320
Rams	50	13	–					63	
				–	3	10	–	13	50
Killers	60	–	50					110	
				–	1	49	–	50	60
	2740								2740

* This is the number which survive to sale or entry to the home hogget flock.

(4) WOOL PRODUCTION

Adult sheep are usually shorn once per year, dry sheep in September October and wet sheep after the dry shearing. Wet ewes may also be shorn pre-lambing (usually August) and this practice is growing in certain districts. The practice of shearing 3 times every 2 years (pre-lambing every second year) is also growing. In the South Island most sheep are first shorn as hoggets 13 months after birth although a proportion are shorn in January. This practice is more common in the damper districts and particularly in the North Island.

Crutching

Lambs which are not shorn are crutched in January–February. Ewes are crutched in June–July and may also be lightly crutched or "ring-crutched" before rams go out.

Yields and Main Classification

The main classification of wool is into fleece wool, bellies, pieces, necks and locks. In addition there are crutchings and often dags and dead wool. For budgeting purposes these last two may be neglected although they may be appreciable on big properties and when wool prices are very high.

A useful classification of wool is into fleece and oddments. An average weight of fleece wool from good ewes is 7.5 lb. Bellies will be about 0.5 lb, pieces about 1 lb or just under, necks 0.25 lb, and locks 0.1 to 0.2 lb. These last are often put in with pieces in the clips of small farmers. Ewe crutchings are of the order of 0.5 to 0.66 lb making a total of a 10 lb clip for the year. This is where a good class of sheep is fed well. As a guide it may be said that a few flocks have averaged 12 lb and some as low as 6½ and 7 lb.

A Canterbury Plains mixed age ewe flock of the Corriedale or Half bred type would average a total clip of about 10 lb or just under.

Hoggets shorn as lambs would average 6 – 7 lb

Long woolled lambs clip about 2½ – 3 lb

Lambs crutch about ¼ – 1/3 per head

Budgeting Procedure

When quoting wool weights it should be clear that figures refer to numbers actually shorn and that weights include crutchings and do or do not, include lambs wool (if it is district practice to shear lambs.)

Obtain shearing tallies by deducting ½ to 2/3 of the annual deaths, depending on the month of shearing. Assess the wool weight per class of sheep and obtain the total wool yield per class of sheep. Add the totals, then, with the weighted price for the whole of the fleece clip, assess the income from wool. Normally current quotations for the Average Grade of the major class of wool in the clip are a good guide to overall price per lb.

An example:

No's at 1.4. ..	Less Deaths	Shearing tally	Wgt/sheep including crutchings	Total
1000 ewes	30	970	10 lb	9,700
400 hoggets	6	394	7½ lb	2,955
1050 lambs shorn		1,040	2½ lb	2,625
lambs crutched				
100 rams and killers	30	70	10 lb	700
	Total shorn	2,484	Total Clip	15,980 lbs

(5) BEEF CATTLE PERFORMANCES

Cattle are rapidly becoming a general feature of Canterbury Plains farming. They are a characteristic feature on Banks Peninsula and in the foothills and appear to be on the increase in the back country. Banks Peninsula buys larger numbers for fattening as do some farmers on heavier wet areas of the Plains. Values vary greatly from month to month and a close check should be made with current reports when doing budgets.

Calving Percentage

On places rearing store cattle an average calving percentage is 85. As the ruggedness of the country increases this percentage quickly decreases down to about 60%. Harsh winter conditions will lower the percentage as well.

Deaths

A usual figure is 2–3%. This varies too with the nature of the country. It may be as high as 5–6% in years with a hard winter and late spring.

Replacements

A breeding cow on hill country will usually produce about 6 calves and in Canterbury heifers are mated to calve down at 3 years old. About 20–22% of the number put to the bull are usually 2 year old heifers. This allows for some not getting in calf. Bulls last about 4 seasons on average.

Sale Stock

Weaners	A number of farms on better country follow this practice of selling weaners and keeping the maximum number of cows. All weaner steers and about half the weaner heifers will be sold here.
Yearlings	Some farmers hold their weaners over the winter and sell in the spring to fat lamb farmers. All the steers and 75% of the heifers will be sold in this case.

2 and 3 year old Stores

This is only practised on the hard hill country in both islands. No weaners or yearlings are sold. All the 2 and 3 year old steers are marketed at the regular spring fairs.

The 2 year old heifers will be sold either fat, or forward to lowland farmers some for breeding and some for fattening. In this case both steer and heifer prices are fairly closely related to export schedule prices in the North Island.

Fat Cattle

For the greater part of the year in the South Island it is a butcher's market, although with more top-dressing cattle are becoming more important in the South Island. The present export schedule covers N.Z. except for Southland where a yield grading system is operated based on the yield of red meat per carcase. Export schedules are printed in the daily press and in the monthly journal, The Meat Producer.

Approximate Dressing Percentages of Beef Cattle

Useful for estimating the outcome of a fattening venture

Class of Animal	Dressing %
Store Cattle	45–48
Grass fattened	50–53
Crop fattened	52–55
Grain fattened	54–58

The carcases beef gain (expressed as a percentage of liveweight gain) during a short fattening period may be approximated between 65 and 70 per cent. A lower percentage gain may be expected when the fattening period exceeds 3 months.

Dressing percentage varies widely and is influenced by the degree of fill at weighing time, age and degree of finish.

Stock Reconciliation

As an example of the usual set out of a stock reconciliation for beef cattle a herd of sixty breeding cows and replacements selling 2 year old store cattle has been adopted. Cows last six breeding season apart from an odd death or cull and calving percentage is 84%. Overall death rate is 2%.

Class	No on hand 1.7	No. bought	Natural increases	Sales	Deaths	Killers	Trans. within herd	Sub-total	Est. on hand 30.6
Steer	–	–	25	–	–	–		25	–
							25	25	
Heifer Calves	–	–	25	–	–	–		25	
							25	25	–
1 yr old Steers	25	–	25	–		–		50	
					1		24	25	25
1 yr old Heifers	25	–	25	–	–	–		50	
							25	25	25
2 yr old Steers	24	–	24					48	
				24	–	–	–	24	24
2 yr old Heifers	25	–	25		–	–		50	
				12	1		12	25	25
Breeding Cows	60	–	12					72	
				11	1	–	–	12	60
Bulls	2	1	–		–	–	–	3	
				1				1	2
	161								161

Summary of Sales:

24	2 year old store steers
12	2 year old breeding heifers
1	cull fat 3 year old heifer
1	cull boner bull
10	cull breeding cows
48	

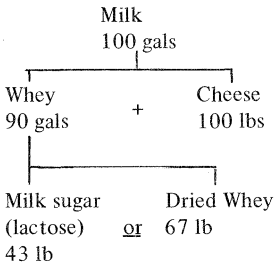
(6) DAIRY STOCK PERFORMANCES

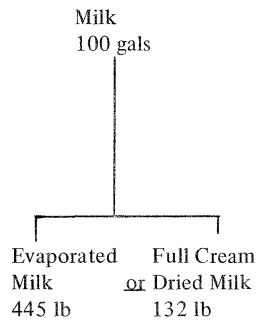
Milk Products – Physical Data

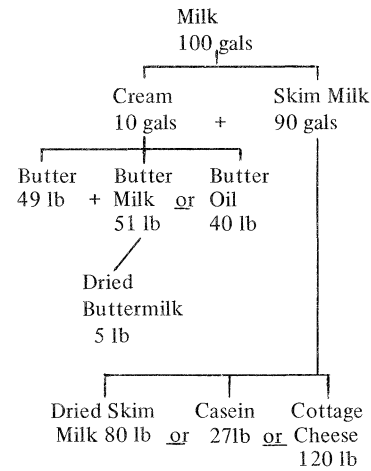
(a) Dairy Weights, Measures, Contents and Formulae:

1 gallon of milk weighs 10.32 lb
1 gallon of average milk yields 1 lb of cheese
100 lb of average milk when separated yields 10 lb cream, 90 lb skim milk
1 gallon of 4% milk will produce either 1 lb cream at 41% fat or ½ lb butter at 82% fat.
82 lb butterfat should make 100 lb butter.

(b) Relative amounts of Product Available from 100 Gallons of Wholemilk







NOTE:

The term "butterfat" which has been used throughout this publication is being replaced by "Milk fat". "Butterfat" has been used to avoid confusion, but "Milk fat" is now more correct.

Cow Production

(a) Butterfat Production

Work from butterfat figures supplied to the factory not from herd test figures. For budget purposes obtain from the farmer as many years factory production as possible, the number of cows and heifers to be milked that season and estimate the number of effective milkers, assess factory fat per cow and compare the total production with previous production, taking due regard of the season and also efficiency, past and present of the management of the farm.

(b) Town Milk Production

The above remarks also apply to town milk producing properties. Here the concept is total gallons sold. The main difficulty in assessing gallons per cow, is to obtain the effective number of cows milked in the year. A useful method is to total the number of cows milked per month for the whole year. A Town supply cow usually milks for 9½ months so this total is then divided by 9.5.

Herd Replacements

(a) Herd Wastage

Analysis of wastage and culling figures produced in 1968–69 by the N.Z. Dairy Production Marketing Board are as follows:

Cause of Wastage	%
Sold for Dairying	1.20
Accident or Injury	0.28
Low Production	7.34
Old Age	0.75
Unsuitable Temperament	0.40
Sold–reason not given	2.56

Disease	%
Bloat	1.02
Calving troubles	0.16
Catarrh	0.04
Facial Eczema	0.32
Lameness (including arthritis)	0.12
Leptospirosis	0.02
Mastitis	0.88
Metabolic:	
Grass Staggers	0.05
Milk Fever	0.12
Other	0.14
Reproductive:	
Abortion and Brucellosis	0.57
Low Fertility	3.78
Tuberculosis	0.32
Deaths–cause unknown	0.64
Wastage–all diseases	**8.18**
TOTAL WASTAGE	**20.71**

For budgeting purposes 18–23% could be taken, the figures assessed after obtaining all the pertinent factors about the farm, the management and the district. Cull cows are invariably sold as boners; for prices see Beef Schedule.

(b) Calving percentages (Calves produced per 100 cows and heifers wintered)

N.Z. calving percentage averages 90% (5–7% of cows fail to get in calf while a further 3–5% cows mated abort.)

Approximately 4% of the calves born die at birth, or are born dead; this leaves an effective calving percentage of 86%.

(c) Number of heifers available as replacements

In effect this is 43 heifer calves available for rearing, but it includes late calves and free martins which are not suitable and are disposed of as bobby

calves. They amount to approximately 20%. Thus you have left 32 heifer calves suitable for rearing. Losses from one month to 2 years approximate 10% and of those which survive to the 2 year old stage 5% prove not in calf. Thus we eventually have 27 heifers that will calve into the herd. As approximately 20% are required to maintain the numbers in a herd, it can be seen that there are 7 heifers which can be sold for dairying or need not have been reared. It is usual for a farmer to ensure he has sufficient replacements by having the number of yearling heifers equivalent to 25% of his milking herd.

(d) Bulls

The average herd life of bulls is 4 years, this means that having been used in the herd for the first time when 15 months old the average bull would be 6 years old when culled.

The main causes of loss or disposal are, prevention of inbreeding, poor results from progeny, sterility, accidents, and because of not being able to manage a bad tempered beast. The increasing use of A.B., plus the high remuneration received from a potter bull in recent years has tended to reduce the active life of a bull in the herd.

(For potter bull realisations see Beef Schedule)

Stock Reconciliation (Seasonal Supply Herd)

An example of the usual set out of the stock reconciliation for a normal seasonal supply dairy herd is presented below. The herd comprises 80 cows and replacements. Effective milkers number 74.

Class	No. on hand 1.7.	No. bought	Natural increases	Sales	Death	Killers	Trans. within herd	Sub-total	Est. on hand 30.6
Heifer Calves	–	–	36	14	2	–	20 20	36 36	–
Bull Calves	–	–	36	35	1	–	–	36 36	–
Yearling Heifers	20	–	20	2	2	–	16	40 20	20
Milking Cows and Heifers	80	–	16	13	–	–	–	96 16	80
Bulls	2	–	–	–	–	–	–	2 –	2
	102								102

Summary of Sales:

49	Bobby Calves
2	2 year old in calf heifers
13	Cull cows
64	

Stock Reconciliation (Town Supply Herd)

Unlike the normal dairy reconciliation this has autumn born calves on hand to begin and end. It also differs in that the heifers are usually not calved down until aged 2½ years. An example for an 80 cow herd which both breeds and buys replacements is presented below. This is common practice since wastage is rather higher in town supply herds and less calves are usually reared since whole milk is being sold.

In effect the herd has been split into two—the spring calvers (30% of the total) and the autumn calvers (70% of the total). Note that the autumn calves go into the spring herd while the spring calves go into the autumn herd.

Class	No. on hand 1.7.	No. bought	Natural increases	Sales	Deaths	Trans. within herd	Sub-total	Est. on on hand 30.6
Heifer calves (autumn born)	6	–	25	18	1	6	31 25	6
Bull calves (autumn born)	–	–	25	24	1	–	25 25	–
18 month old heifers	6	–	6	–	1	5	12 6	6
Spring calving cows	25	–	5	4	1	–	30 5	25
Heifer Calves (spring born)	–	–	11	4	1	6	11 11	–
Bull calves (spring born)	–	–	11	11	–	–	11 11	–
Yearling heifers	6	6	6	–	–	12	18 12	6
2 year old heifers	12	–	12	–	–	12	24 12	12
Autumn Calvers (cows in milk)	55	–	12	9	3	–	67 12	55
Bulls	2	1	–	1	–	–	3 1	2

Town Milk Production

The milk year operates from September 1st to August 31st. The price in any one particular year is by a special formula to the guaranteed price for butterfat supplied to cheese factories. It is computed by the N.Z. Milk Board who purchase the milk, on a guaranteed quota basis, from local pro-

ducer associations. The system of payment for quota milk, quantities in excess of quota, penalties for deficiencies, standards that town milk have to comply with, and seasonal payouts will become apparent when students visit town supply farms.

1. Quota Milk

The N.Z. Milk Board is guaranteed a daily quota supply by the local association, who in turn organise the obtaining of this quantity by allocating to farmer suppliers a daily quota for the whole year. The farmer must take out shares in the association to become a supplier and his milking shed and stock must comply with certain standards as set down by the Agriculture Department. The basis for allocation of quotas varies from one district to another, but with Canterbury Dairy Farmers Ltd., increases in quota are now (1971) related to the amount of surplus milk supplied in the months of February, June, July and the supplier's other lowest month of the year.

2. Quantities in excess of Quota (surplus milk)

All milk produced on a town supply farm is taken by the local association, and the milk in excess of requirements is usually sent in from the receiving depot to a local dairy factory, where a lower price is obtained. In the spring months nearly all producers send in milk above their quota, but in other months of the year a proportion of the producers are unable to meet their full quota, whilst other farmers do have an excess supply, and it is in these months that this excess milk is accepted at full quota prices.

The acceptance of surplus milk varies with the season; in general the Canterbury Dairy Farmers Ltd, pay out on the following basis:

September to January	—	full price paid for quota + 5%	All excess at surplus milk prices.
February and March	—	full price paid for quota + 15%	All excess at surplus milk prices.
April and May	—	full price paid for quota + 25%	All excess at surplus milk prices
June and July	—	full price paid for quota + 30%	All excess at surplus milk prices

August — full price paid for quota + 20% All excess at surplus milk prices.

3. Calving Pattern and Analysis of Production

Because the seasonal production of milk is so important on a town supply farm it is necessary to estimate the likely pattern of production (quota and non-quota milk) on a monthly basis so that likely deficiencies can be remedied and income can be more accurately estimated. To do this a table showing cows calving, and numbers in each month of their lactation, is drawn up. In such a table cows calving means the number which actually calve down and enter the herd rather than total cows carried, (i.e. effective milkers). Another point to note is that if say 10 cows are calving in August then because some calve late in the month there will only be an effective 5 for the whole month.

Besides a knowledge of numbers of cows in milk each month and the month of lactation which they are in, it is necessary to know the average production per cow per day in each month of lactation, to assess overall monthly production. The average Canterbury town supply herd produces and sells about 750 gallons of milk per effective cow. A good herd of Friesians well managed and fed should produce about 900 gallons per effective cow while one or two top herds are producing about 1050 gallons per cow. Lactation patterns of production in gallons per day per cow for each month of lactation are given below for each of these three levels of production.

Period	750 gals/cow	900 gals/cow	1050 gals/cow
1st month	3½ gals/day	4 gals/day	4½ gals/day
2nd month	4 gals/day	4½ gals/day	5 gals/day
3rd month	3½ gals/day	4 gals/day	4½ gals/day
4th month	3 gals/day	4 gals/day	4½ gals/day
5th month	3 gals/day	3½ gals/day	4 gals/day
6th month	2½ gals/day	3 gals/day	3½ gals/day
7th month	2 gals/day	2½ gals/day	3 gals/day
8th month	1½ gals/day	2 gals/day	2½ gals/day
9th month	1 gals/day	1½ gals/day	2 gals/day
10th month	1 gals/day	1 gals/day	1½ gals/day

In the spring months of September, October, November and December 5% should be added to the calculated total monthly production to allow for the spring flush.

The calving pattern outlined below as an example is of the 80 cow herd for which the stock reconciliation was constructed.

Calving Schedule

Month	Cows Calvg	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
July	–	–	–	–	–	–	–	–	–	–	–	–	–
August	14	–	7	14	14	14	14	14	14	14	14	14	–
Sept.	9	–	–	5	9	9	9	9	9	9	9	9	9
October	–	–	–	–	–	–	–	–	–	–	–	–	–
Nov.	–	–	–	–	–	–	–	–	–	–	–	–	–
Dec.	–	–	–	–	–	–	–	–	–	–	–	–	–
Jan.	–	–	–	–	–	–	–	–	–	–	–	–	–
Feb.	10	10	10	10	10	10	–	–	5	10	10	10	10
March	18	18	18	18	18	18	18	–	–	9	18	18	18
April	15	15	15	15	15	15	15	15	–	–	8	15	15
May	8	8	8	8	8	8	8	8	8	–	–	4	8
June	–	–	–	–	–	–	–	–	–	–	–	–	–
Year	74	51	58	70	74	74	64	46	36	42	59	70	60

From the calving schedule and the table of daily production one can quickly work out the total daily production and then multiply by days in the month to obtain the monthly production. For July in the table above we have at the 900 gallons per cow level of production:

10 x 3 (6th ”) = 30
18 x 3½ (5th ”) = 63
15 x 4 (4th ”) = 60
8 x 4 (3rd ”) = 32

185 gallons per day

and 185 x 31 = 5735 gallons for the month

This information for each month is tallied up and inserted in a schedule of estimated milk sales. Using the information set out in sub sections 1. and 2. together with price data for each period, total production is divided between that sold at quota price, and that sold at surplus price, and is valued accordingly. A quota of 80 gallons per day is assumed.

Schedule of Estimated Milk Sales

Month	Estimated Total Gals.	Gals. sold at Quota Price	Value $	Gals sold at surplus Price	Value $
July	5,735	5,735	1,990	–	–
August	5,920	5,920	2,054	–	–
September	6,960	2,400	833	4,560	580
October	6,770	2,480	457	4,290	545
November	5,640	2,400	442	3,240	412
December	4,600	2,480	457	2,120	270
January	3,110	2,480	457	630	80
February	2,515	2,515	572	–	–
March	3,940	3,940	896	–	–
April	5,760	2,880	999	2,880	366
May	6,880	2,976	1,033	3,904	496
June	6,360	6,360	2,207	–	–
Year	64,190	42,566	12,397	21,624	2,749

(7) PIG PERFORMANCE

Pig Production when associated with the Dairy Herd

Breeding Herds

The essential point to establish is the number of breeding sows to be carried in any one farming season. The herd will be in one of three states—static numbers or herd numbers increasing or decreasing. With static numbers it is fairly easy to establish the essential budgetary points of number of breeding animals required to maintain the herd and the number of chopper sows for sale at the end of their breeding life. The boar situation can be determined similarly. With changing herd numbers attention to the age of the sows is important and common sense provides the answer. Sows last on average about four years (7—8 litters) while boars are usually disposed of after three years because of difficulties with inbreeding.

Sale Numbers

The essential points are the number of litters per year, the litter size and the mortality. The answers are essentially an assessment of the inclination and standards of husbandry of the pig owner. The performance figures given below are taken from Recent Pig Council Surveys. In general the farmers in the survey would be above average in pig management.

Sow Cow Ratio

The Pig Council Survey average was 1 sow per 9.8 cows. In general efficient levels of production could be considered to be as follows:

Weaner production	1 sow per 4 cows
Porker production	1 sow per 6 cows
Baconer production	1 sow per 10 cows
Mixed Porker & Baconer	1 sow per 8 cows

Pigs born per Litter

The average figure was 9 piglets born per litter

Pigs weaned per Litter

The average figure was 7 piglets weaned per litter

Litters per Sow per Year

The average figure was 1.8 litters per sow per year

Pigs Sold per Sow per Year

The average figure was 11.1 pigs sold per year.

With the increasing trend towards specialist pig production not reliant on skim milk feeding, management improvement has resulted, and in this situation average production has improved. Figures of 2 litters per sow per year and 14 pigs sold per sow can reasonably be expected.

In general losses up until weaning amount to 20–25% of the total number of pigs born with post weaning losses about 3–5% of the total number of pigs born. Litters per sow range from 1.6 to 2.0 on average per year depending on levels of efficiency. The number of pigs sold per sow over New Zealand as a whole calculated from A. & P. statistics is only 10, so that obviously the Survey farmers are above average in their pig management.

Stock Reconciliation (Pigs)

As an example of a stock reconciliation for pigs the following situation is outlined. A farmer running 50 cows on cream supply has 8 sows producing almost all porkers. Efficiency is above average so that 9 pigs are born per litter and 7 are weaned.

The 8 sows produce 14 litters in the year and after allowing for post weaning deaths 95 porkers are sold each year.

Class	No. on hand 1.7.	No. bought	Natural increases	Sales	Deaths	Killers	Trans. within flock or herd	Sub-total	Est. on hand 30.6.
Young	14	–	126					140	
Pigs				95	31	–	–	126	14
Breeding	8	2	–					10	
Sows				2	–	–	–	2	8
Breeding	1	–	–					1	
Boar				–	–	–	–	–	1

Pig Prices

The crux of the matter is supply and demand. Where the supply is insufficient to meet demand or is fluctuating relative to demand there will be a fluid price level set by auction prices in accordance with the level of these two factors. This is largely the case in the South Island. Local supply is insufficient to meet demand and so auction prices at Addington and Burnside set the return to the producer. No study of these has as yet been made and students are directed to observe the prices in Wednesday's Press each week. For South Island budgets take 90 per cent of current Addington realisations for fat pigs. Store pigs must be interpreted according to the time of the year.

Pig Production – intensive "pigs only" basis

(i) Sows

Management of the sow herd is critically important as a means of generating profit in the pig enterprise. The sow production cycle is approximately 26 weeks and in excess of 2 litters per sow per year should be aimed for. Minimum sow performance of specialist pig units should be as follows:

No./litter born	=	11.0
No./litter reared	=	8.5
Litters/year	=	2.0
Pigs weaned/sow/ year	=	17.6

Feeding of Sows

Sows are usually grazed during pregnancy, the amount of supplementation depending on the nutritive value of grass eaten.

The following is a satisfactory level of feeding for sows:

Mating

4 to 6 meal units per day during mating and for 1 week thereafter
2 to 3 meal units per day in mid pregnancy
4 to 6 meal units per day over last three weeks of pregnancy

Suckling

4½ meal units per day and 1 meal unit for each piglet suckled

Breeder (Sow) Meal – $58–67/metric ton

(ii) Young Pigs

A palatable, concentrated and easily digestible meal should be provided from approximately 10 days of age.

Early Weaning Meal Mixture

	%	
Meat Meal	10	
Pea Meal	15	+ Supplement of vitamins
Pollard	20	A & D and of selenium
Barley	55	
	100	

Creep feeds are priced at 4.2 – 6.0 c./lb, weaner pellets at $65–77 per ton. Pigs are usually weaned at 5–6 weeks.

(iii) Growing–Finishing Pigs

The following table provides a guide for meal units to be supplied to fattening pigs:

Weight Range (lb)	Daily Ration (gals skim milk, or lbs meal)
36 – 40	1.50
41 – 45	1.75
46 – 50	2.00
51 – 55	2.25
56 – 60	2.40
61 – 65	2.50
66 – 70	2.60
71 – 75	2.75
76 – 80	2.90
81 – 85	3.00
86 – 90	3.10
91 – 95	3.25
96 – 100	3.40
101 – 105	3.50
106 – 110	3.60
111 – 115	3.75

Dressing percentages are 69–73%.

High protein weaner–grower meal (or pellets) should be fed to young pigs, and a gradual change to a finished ration should take place at 8–9 weeks.

Finisher Pellets – $59–67/ton.

Protein Supplementation

Recommend the "flat-rate" approach–½ to ¾ gallon skim milk per day or 2/3 to ¾ meat meal per day.

Alternatively, 10% meat meal with grain,

or 12% meat meal up to 50 lb liveweight
7% meat meal 50 to 100 lb liveweight
5% meat meal over 100 lb liveweight

Minerals:

Apart from known specific deficiencies, the only mineral supplements required are calcium carbonate and salt. Calcium is required only when neither milk nor meat and bone meal is used.

Usual mixture is four parts of limestone to one part of salt, fed at the rate of 1oz/pig/day for pigs on skim milk.

Copper requirement for piglets is 10 ppm – do not exceed 125 ppm
Iron requirements for piglets is 80 ppm – do not exceed 4000 ppm
Iodine requirement for piglets is 0.2 ppm
Selenium requirement for piglets is 0.1 ppm, toxic level is 5 ppm

Vitamins

Requirements for vitamins A & D can be met by including lucerne meal at 3% in the ration, or feeding 1½–2 oz per growing pig per day, or 5–7oz per adult pig per day.

Note:

For a description of meal units, and the yearly maintenance feed requirements of pigs, see Section "Feed Requirements of Pigs".

(8) FEEDING STANDARD FOR LIVESTOCK

In any integrated programme of production whether of livestock only, or of stock and crops in combination, it is necessary to be sure that adequate provision has been made for the livestock it is proposed to carry. Two aspects are involved here. On the one hand it is necessary to assess the probable amount of feed which will be grown on the property at different seasons of the year, and on the other hand it is necessary to assess the probable requirements of the livestock in these seasons and balance the stock requirements with the feed available.

This may be done in the highly accurate way adopted by the animal scientist by considering quantities of Digestible Dry Matter and Protein in the various feeds and balancing this with stock requirements (refer Animal Nutrition–I.E. Coop). Because of the complexity of the method a simpler system which takes as its base the feed requirements of an average Romney ewe plus her lamb at the different seasons of the year. Other stock including cattle and horses are rated on this scale.

Some theoretical difficulties arise when doing this because the spread of feed requirements of the sheep and the dairy cow differ (see Table I below). Provided one remembers this fact which makes fat lamb production much easier than dairy production in areas having a summer drought (see comparative monthly pasture production columns in Table I) little practical difficulty should be met. Of course it is also necessary to remember the need for a balanced diet when assessing the place of the various supplementary feeds.

Table I **Comparison of Monthly Stock Requirements as Percentages**

	Standard Ewe flock	Standard Ewe with twins	Jersey Herd	Friesian Herd	Beef Cattle Herd
January	5.1	4.3	9.0	6.1	10.6
February	5.1	4.3	8.6	5.1	10.7
March	5.3	4.4	8.2	7.4	5.9
April	5.4	4.6	7.8	8.6	5.9
May	5.6	4.8	6.2	9.3	5.9
June	5.8	4.9	5.2	8.6	6.0
July	7.0	7.0	7.5	8.6	7.3
August	10.8	11.5	9.0	9.3	8.1
September	13.3	15.0	10.0	9.7	8.8
October	14.3	15.8	9.7	9.7	10.0
November	14.3	16.0	9.5	9.2	10.3
December	8.0	7.4	9.3	8.4	10.5

Table II **Comparison of Monthly Pasture Production as Percentages**

	Canterbury Pasture (M-H)	Bay of Plenty Pasture
January	4.3	10.5
February	1.8	9.4
March	6.2	8.3
April	5.7	6.9
May	4.3	4.7
June	3.0	3.2
July	2.8	2.8
August	6.7	7.8
September	17.6	10.1
October	22.5	11.8
November	15.2	12.9
December	9.9	11.6

Table III Classification of Various Classes of Livestock in Ewe Equivalents

Class of Stock	Average Liveweight lbs	Ewe Equivalents		
		May–August	September–December	January–April
Sheep:				
Ewe –B/L x Romney	140	1.1	1.1	1.1
Romney	120	1.0	1.0	1.0
Corriedale	100	0.9	0.9	0.9
Merino	80	0.8	0.8	0.8
Hoggets–ewe	50– 90	0.6	0.5	1.0
Hoggets–wether +	80– 90	0.6	0.5	1.0
Wethers M.A.	110–120	0.7	0.5	1.0
Rams	160	0.8	0.5	1.0
Studs –ewes		1.25	1.25	1.25
–hoggets		1.0	0.75	1.25
Cattle (1) Beef:				
Br. Cow	1000	6.0	6.0	6.0
Heifer–weaner	300–600	3.5	3.5	4.0
yearling	600–800	4.0	4.0	4.5
2 yr old	800–1000	4.5	4.5	6.0
Steer–weaner	350–750	4.0	3.5	4.5
yearling	750–1100	5.0	4.0	6.0
(2) Seasonal Dairying:				
Jersey cow	800	6.5	6	7
yearling		2.5	3	4.5
calf		–	–	2
bull		5	4	5
(3) Town Supply:				
*Friesian cow	1200	10 + (x3)	5 + (x2)	5 + (x2)
Heifer 2 yr old		10	5	5
1 yr old		3	4	5
calf		–	2	3
bull		5	4	6
Horses: Hacks		7	5	9

The above ewe equivalent classification is basically from an article by Professor I.E. Coop published in the "New Zealand Agricultural Science" Vol. 1, No. 3, Nov. 1965. The recommended rates for town milk supply dairying have been adjusted however to reconcile with subsequent Farm Management Research which takes into account such factors as high wastage of feed involved in winter milk production etc. Similarly, stud sheep have been correspondingly increased due to the scope required in stud sheep farming.

* Town Milk Supply Friesian cow is assessed as follows:

10 E.E. maintenance plus no. gallons milk per day multiplied by 3 during winter and by 2 spring-summer-autumn, i.e. 750 gallons autumn calver cow for May-August is

$$10 + (3\frac{1}{2} \times 3) = 20\frac{1}{2} \text{ E.E.'s}$$

\+ Wether hoggets – winter fattening May–August as 1 E.E.

The above figures should be regarded as approximations and in applying these E.E. factors effects of environment (wind, temperature, grazing pressure, etc.) must be borne in mind.

On rough hill country where cattle and wethers are used to control second growth the feed requirements are lower than those listed since the stock often lose weight then.

A point which should always be borne in mind in assessing probable feed available is the amount of seasonal variation from year to year in the district. In some areas such as coastal Southland this variation is fairly small—feed supplies are reliable—while in other districts like Canterbury and Marlborough the variation between seasons is extreme and must be allowed for by carrying extra supplies of hay as an insurance.

A rough guide to average feed availability from pastures and various crops is contained below. Wherever possible it should be supplemented by detailed local knowledge of the district and the farm being budgeted. The stock unit per acre figure is only approximate.

Table IV **Value of Various Feeding Materials**

Winter Feed (May—August—100 days)

		S.U. per acre
Pastures (Canterbury)		
	Very good	2 – 2½
	Fair—good	1½ – 2
	Poor—fair	¾ – 1½
Autumn saved pasture		
	Good	8
	Fair	5
	Poor	2
Roots	Per 1 ton (2240 lbs)	Per 1 ton
	Swedes or Pumpkins	1
	Chou moellier or kale	2
	Mangolds	1
	Fodder Beet	1½
	Sugar Beet	2
	Turnips	¾

Grain	Per 1 ton (2240 lbs)	Per 1 ton
	Barley	18
	Oats	16
	Wheat	19
	Peas	18
Hay	Per 1 ton	Per 1 ton
	Good lucerne or clover hay (35–40 bales/ton)	10
	Good pasture or av. lucerne (35–40 bales/ton)	8
	Fair hay (35–40 bales/ton)	5 – 7
	Ryegrass straw (55–60 bales/ton)	3 – 4
	Pea straw (55–60 bales/ton)	3 – 4
Ensilage	Per 1 ton	
	Very good	4
	Good	3
Lupins		S.U. per acre
	Good	20
	Fair	12
	Poor	3
Italian ryegrass greenfeed		
	Good	20
	Fair	12
	Poor	3
Tama Ryegrass Greenfeed		
	Good	22
	Fair	14
	Poor	3
Greenfeed oats, barley, ryecorn		
	Good	10
	Fair	5
	Poor	2

If greenfeeds and A.S.P. are required specifically for Lambing Feed they should not be calculated as winter feed.

Lambing Feed

With early lambing there is special need for nutritive lambing feed, separate from winter and spring–summer feed provisions. A guide to feeding rates is: (in relation to onset of lambing, quality of feed, and beginning of spring growth)

New grass	4 – 5 acres per 100 ewes
A.S.P.	6 – 8 acres per 100 ewes
Greenfeed oats or barley	6 – 8 acres per 100 ewes

Spring–Summer Feed (Post Lambing–Weaning)

Medium–Heavy Soils	Grazing (S.U. per acre)	Grazing pre small seeds (S.U. per acre)
Very Good Pasture	11 – 15	6 – 8
Good Pasture	8 – 10	4 – 5
Fair Pasture	5 – 7	2 – 3
Medium Soils		
Very Good Pasture	8 – 10	4 – 5
Good Pasture	6 – 7	2 – 3
Fair – Poor Pasture	3 – 5	–
Lucerne:		
Very Good	10 – 12	–
Fair	7 – 9	–
Light Land		
Lucerne		
Very Good	8 – 10	–
Good	6 – 7	–
Fair – Poor	4 – 5	–

Pasture	Grazing (S.U. per acre)	Grazing pre small seeds (S.U. per acre)
Very Good	5 – 7	–
Good	3 – 4	–
Fair – Poor	1 – 2	–

Summer–Autumn Feed: (January–April)

On sheep farms little trouble is usually experienced in carrying stock at this period so a general feed calculation is seldom done. Special fattening feed is usually required for lambs as detailed below but the ewe flock can usually be maintained on pasture pickings plus some poorer quality hay in districts subject to drought.

On dairy farms, particularly in districts subject to summer drought this period can critically affect annual production so that adequate provision of supplementary feeds is necessary. Hay, ensilage, chou moellier and turnips can be taken at their winter values. Other feeds as follows:–

Greenfeeds	Maize	2 S.U. per ton
	Millet	15–20 S.U. per acre
Pastures	Best irrigated pastures	8 S.U. per acre
	Good heavy land pasture	6 S.U. per acre
	Fair heavy land pasture	4 S.U. per acre

Fattening Feed

Rates based on the fattening of a lamb to 33 lb in a period 6–8 weeks, in an average Canterbury season.

	Lambs fattened per acre
Rape, kale and chou moellier	
Good	25 – 30
Fair	15 – 18
Poor	7 – 12
Pea Stubble	2 – 4
Ryegrass stubble	2 – 3
White clover stubble	3 – 4
Wheat, barley, oat stubble	1 – 2
Good pasture	5 – 6
Fair pasture	2 – 4
New grass and turnips	6 – 8
Lucerne (mature)	8 – 10

THE FOOD REQUIREMENTS OF RUMINANTS

K.T. Jagusch

The aim of this paper is to give the food requirements of beef cattle, sheep and dairy cows under a standard nomenclature used by various agricultural disciplines. Hence the most recently published allowances of energy for ruminants (Gt. Brit. Agric. Res. Council, 1965) have been converted to the pounds of dry matter (DM) required for maintenance, growth, fattening and lactation. The system used to evaluate rations was based on the available energy in a food stuff per unit amount of dry matter for the maintenance of the animal; with subsequent calculations of the dry matter requirements for particular animal performances and physiological states, from the scale of values tabulated by the Great Britain Agricultural Research Council.

In order to understand the data given in the ensuing tables, it is first necessary to briefly discuss present methods of evaluating rations fed to ruminants and the limitations of existing feeding systems.

Feed Evaluation Systems for Ruminants

A number of systems of evaluating rations fed to ruminants have evolved over the past fifty years. Some are based on the amount of ingested energy that is lost in the faeces, e.g. digestible organic matter and total digestible nutrient systems, others on the amount of ingested energy that is stored, e.g. starch equivalent, Scandinavian food unit and Russian oat unit systems. Yet another, based on the metabolizable energy in a ration, has been described (Blaxter, 1962). By assigning a metabolizable energy value to a foodstuff, account is taken not only of losses of energy in the faeces, but also the losses of energy that occur in the urine and gases expelled from the digestive tract. This latter system is closely related to the digestible organic matter and total digestive nutrient systems, in fact 1 lb of total digestible nutrient is fairly constant at 1.62 megacalories * of metabolizable energy.

Limitations of the main feed evaluation systems

All the main feed evaluation systems rate the fodder of ruminants in a similar order according to the ability of the ration to supply energy. These systems do not however take into account the different physiological states of an animal. Hence the accuracy of applying the two main feed evaluation systems, (i.e. those based on excreted losses of energy and those based on

stored energy), depends on how rations that differ in quality are utilized by the ruminant when the plane of nutrition varies or the animal is lactating. This is exemplified as follows:

1. The digestibility of a ration decreases with increasing increments of food above maintenance (i.e. the proportionate losses of energy in the faeces increase), and the depression in digestibility is greatest for low quality forages. Thus rations evaluated in terms of digestible organic matter, total digestible nutrients or metabolizable energy at maintenance will overestimate the nutritional value of a ration at higher levels of feeding. Conversely the nutritive value of a ration for maintenance will be underestimated if the ration is evaluated in these terms when the animal is growing or fattening.

2. Increments of metabolizable energy (i.e. the energy remaining after excreted and expelled losses are accounted for) of low to high quality diets are utilized for maintenance with efficiencies ranging from 66 to 78 per cent, but at intakes above maintenance the range is 33 to 66 per cent. Thus a good quality ration, containing 60 units of starch equivalent, is not twice as good as a poorer quality ration containing 30 units of starch equivalent, when these rations are given solely to maintain the animal. This is because foods evaluated in terms of starch equivalent were derived from experiments in which the animals were fattening.

3. Lactation is a more efficient process than fattening. When body gain is zero the efficiency of utilization of metabolizable energy for lactation varies little from 70 per cent, decreasing slightly for rations either high in fibre or starch. This means that each Mcal of metabolizable energy above maintenance elicits a 0.7 Mcal increase in milk production. Thus feeding values given to rations which are derived from experiments where the performance of the animal was that of fattening, will result in an underestimation of the nutritive value of the fodder for lactation. This error would be particularly important with low quality rations.

* 1 megacalorie = 1 Mcal = 10^3 Kilocalories = 10^6 calories
1 calorie = heat required to raise the temperature of 1 gram of water 1 degree centigrade (15–16°C).

Animal Performance Prediction

The values presented in the following tables give the dry matter requirements of ruminants according to the type of production desired. They take into account the differences in the quality of the ration and whether it is utilized for maintenance, growth or lactation.

Beef Cattle

Mean values for the dry matter requirements of growing and fattening cattle fed on forages containing different concentrations of metabolizable energy (ME) are given in Table A. In practical terms they represent the requirements of a traditional beef beast weaned at 330 lb which gains increments of 200 lb to a finished weight of 990 lb.

The quality of the rations have been rated in terms of the concentration of metabolizable energy in a unit (1b) of dry matter when the ruminant animal is at maintenance (they could have been rated equally as well in terms of starch equivalents or total digestible nutrients). Most foods contain 2.0 megacalories of energy per pound of dry matter.

Table A **Mean values for the dry matter requirements (lb/day) of growing and fattening cattle**

Live-weight (lb)	Quality of Ration (Mcal ME/lb DM)	Rate of Gain (lb/day)						
		0	0.55	1.10	1.65	2.20	2.76	3.31
440	0.8	10.5	12.8	15.7	19.3	–	–	–
	1.0	8.3	9.8	11.5	13.6	16.3	–	–
	1.2	6.8	7.8	9.0	10.5	12.2	14.2	16.7
	1.4	5.6	6.4	7.2	8.2	9.5	10.9	12.6
660	0.8	12.8	15.6	18.7	22.9	–	–	–
	1.0	10.2	11.9	13.9	16.3	19.5	–	–
	1.2	8.3	9.5	10.9	12.5	14.6	17.3	–
	1.4	6.9	7.7	8.8	9.9	11.4	13.1	15.3
880	0.8	15.1	18.4	22.0	27.0	–	–	–
	1.0	12.0	14.1	16.4	19.3	22.9	–	–
	1.2	9.8	11.2	12.8	14.8	17.2	20.3	–
	1.4	8.1	9.2	10.3	11.7	13.4	15.5	18.3

Hence a value of 0.8 Mcal ME/lb DM means that for every 1 lb of food given to the animal 1.2 (2.0–0.8) megacalories are unavailable to the animal; a situation that occurs when ruminants are given poor qulaity hay. On the other hand a value of 1.4 Mcal ME/lb DM means that only 0.6 (2.0–1.4) megacalories of energy per pound of dry matter given is unavailable. This occurs when new grass or concentrates are fed and the difference is largely due to greater faecal losses of energy with low quality rations. Values of 1.0 and 1.2 Mcal ME/lb DM are indicative of high quality legume hays and good pasture respectively.

It can be seen from the values in Table A that:

1. Within any one quality type of ration the dry matter requirement for maintenance (zero liveweight gain) increases as the animal increases in weight. In planned feeding programmes, it would be increasingly inaccurate to predict dry matter requirements for a certain liveweight gain, from the relationship between dry matter intake (lb/day) and the liveweight (lb), because the maintenance requirement continually changes with growing cattle.

2. For a particular rate of liveweight gain, cattle require a greater dry matter intake of low quality rations compared to those of high quality. Rapid rates of gain cannot be achieved with low quality forages because the bulk of the food limits intake before sufficient energy has been ingested to achieve high weight gains. The dashes in Table A indicate where bulk limits appetite.

3. The margin between low and high quality rations in terms of dry matter requirements becomes more marked as the plane of nutrition increases to accommodate faster liveweight gains. This is due to:
   (a) proprotionately greater faecal losses of energy
   (b) lower efficiencies of utilisation of metabolizable energy.

4. The gross efficiency of food utilization, i.e. the ratio of gain to intake expressed as a percentage, increases the faster cattle are grown, because the daily effect of the maintenance requirement on total production is diluted. If cattle are fed to appetite this results in a considerable saving of dry matter.

Adult sheep

Adult sheep spend virtually their entire life at maintenance. Higher levels of feeding are only necessary prior to lambing and during a ewe's effective lactation of six weeks. In the latter case the ewe's requirement is trebled. Maintenance feeding, therefore, is the major pre-occupation of the sheep producer.

The dry matter requirements of adult sheep fed on fodder containing different concentrations of metabolizable energy are given in Table B. These values are in substantial agreement with the results of hand-feeding trials carried out in Australia (Franklin, 1952) and New Zealand (Coop, 1962). However, Coop and Hill (1962) found that the maintenance requirement of grazing sheep is higher than that for hand-fed animals.

Table B **The dry matter requirements (lb/day) for the maintenance of adult sheep**

Liveweight (lb)	Quality of Ration (Mcal ME/lb DM)			
	0.8	1.0	1.2	1.4
90	1.9	1.5	1.3	1.0
120	2.2	1.8	1.4	1.2
150	2.4	2.0	1.5	1.3

The margin of increase could be 50 per cent depending largely on climatic conditions, particularly that of temperature and wind. In order to account for this extra energy cost of grazing, the values in Table B can be adjusted by a factor of 1.50, although it must be realized that the closer hand-feeding is simulated, the lower this adjustment factor. For example, if a 120 lb sheep consumed a ration of the quality of 1.0 Mcal ME/lb DM for half the year and another ration of the quality 1.2 Mcal ME/lb DM for the other half of the year, including an effective 6 week lactation period when requirements are trebled, then the minimal annual requirement can be calculated as follows:

182	days at 1.8 lb DM/Day	= 328
140	days at 1.4 lb DM/Day	= 196
43	days at (1.4 x 3)lb DM/Day	= 181
TOTAL ANNUAL REQUIREMENT		705 lb DM

On the other hand if the minimum allowance had to be adjusted daily for the energy cost of grazing, the maximum annual requirement would be 705 x 1.5 = 1050 lb DM. In practice the sheep will only be subjected to unfavourable climatic conditions for certain periods of the year and the extent of these periods will depend on such factors as geographic site and topography. Thus it is likely that the annual requirement of a 120 lb sheep will vary from 800–950 lb DM. If lactation is continued for 12 weeks then the minimum annual requirement of 120 lb sheep increases to 800 lb DM. Allowing for the energy cost of grazing factor then the probable range of annual requirement is 900--1100 lb DM.

Lambs

Estimates of the dry matter requirements of fattening lambs are given in Table C. These values represent the requirements for down-cross lambs and allow for the fact that the composition of the gain contains a significant proportion of fat. As far as lamb production in New Zealand is concerned the data for 44 lb lambs are pertinent. The requirements, given in Table C, for lambs at the higher weights provide standards for rearing hoggets. Otherwise the conclusions from these calculations are identical to those given for growing and fattening cattle.

Table C. **Mean values for the dry matter requirements (lb/day) of fattening lambs**

Liveweight (lb)	Quality of Ration (Mcal ME/lb DM)	Rate of Gain (lb/day) 0.00	0.11	0.22	0.44	0.66
44	0.8	1.2	1.9	2.9	–	–
	1.0	1.0	1.4	1.9	3.4	–
	1.2	0.8	1.1	1.4	2.3	3.6
	1.4	0.6	0.9	1.1	1.7	2.5
66	0.8	1.6	2.3	3.4	–	–
	1.0	1.3	1.8	2.3	3.9	–
	1.2	1.0	1.4	1.7	2.7	3.9
	1.4	0.8	1.1	1.4	2.0	2.8
88	0.8	1.9	2.8	3.9	–	– –
	1.0	1.5	2.1	2.7	4.3	–
	1.2	1.3	1.6	2.1	3.0	4.2
	1.4	1.0	1.3	1.6	2.3	3.1

Dairy Cows

The dry matter requirements of lactating dairy cows are given in Table D. The values include an activity allowance of two miles walking and five hours standing each day. The values have also been adjusted to allow for the higher fat percentage of the milk from lighter cows. It can be seen that animals yielding heavily require high quality rations to achieve the required intake of dry matter.

The dry matter requirements of mature Friesian and Jersey cows during the period they are not lactating, are given in Tables E and F respectively.

Table D. **Mean values for the dry matter requirements (lb/day) of lactating dairy cows**

Live-weight (lb)	Quality of Ration (Mcal ME/lb DM)	Milk Yield (lb/day)							
		0	11	22	33	44	55	66	77
800	0.8	11.9	22.5	–	–	–	–	–	–
	1.0	9.3	16.8	25.7	–	–	–	–	–
	1.2	7.6	13.3	19.7	26.7	34.9	–	–	–
	1.4	6.3	11.2	16.4	21.9	27.7	34.0	–	–
1100	0.8	15.1	23.8	34.7	–	–	–	–	–
	1.0	11.9	18.0	25.0	32.8	–	–	–	–
	1.2	9.7	14.5	19.6	25.1	31.0	37.4	–	–
	1.4	8.1	12.3	16.5	20.9	25.6	30.3	35.3	–
1300	0.8	17.2	25.4	35.3	–	–	–	–	–
	1.0	13.5	19.4	25.9	33.1	41.3	–	–	–
	1.2	10.9	15.6	20.5	25.7	31.2	37.1	43.9	–
	1.4	9.2	13.2	17.4	21.5	25.9	30.5	35.1	40.1

Table E. **The dry matter requirements of a pregnant non-lactating Friesian cow**

Quality of Ration (Mcal ME/lb DM)	Weeks from term		
	8–4	4–2	2–0
0.8	19.4	24.7	27.4
1.0	14.6	18.4	20.2
1.2	11.4	14.4	15.7
1.4	9.2	11.7	12.7

Table F. The dry matter requirements of a pregnant non-lactating Jersey cow

Quality of Ration (Mcal ME/lb DM)	Weeks from term		
	8–4	4–2	2–0
0.8	13.4	17.0	18.6
1.0	10.1	12.8	14.0
1.2	7.9	10.0	10.9
1.4	6.3	8.0	8.7

Discussion

The dry matter requirements of ruminants given in the foregoing tables provide an accurate guide to the practical feeding of animals and the fodder can be easily costed. All that is required of the agriculturist is that he grade rations according to their quality, stipulate the performance wanted of the animal and estimate the dry matter content of the ration to be fed together with the amount available. The data in Table G, which show the dry matter content and the amount of metabolizable energy and starch equivalent in common New Zealand feeds, will facilitate this.

There is no problem in applying these standards to animals which are hand-fed but some difficulty will be experienced in estimating the amount of dry matter available to ruminants under grazing conditions. It is thus necessary to obtain regional data of dry matter production per acre from grazed pastures. Some recent examples of seasonal yields from pastures in different areas of New Zealand are given in Table H.

However, this now raises the vexing question as to whether all the dry matter, as measured from cutting trials, is harvested by the ruminant. It appears that efficient harvesting of pasture involves a compromise between stocking rate and animal production. In the case of sheep and dairy cows one principle is to increase stocking rates until per acre production begins to fall, but in the case of growing stock per head production is also important. Under present conditions steers are stocked at a rate compatible with the maintenance of good quality pasture, and with that of finishing prime before the second winter.

In the present paper an attempt has been made to translate scientific findings concerning the utilization of food by the ruminant into practical realities. The time is ripe to think of the nutritional value of a ration according to the physiological state and the performance required from the animal. For this reason the previous systems of determining the requirements of ruminants have been abandoned and the values are given in terms of dry matter rather than calories to permit ease of use. Errors in the application of these feeding standards, especially under our grazing conditions, may indeed swamp the advantages of using specific values for particular performances. Even so, a more precise scheme enables the planning and costing of animal production to be made more exact, even if its execution is poor.

Table G. Food values of common New Zealand foodstuffs

Foodstuff	Dry Matter (%)	Starch Equivalent (relative to starch = 100)	Metabolizable energy (Mcal ME/lb DM)
Poor-quality hay	86	29	0.78
Good-quality hay	86	47	0.99
Clover hay	84	48	1.01
Lucerne hay	84	42	0.94
Wheat straw	86	15	0.62
Oat straw	86	25	0.73
Ryegrass straw	86	29	0.78
Leafy pasture	20	70	1.27
New pasture	16	75	1.32
Winter pasture	35	60	1.15
Brown summer pasture	60	50	1.03
Silage	20	30 – 50	0.80–1.03
Green oats	20	65	1.21
Italian ryegrass	20	70	1.27
Chou moellier	15	75	1.32
Kale	15	75	1.32
Lupins	15	70	1.27
Rape	14	80	1.38
Green maize	25	52	1.05
Swedes	12	62	1.17
Turnips	9	65	1.21
Fodder beet	15	60	1.15
Barley	87	82	1.41
Oats	87	69	1.25
Wheat	87	90	1.50
Maize	87	83	1.42
Linseed meal	88	84	1.43
Meat meal	89	100	1.62
Sheep nuts	89	73	1.30
Skim milk	9	95	1.57
Butter milk	9	97	1.59
Cow's whole milk	13	132	2.00
Whey	7	92	1.52

Table H. Annual yields of dry matter from ryegrass-white clover pastures (lb/acre)

Region	Winter	Spring	Summer	Autumn	Total
Hamilton clay loam (Rukuhia	1,270	5,280	4,710	1,820	13,080
Soil type 66A (Waimate west)	695	4,860	5,195	1,860	12,610
Marton loam (Marton)	1,130	2,480	3,650	1,730	8,990
Lismore silt loam (Winchmore irrig.)	465	2,880	4,350	2,065	9,760
Alluvial silt loam (Invermay)	485	3,305	3,050	1,300	8,140

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MONTHLY FEED SUPPLY AND DEMAND TABLES

G.A.G. Frengley

The following tables show the requirements of a 120 lb breeding ewe lambing in mid-August and rearing a lamb for 12 weeks. The figures may be converted to the feed requirements of other livestock by reference to the tables comparing the feed requirements of other classes of stock shown above.

A number of common feeds have been selected and by using the tables, the feed requirements of a flock or herd can be budgeted with reasonable accuracy for any period of the year.

Hay Feeding

	lb/ewe/day Good Lucerne	Bales/100/day (64 lb bales)	lb/ewe/day Very Good Meadow Hay	Bales/100/day (60 lb bales)	+Low Quality Hay lb/ewe/day
January	2.20	3.4	2.02	3.4	2.7
February	2.44	3.8	2.26	3.7	3.0
March	2.3	3.6	2.12	3.5	2.8
April	2.4	3.7	2.23	3.7	2.9
May	2.4	3.7	2.23	3.7	2.9
June	2.57	4.0	2.38	4.0	3.1
July	3.0	4.7	2.79	4.65	3.9
August	4.65*	7.2	4.31*	7.18	*5.1(+.5)

* Intake limit reached.

\+ Note that an assumption is made that although the feed value of this hay is low it is quite palatable.

Grain Feeding

	Barley		Oats		Peas	
	lb/ewe /day	Bushels (50 lb)/ 100	lb/ewe /day	Bushels (40 lb)/ 100	lb/ewe /day	Bushels (60 lb)/ 100
January	1.38	2.76	2.4	6.0	1.37	2.28
February	1.50	3.0	2.66	6.65	1.52	2.53
March	1.4	2.8	2.47	6.1	1.41	2.35
April	1.47	2.94	2.61	6.5	1.49	2.48
May	1.47	2.94	2.61	6.5	1.49	2.48
June	1.57	3.14	2.81	7.0	1.60	2.66
July	1.84	3.68	3.26	8.1	1.86	3.1
August	2.86	5.72	5.06	12.65	2.89	4.81

Brassica and Root Crops

	Turnips					Swedes				
	lb/day /ewe	Ewes/ac/week 20t.	30t.	ac/1000/mth 20t.	30t.	lb/day /ewe	Ewes/ac/week 40t.	60t.	ac/1000/mth 40t.	60t.
Jan.	15.4	415	623	10.6	7.1	12.16	1052	1578	4.2	2.8
Feb.	17.1	374	561	11.7	7.8	13.50	947	1420	3.78	2.5
March	15.8	403	604	10.9	7.2	12.5	1020	1530	4.07	2.7
April	16.7	381	571	11.5	7.7	13.2	964	1446	3.85	2.6
May	16.7	381	571	11.5	7.7	13.2	964	1446	3.85	2.6
June	18.0	355	532	12.4	8.3	14.2	899	1348	3.59	2.4
July	20.9	305	457	14.4	9.6	16.5	773	1159	3.09	2.1
August	32.5	196	294	22.3	14.9	25.6	498	747	2.0	1.3

(Note: The weight of two square yards of crop in pounds is equivalent to tons per acre yield. For chou moellier, one foot in height is equal to approximately 10 tons per acre.)

	Fodder Beet Per 10t. of crop			Chou moellier Per 10t. of crop			Rape Per 10t. of crop		
	lb/day /ewe	Ewes/ac /week	Ac/1000 /month	lb/day /ewe	Ewes/ac /week	Ac/1000 /month	lb/day /ewe	Ewes/ac /week	Ac/1000 /month
January	10.0	320	12.5	8.53	375	11.8	8.71	367	12.0
February	11.1	288	13.9	9.47	337	13.0	9.67	330	13.3
March	10.3	310	12.9	8.8	363	12.1	8.97	356	12.3
April	10.9	293	13.6	9.3	344	12.8	9.50	336	13.1
May	10.9	293	13.6	9.3	344	12.8	9.50	336	13.1
June	11.7	273	14.6	10.0	320	13.8	10.2	314	14.0
July	13.6	235	17.0	11.6	275	16.0	11.8	269	8.8
August	21.1	151	26.4	18.0	177	24.8	18.4	173	5.7

Carrots: As for chou moellier, but multiply daily and monthly feed requirements by 1.174. Multiply ewes per acre per week by a factor of 0.85.

*Silage

	Very Good		Average Quality	
	lb/day/ewe	Tons/100 ewes	lb/day/ewe	Tons/1000 ewes
January	6.85	3.06	7.6	3.39
February	7.60	3.40	8.43	3.76
March	7.05	3.15	7.82	3.49
April	7.46	3.33	8.28	3.69
May	7.46	3.33	8.28	3.69
June	8.01	3.58	8.90	3.97
July	9.31	4.16	10.36	4.61
August	14.4	6.46	16.03	7.15

* Assumed feed values 1230 KCal ME/lb DM for very good silage and 950 for average silage. Percentage DM, 20% for very good silage and 25% for average silage.

Winter Greenfeeds

	A.S.P. (6" high, dense, 30% DM)			Oats (20% DM)	Italian (20% DM)
	lb/day /ewe	Ewes/ac /week	Ac/1000 /month	lb/day /ewe	lb/day /ewe
May	5.45	234	18.8	8.6	8.1
June	5.85	218	19.3	9.15	8.7
July	6.80	187	23.6	10.71	10.17
August	10.5	120	36.7	16.54	15.7

(Note: The weight of two square yards of crop in pounds is equivalent to tons per acre yield.)

Maintenance Feed Requirement Relationship between Livestock Classes *

(Breeding ewe constant)

	Breeding Ewe	Dry Stock 44lb	66lb	88lb	120lb	150lb	Steer 440lb	660lb	880lb	Breeding cow 1100lb
January	1.0	.51	.66	.83	1.0	1.09	4.6	5.7	6.7	13.2
February	1.0	.46	.59	.75	.9	.98	4.1	5.1	6.0	13.3
March	1.0	.49	.64	.72	.97	1.06	4.4	5.5	6.5	7.1
April	1.0	.47	.60	.76	.92	1.0	4.2	5.2	6.1	6.9
May	1.0	.47	.60	.76	.92	1.0	4.2	5.2	6.1	6.9
June	1.0	.44	.56	.71	.85	.93	3.9	4.8	5.7	6.7
July	1.0	.37	.48	.61	.74	.80	3.4	4.2	4.9	6.6
August	1.0	.24	.31	.39	.47	.52	2.2	2.7	3.2	4.7
September	1.0	.19	.24	.31	.37	.41	1.7	2.1	2.5	4.2
October	1.0	.18	.23	.29	.36	.39	1.6	2.0	2.4	4.4
November	1.0	.17	.23	.29	.34	.37	1.6	2.0	2.3	4.6
December	1.0	.33	.42	.53	.64	.70	2.9	3.6	4.3	8.3

* Based on an assumed feed quality of 1.13 Mcal M.E./15 D.M.
No allowance for liveweight gain of dry stock or steers has been made.

Reciprocal Maintenance Feed Requirement Relationship between Livestock Classes (Dry Stock Constant)

	Breeding Ewe	Dry Sheep 44lb	66lb	88lb	120lb	150lb	Steer 440lb	660lb	880lb
January	1.0	.51	.66	.83	1.0	1.09	4.6	5.7	6.7
February	1.11	.51	.66	.83	1.0	1.09	4.6	5.7	6.7
March	1.03	.51	.66	.83	1.0	1.09	4.6	5.7	6.7
April	1.09	.51	.66	.83	1.0	1.09	4.6	5.7	6.7
May	1.09	.51	.66	.83	1.0	1.09	4.6	5.7	6.7
June	1.17	.51	.66	.83	1.0	1.09	4.6	5.7	6.7
July	1.36	.51	.66	.83	1.0	1.09	4.6	5.7	6.7
August	2.11	.51	.66	.83	1.0	1.09	4.6	5.7	6.7
September	2.68	.51	.66	.83	1.0	1.09	4.6	5.7	6.7
October	2.80	.51	.66	.83	1.0	1.09	4.6	5.7	6.7
November	2.89	.51	.66	.83	1.0	1.09	4.6	5.7	6.7
December	1.56	.51	.66	.83	1.0	1.09	4.6	5.7	6.7

Feed Requirements of Pigs

Because pigs are usually hand fed on concentrates and skim milk whereas other stock forage for themselves on pasture most of the year a different system of calculating feed requirements has been adopted for pigs. This is the Meal Unit system which is based on 1 lb of Barley Meal = 1 Unit. Pig Production must be carefully fitted to the seasonal availability of skim milk with most New Zealand pig enterprises to get maximum utilization of feed. (See Animal Nutrition—I.E.Coop.) Provided this is remembered the following total requirements for various classes of pigs can be used satisfactorily.

Table V **Meal Unit Requirements of Various Classes of Pigs**

Boar	—	2,000 M.U. per year maintenance
Sow	—	2,000 M.U. per year maintenance + 900 M.U. per litter production ration
Weaners	—	40 M.U. covers necessary creep feeding until weaning if the aim is to produce weaners for sale
Porkers	—	250 M.U. covers total feed (including creep feeding) required for a pig to reach a liveweight of about 120 lbs at the age of four months.
Baconers	—	500 M.U. covers total feed (including creep feeding) required for a pig to reach a liveweight of about 200 lbs at the age of six months.
Stores	—	(a) 100 M.U. covers total feed (including creep feeding) required by a pig up to the age of 3 months if the aim is to sell light stores. (b) 120 M.U. per month will maintain a store pig over the winter if the aim is spring fattening (c) 250 M.U. additional would be required to fatten this type of pig to bacon weights (6 weeks fattening).

Table VI **Conversion of Various Foodstuffs to Meal Units**

Cereal Grains			
Barley, Wheat and Maize	1 lb	=	1 Meal Unit
Pollard Bran or Pig Pellets	1¼ lb	=	1 Meal Unit
NOTE: Oats are too fibrous for pigs			
Protein Rich Foods:			
Meat meal (good quality)	¾ lb	=	1 Meal Unit
Meat and Bone Meal	1 lb	=	1 Meal Unit
Peas and Pea Meal	1 lb	=	1 Meal Unit
Milk and Milk Products			
Skim Milk	1 gal.	=	1 Meal Unit
Whey	1½ gal.	=	1 Meal Unit
Skim Milk Powder	1 lb	=	1 Meal Unit
Buttermilk Powder	1¼ lb	=	1 Meal Unit
Roots			
Fodder Beet (320 M.U. per ton)	8 lb	=	1 Meal Unit
Sugar Beet (450 M.U. per ton)	5 lb	=	1 Meal Unit
Carrots (280 M.U. per ton)	8 lb	=	1 Meal Unit
Swedes (250 M.U. per ton)	9 lb	=	1 Meal Unit
Potatoes (560 M.U. per ton)	4 lb	=	1 Meal Unit
Apples	10 lb	=	1 Meal Unit
Pumpkins	12 lb	=	1 Meal Unit
Artichokes	12 lb	=	1 Meal Unit
Other Foods			
Good Succulent Pasture	2 lb (dry matter	=	1 Meal Unit
Molasses	5 lb	=	1 Meal Unit

(9) CASH CROP AND SMALL SEEDS PRODUCTION

Standard Bushel Weights

	lbs/bus
Barley	50
Beans	60
Bran	20
Canary Seed	56
Clovers	60
Grass Seed	20
Linseed	56
Lucerne	60
Lupins	60
Maize	56
Oats	40
Peas	60
Peas (in pod)	28
Pollard	20
Rice	45
Rye corn	60
Safflower	40
Sorghum grain	60
Sunflower	35
Wheat	60
Cocksfoot (machine dressed)	17
Cocksfoot (not dressed)	12

Yield

These should be determined after consideration of the district averages, the condition of the property and if possible the growing crop, and past performances on that particular property. There are considerable variations due to season but an experienced man will be able to estimate most crop yields in advance fairly accurately after becoming accustomed to his district.

Average National Yields	
Wheat	39 bus per acre
Barley	55 bus per acre
Oats	61 bus per acre
Peas	30 bus per acre
Potatoes	10.2 tons per acre

Peas

There are two major sections of this trade. The first is Field Peas or Maple Peas which are grown mainly on the medium quality soils and may be either contract or free. The bulk of the crop is exported. It is sold in two grades after Machine Dressing

Standards are	No. 1 Grade	No. 2 Grade
Minimum Size	92% over ¼" in dia. 8% tolerance down to 7/32"	85% over 13/64" in dia 15% tolerance down to 5/32"
Splits	Not to exceed 0.5%	Not to exceed 2%
Damaged & Sprouted	Not to exceed 1.5%	Not to exceed 2%
Foreign Matter	Not to exceed 0.5%	Not to exceed 2%
Moisture	Not to exceed 15%	Not to exceed 15%
Condition	Sound, dry and in good keeping condition at time of shipment	
Colour	F.A.Q. of Season	

The second section of the pea trade is Garden Peas. A big proportion of the crop is exported but part of it is used as seed for the production of Freezing Peas—a sub-section of the Garden Pea trade. Garden peas whether for Freezing or threshing are usually grown on the better medium-heavy and heavy soils. Freezing peas are contracted in specific areas near factories whil the bulk of the garden peas for threshing are also contracted.

Standards for Garden Peas

Machine Dressing loss not greater than 7½%
Maximum Moisture – 15%
Earth – deduction by weight
Note–all percentages are calculated by weight.

For further information on peas consult New Zealand Journal of Agriculture Volume 100 page 57, Volume 102 page 357.

Wheat

The principal basis of the wheat market is the F.A.Q. milling standard:

Sprout – a sprout index of not more than S1
i.e. No more than 10% sprouted grains in a line

Baking Score – 30

Screenings – up to 5%, but anything over 3% is a deduction from the grower.

Weed Seeds – not more than 0.5%

Moisture – not more than 15%, but anything over 14.5% is a deduction from the grower.

Freedom from weed seeds and musty grains. Wheats are paid for on the F.A.Q. basis at fixed prices.

Fowl Wheats

Owing to the shortage of wheat in New Zealand, the balance of milling requirements being made up by subsidizing imports, non-milling wheat finds a ready market at milling prices as fowl wheat if quality is at all reasonable.

Seed Wheats

There is a small volume of pedigree wheat produced by a few growers from Government stock grade but this can be disregarded for ordinary budgetary purposes. The main seed wheats are produced as Mother (from Pedigree) 8c above milling and Commercial (from Mother) 5c above milling.

Good lines of milling are of course suitable farmers' seed.

Barley

There are two sections of this crop. The first and most important is Malting barley which is grown on contract and the other is feed barley which may be contract or free.

Malting Standard:	Skinned grains – not more than 5%.	
(No. 1 Grade)	Screenings (pinched grain) not more than 15%	
	Moisture content–not more than	15.5% sacks
		14.0% bulk

Main varieties for malting are Research (medium soils) Kenia and Carlsberg (heavy soils). Varieties for feed are Cape, Wong and Black Skinless. For other information refer Canterbury Chamber of Commerce Agricultural Bulletin No. 361 (August 1959).

Oats

This crop is usually grown on the medium and lighter soils as it is a lower fertility demander than wheat or barley. The main sections of the trade are–(a) Milling Oats (Garton's) grown on contract to the porridge manufacturing firms–(b) Algerian and Dun Oats grown for seed to provide for the greenfeed oat trade and (c) Oats for chaff.

The New Zealand average yield of oaten chaff is about 1¼ tons per acre (variation 1 ton to 3½ tons). Good chaff has a bright colour, a sweet smell and a high proportion of grain to straw. 25–28 bags to the ton is a good standard. Approximately 27 bushels to the ton, grain to straw ratio 45/55. Good average quality up to $70 per ton O.T.S.E. for new seasons F.A.Q. Old seasons $50–$60 per ton.

Reference: New Zealand Journal of Agriculture Volume 100 page 161.

Linseed

Grown chiefly on the "clay downs" type of country but also a useful crop on heavy land (e.g. Eiffleton) or any reasonably fertile country which is

assured of summer showers. New varieties released in recent years which are higher yielding (Redwood and Rocket) and the re-establishment of the linseed oil industry in this country have stimulated new interest in this crop. Grown on contract to the manufacturers.

Reference: New Zealand Journal of Agriculture Volume 102, pages 119 and 381.

Potatoes

Reference: New Zealand Journal of Agriculture Volume 101 page 218.

The New Zealand crop can be divided into new potatoes and main crop. Approximately 20,000 acres are grown each year to satisfy New Zealand's requirements.

(a) New Potatoes

The main varieties of new potatoes are Epicures and Arran Banners.

Average yields are probably about 8–9 tons of marketing potatoes and for budgeting purposes, an average price of 2–3c per lb could be used, but up to date prices can be seen in the produce reports in the daily newspapers.

(b) Main Crop

The New Zealand and Canterbury average potato yields are approximately 10.5 and 11.0 tons respectively. Certified seed invariably yields 20–25% more than uncertified seed.

In Canterbury a 12 ton crop would comprise approximately

3	tons table potatoes
9	tons seed
12	tons

"Good Table" potatoes are of good shape according to variety, not more than 15% of which can be passed through a square the sides of which have an inside measurement of 2", the lot shall be free (2%) from green potatoes, second growth, dry or wet rots including blight or frost damage; the lot shall be practically free from earth which shall not exceed 4% by weight of the lot; the weight of the lot affected by mechanical injury including

bruises and cuts shall not exceed 6%, the lot shall be practically free from scab or other defects not herein mentioned.

F.A.Q. potatoes are similar to the above except for the figure in brackets.

The Potato Board have a guaranteed payout for surplus potatoes grown on contract.

Payments for surplus potatoes are to be determined on the basis of the F.A.Q. proportion held in pits or sheds at the end of the season. It should be remembered that considerable loss through shrinkage will have taken place by this time.

Seed prices fluctuated widely and no reliable information regarding these is usually available until the crop has been lifted.

The Potato Board levy will be payable on both table and seed potatoes, excepting certified seed carrying the official certification tag of the Department of Agriculture and not exceeding a maximum certification grading size of 6.5 oz, and uncertified seed where the largest tubers are under 4½ oz in weight. Levy is $1.40 per short ton

Hay

The important features of hay are:

(i) quality
(ii) points of delivery
(iii) supply and demand

Hay is bulky and costly to transport hence there is little movement of it outside local districts, except in times of shortage.

Lucerne hay sells for 40 cents to 70 cents per bale depending on quality, and bale size.

Meadow hay similarly sells for from 30 cents to 40 cents per bale. Increasing use is made of ryegrass straw which sells for 10 cents to 20 cents per bale.

Relationship Between Bale Weight and Bales per Long Ton

Weight of Bale lb	Approx No. of Bales per Long ton
50	45
55	41
60	37
65	34
70	32
75	30
80	28
90	25
100	22
110	20
120	19
130	17
140	16
150	15

Small Seeds

The best general reference for these crops is

Small Seed in Farm Management – H.E. Garrett

Ryegrasses and Clovers are usually taken as crops from first and second year pasture areas sown with the crop in mind though some specialist crops are grown. Cocksfoot and Timothy are normally grown as specialist seed areas.

(10) WORK CAPACITY OF FARM MACHINERY AND IMPLEMENTS

(a) Cultivation
(b) Harvesting

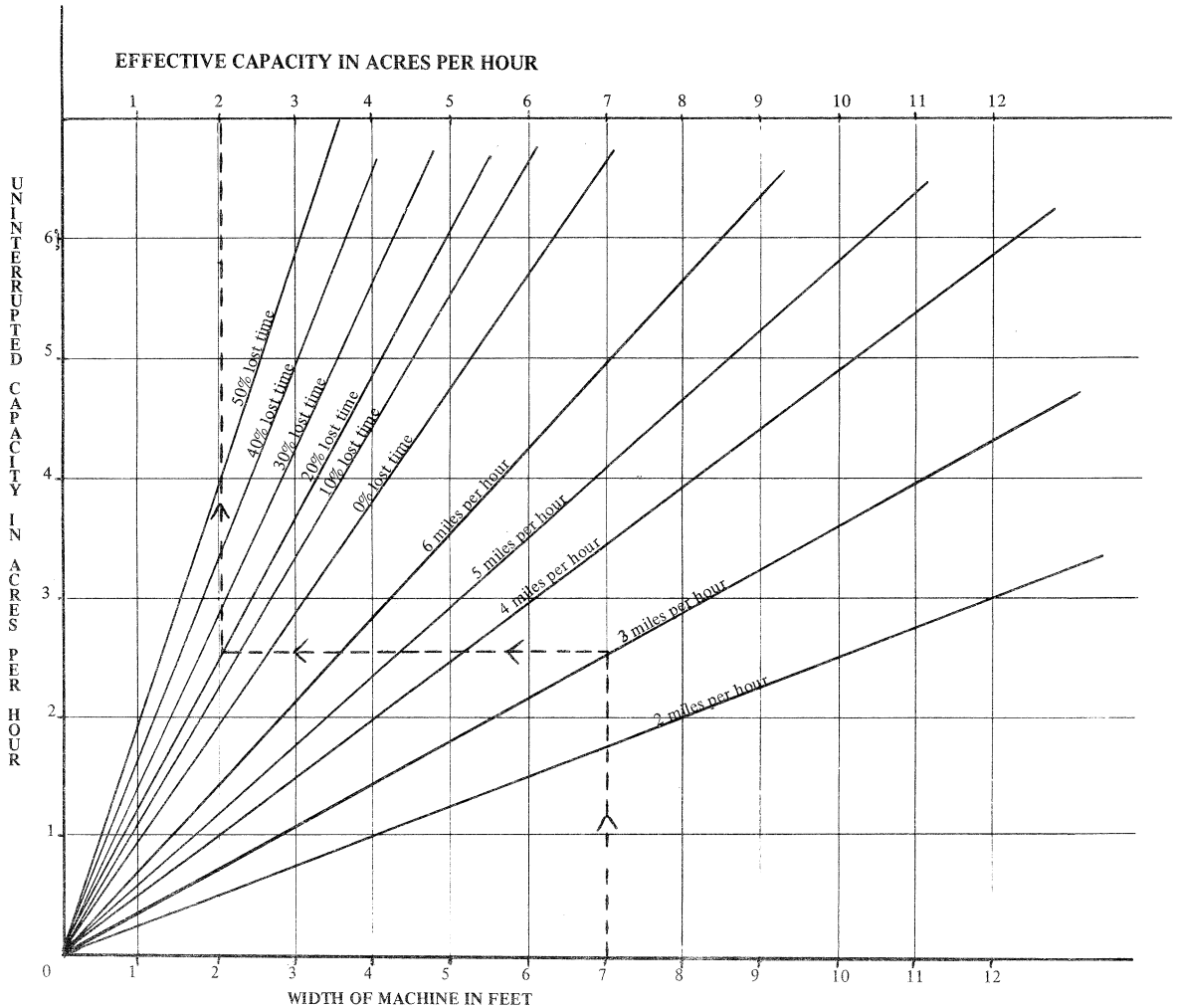
(a) Acreage covered by cultivation implements in a given time depends on:

1. size of implement
2. size of traction unit
3. nature of country—general steepness of the contour
4. type and condition of soil—compare light, stony, heavy and clay soil. In wet or dry condition
5. work of the implement—plg. initial work—to harrowing seed bed
6. general organisation—keeping the tractor going by working in shifts; proximity of fuel dumps
7. breakage and general skill of operator. An experienced man knows the speed at which he gets maximum use out of the implement.
8. extent to which other work is combined, such as going around the sheep
9. size and shape of paddock

(b) Harvesting machinery. Time depends on:

1. bulk of the crop—heavy or light yields
2. type of crop—wheat or peas, or clovers etc.
3. condition of crop—ease of threashing—lodged oats or ryegrass,
4. weather—hot, dry, vs. damp and cool,
5. month of harvest—late February or March cooler and shorter days, slow-up harvest,
6. previous treatment of crop—windrowing—peas, ryegrass, oats, cocksfoot;
   mown with binder or mower—e.g. ryegrass, oats.

   Has paddock been rolled or is it still cloddy? e.g. wheat and peas.


EFFECTIVE CAPACITY IN ACRES PER HOUR
UNINTERRUPTED CAPACITY IN ACRES PER HOUR
WIDTH OF MACHINE IN FEET
50% lost time
40% lost time
30% lost time
20% lost time
10% lost time
0% lost time
6 miles per hour
5 miles per hour
4 miles per hour
3 miles per hour
2 miles per hour

Effective Capacity of Farm Machinery

The chart may be used to determine the effective capacity of farm machinery if the width, speed, and percentage of lost time are known. The amount of time lost will depend largely upon the skill of the operator, the type and quality of machinery being used, the operation performed, and working conditions experienced.

Example:

To determine the effective capacity of a machine, 7ft wide, moving at 3 m.p.h. with an estimated percentage of lost time of 20 per cent (as for some planting and harvesting equipment).

1. Locate the width (7 ft.) of the machine on the horizontal axis.
2. Move up to the point of interesection with the speed of travel (3 m.p.h.)
3. Move across to the intersection with the line for the percentage of lost time (20%)

(If this line was extended right across to the vertical axis, this would give the uninterrupted capacity of the machine, that is, if no time were lost.)

4. Follow the dotted line up to the top horizontal line. The point of intersection gives the effective capacity in acres per hour (2 acres).

In addition to the chart, the following formulae may be used as rules of thumb:

(1) Effective Capacity $= \dfrac{\text{Working Width (ft)} \times \text{Speed of Travel (m.p.h.)}}{10}$

= ac/hour (allowing for 17½% lost time)

(2) Uninterrupted Capacity (Theoretical Field Efficiency)

$$\frac{\text{Working Width (in.)} \times \text{Speed of Travel (m.p.h.)}}{100}$$

= ac/hour (with no lost time and machine always covering 100% of its rated width).

Where field efficiency is estimated (as in the next table) incorporate the percentage in either of the following formulae to obtain effective field efficiency.

$$\text{Effective acres/hour} = \frac{\text{working width (ins)} \times \text{Speed of Travel (m.p.h.)} \times \text{Field Efficiency (as a decimal)}}{100}$$

Example:

Using formula, a 10 ft header with 70% field efficiency, would harvest

$$\frac{120 \times 3 \times 0.70}{100}$$

= 2.5 acres/hour when operating at a speed of 3 m.p.h.

(3) Time (hours) required for any farming operation

$$= \frac{\text{Total Area (ac) to be covered}}{\text{Effective Acres per hour}}$$

Estimated Range in Field Efficiency and Operating Speed of Field Machines

Machine	Range in * Field Efficiency (%)	Speed m.p.h.
Cultivator, field	75 – 90	3.0 – 5.0
Cultivator, row crop	75 – 90	1.5 – 5.0
Disc Harrow	75 – 90	3.5 – 6.0
Plough	75 – 90	3.5 – 5.0
Rotary hoe	75 – 90	5.0 – 10.0
Harrow (spike–tooth)	70 – 85	3.0 – 6.0
Grain drill	60 – 80	2.5 – 4.0
Maize planter	60 – 80	3.5 – 6.0
Combine header	65 – 80	2.0 – 3.5
Maize picker	55 – 70	2.5 – 3.5

Machine	Range in * Field Efficiency (%)	Speed m.p.
Mower	75 – 80	3.5 – 5.5
Rake	75 – 90	3.5 – 5.0
Hay baler	55 – 80	2.0 – 5.0
Forage Harvester	50 – 75	2.0 – 4.0
Sprayer	55 – 65	3.0 – 6.0

* Field efficiency is the percentage of theoretical field work accomplished after deducting for losses resulting from failure to use the full width of the machine, turning and idle travel at the ends, clogging, adjusting seed or fertilizer, unloading harvested crops, machine adjustments and minor repairs, lubrication, and other minor interruptions.

Harvesting – these figures should be used as a rough guide only, and the the effective capacity table is preferable for more accurate work.

Wheat 2–3 acres per hour

Barley 2–3 acres per hour

Peas 1–2 acres per hour–depending on size of header and whether windrowed or not

Ryegrasses 2–3 acres per hour

Clovers 1–2 acres per hour

Adjustment to cultivation hours

Heavy land	25 – 33% up
Stony land	10 – 30% up
Undulating to steep	10 – 50% depending on contour

Additional Hours for feeding out, tractor use at lambing, fencing, plus running to and from paddocks.

Example of Working Out Tractor Hours

(1) Heavy Soils:

(a) Preparation for Peas:	hrs/ac.
August	
Grub	0.24
Grub, Harrow and Roll	0.25
Plough	0.69
Roll	0.22
Harrow and Roll	0.12
Disc, Roll and Harrow	0.26
Disc and Roll	0.25
Harrow and Roll	0.13
Dutch Harrow	0.16
Drill	0.36
Total Cultivation	**2.68**
Harvesting (Yield 45 bus.)	0.8

(b) Preparation for Wheat	hrs/a
January	
Plough	1.15
Roll	0.20
Disc	0.25
Grub and Harrow	0.20
Grub	0.17
Harrow and Roll	0.15
Drill	0.25
Total Cultivation	**2.37**
Harvesting (Yield 50 bus.)	0.6

(c) Preparation for Barley:	hrs/ac.
August	
Grub	0.17
Grub, Harrow and Roll	0.16
Harrow and Roll	0.07
Plough	0.55
Roll and Disc	0.24
Harrow and Roll	0.12
Harrow and Roll and Disc	0.69
Harrow and Roll	0.12
Drill	0.32
Total Cultivation	**2.44**
Harvesting	0.59
Plough headland	0.05

(d) Preparation for Grass:	hrs/a
March	
Disc	0.50
Harrow and Roll	0.19
Drill	0.44
Spread Fertilizer	0.22
Total Cultivation	**1.35**

This paddock is sown for 3 years, so cost of establishment is divided by 3 to find the annual cost.

(e) Preparation for Tama Ryegrass	hrs/ac.	(f) Preparation for Clover Seed	hrs/ac.
Disc and Harrow	0.24	Spray	0.18
Roll and Disc	0.06	Heavy Roll	0.32
Roll	0.18	Mow	0.57
Disc	0.24		
Harrow and Roll	0.18		
Disc and Harrow	0.25		
Roll	0.12		
Disc and Harrow	0.21		
Harrow and Roll	0.14		
Drill	0.41		
Spread Fertilizer	0.59	**Total**	**1.07**
Total Cultivation	**2.44**	Thresh	**1.01**

(2) Medium Soils:

(a) Old Grass–Peas:	hrs/ac.	(b) Peas–Wheat	hrs/ac.
Deep Plough	1.33	Disc (2)	0.08
Roll	0.33	Deep Plough	1.33
Disc (2 x)	0.08	Grub (3)	1.00
Grub (3x)	1.00	Drill	0.04
Harrow (2)	0.04	Roll	0.33
Roll (2)	0.66	Harrow	0.02
Drill	0.04		
Roll	0.33		
Harrow	0.02		
Total Cultivation	**3.83**	**Total Cultivation**	2.8
Harvest– Mow	0.66	Harvesting	0.40
Head	0.50		

(c) Wheat–Barley

	hrs/ac.
Disc (2)	0.08
Deep Plough	1.33
Grub	0.66
Harrow (2)	0.04
Roll (2)	0.66
Drill	0.04
Harrow	0.02
Total Cultivation	**2.83**
Harvesting	0.46

(d) Barley–Greenfeed–Summer fallow–new grass

	hrs/ac.
Grub	1.00
Roll	0.33
Drill	0.04
Plough (Oct)	1.33
Grub (4)	1.33
Harrow (4)	0.08
Roll (4)	1.33
Drill	0.04
Roll	0.33
Total Cultivation	**5.81**
Harvesting ryegrass	0.66

Feeding Out

1 hour per day 100 days 100 hours

WEIGHTS AND MEASURES

Measures of Length – British and Metric Equivalents

1 inch	=	2.54 centimetres
1 foot	=	30.4799 centimetres
1 yard	=	0.914399 metres
1 chain	=	20.1168 metres
1 mile	=	1.6093 kilometres
1 metre	=	39.370 inches
	=	3.281 feet
	=	1.0936 yards
1 kilometre	=	0.62137 miles (approximately 5 furlongs)

Surveyors Measure – (Lineal)

Inches	Links	Feet	Yards	Chains	Mile
1.00	0.126	0.0833	0.0278	0.00726	0.0000158
7.92	1.000	0.6600	0.2200	0.01000	0.0001250
12.00	1.515	1.000	0.3333	0.01515	0.0001894
36.00	4.545	3.000	1.0000	0.04545	0.0005682
793.00	100.00	66.000	22.000	1.0000	0.0125159

Measures of Area – British and Metric equivalents

1 square inch	=	6.4516 square centimetres
1 square foot	=	0.092903 square metres
1 square yard	=	0.836126 square metres
1 acre	=	0.40468 hectare
1 square mile	=	259 hectares

Surveyors Measure (Square)

A strip 1 chain wide goes 8 acres to the mile

Ten square chains = 1 acre

A square mile contains 27,878,400 sq. ft, 3,097,600 sq. yards or 640 acres

Acres x 0.0015625 = sq. miles

Sq. yards x 0.000000323 = sq. miles

625 sq. links = 1 perch = 16.5 feet square

Measures of Weight – British and Metric Equivalents:

1 oz	=	28.4 grams
1 lb	=	454 grams
1 kilogram	=	2-1/5 lb
1000 kilograms	=	1 long ton (approx)

Conversion from British to Metric and Vice Versa

To Convert	British to Metric Multiply by:	Metric to British Multiply by:
Inches – Millimetres	25.4000	0.0394
Feet – Metres	0.3048	3.2808
Yards–Metres	0.9144	1.0936
Miles–Kilometres	1.6093	0.6214
Sq. inches–sq. centimetres	6.4516	0.1550
Sq. feet – sq. metres	0.0929	10.7639
Cu. inches–Cu. centimetres	16.3870	0.0610
Cu. Feet–Cu. Metres	0.0283	35.3148
Ounces (av)–Grammes	28.3500	0.0350
Pounds (av)–Kilogrammes	0.4536	2.2046
Gallons–Litres	4.5459	0.2199
British H.P. (746 watts)–Metric H.P. (736 watts)	1.0136	0.9865
Foot pounds–Kg metres	0.1383	7.2340
p s i – kg per sq. cm.	0.0703	14.2230
Gal per min–Cu. Metres per hour	0.2728	3.6662
Cu. ft. per min–Litres per sec	0.4719	2.1190
B.t.u. per lb Kcal per kg	0.5555	1.8000

1 kilogram per hectare = 0.89 lb per acre

Approximate Equivalents

6½ sq. centimetres	=	1 sq. inch
1 sq. metre	=	10¾ sq. feet
1 millimetre	=	1/25th inch
2½ centimetres	=	1 inch
1 metre	=	39-3/8 inches
1 kilometre	=	5 furlongs
1 kilometre	=	5/8 mile
1 kilogramme	=	2¼ lbs
1000 kilogrammes	=	1 ton
1/16 inch	=	1.58 mm or 0.158 cm
1/8 inch	=	3.175 mm or 0.3175 cm

SECTION 2

REVENUE DATA

1. MEAT

(a) Sheep

Locally Consumed Lamb and Mutton

There is a considerable volume of sales from farm to wholesale meat buyers direct, but the main sales such as Addington and Burnside still set the market in the South Island. The weekly stock report is the best guide to the current situation.

Export Lamb and Mutton

Meat which is exported is graded by the New Zealand Meat Producers Board. The various grades are paid for by means of a meat schedule, details of which are set out on the following page

As regards lambs, ewes and wethers the payout is based on a separate assessment for meat and another for pelt and wool payment. These schedules are subject to alteration without notice. In the case of meat, prices may be altered to make allowance for any one or a combination of the following:–

1. Changes in meat prices due to supply and demand at Smithfield
2. Changes in price for by-products, and
3. Changes in killing charges.

If the meat and pelt schedule remains relatively stable throughout the season for lambs then, other things being equal there should be an increase in return per head due to the increased wool pull later in the season.

In Canterbury many freezing ewes are sold "on the hoof" in the owner's yards.

Meat Exporters Schedule – December 1970

LAMBS:	Meat/lb
Prime	c.
20 to 28 lb	16.8
29 to 36 lb	15.5
37 to 42 lb	13.7
43 to 50 lb	13.0
FAQ	
20 to 28 lb	15.5
29 to 36 lb	15.1
37 lbs and over	12.9
Omega	
28 lbs and under	14.9
29 to 36 lbs	13.7
Alphas	12.4

EWES:	Meat/lb
Prime	c.
48 lb and under	5.5
49 to 56 lb	4.5
57 to 64 lb	3.5
65 to 72 lb	2.5
73 to 80 lb	2.0
81 lb and over	1.5
Overfats	1.0
FAQ	
48 lb and under	5.5
49 lb and over	4.5
Canners	3.5
Choppers	1.0

WETHER:	Meat/lb
Prime	c.
48 lb and under	9.5
49 to 56 lb	8.6
57 to 64 lb	7.7
65 to 72 lb	6.4
73 to 80 lb	5.1
81 lb and over	4.7
Overfats	4.2
FAQ	
48 lb and under	9.1
49 to 56 lb.	8.8
57 lb and over	7.3
Canners	4.5
Choppers	1.0

HOGGET	Meat/lb
Prime	c.
48 lb and under	10.5
49 to 56 lb	9.6
FAQ	
48 lb and under	10.1
49 to 56 lb	9.2

Skin Payments

Woolly Lambs

1¼	lbs	91	cents/head
1-3/8	lbs	93	cents/head
1½	lbs	95	cents/head
1-5/8	lbs	98	cents/head
1¾	lbs	100	cents/head
1-7/8	lbs	102	cents/head
2	lbs	105	cents/head

Ewes

½	lb	76	cents/head
5/8	lb	78	cents/head
¾	lb	81	cents/head
7/8	lb	83	cents/head
1	lb	85	cents/head
1-1/8	lbs	87	cents/head
1¼	lbs	90	cents/head

Woolly Lambs

2-1/8	lbs	10 107	cents/head
2¼	lbs	109	cents/head
2-3/8	lbs	111	cents/head
2½	lbs	114	cents/head

less 12 cents per skin for seedy pelts, and 5 cents per lb for seedy wool. Deductions will also be made for black fibres of 5 cents per lb.

Ewes

1-3/8	lbs	92	cents/head
1½	lbs	95	cents/head
1-5/8	lbs	98	cents/head
1¾	lbs	101	cents/head
1-7/8	lbs	104	cents/head
2	lbs	107	cents/head
2-1/8	lbs	109	cents/head
2¼	lbs	111	cents/head
2-3/8	lbs	113	cents/head
2½	lbs	115	cents/head
2-5/8	lbs	118	cents/head
2¾	lbs	121	cents/head
2-7/8	lbs	124	cents/head
3	lbs	127	cents/head

Seedy wool—a deduction will be made.

In forecast budgeting the following may be used as a reasonable guide for export meats:

Lamb	Prime 32 lbs	15.5	per lb	+ wool allowances
	Seconds	15.0	per lb	+ wool allowances
Ewes	Under 56 lbs	5.0	per lb	+ wool allowances
	Over 56 lbs	3.5	per lb	+ wool allowances
Wethers	Under 56 lbs	9.0	per lb	+ wool allowances
	Over 56 lbs	8.0	per lb	+ wool allowances

Lamb Pelts

Prices for sound pelts in December 1970 were $12.75 – $14.00 per dozen.

For average receipts budget on $1.10 per pelt.

(b) Cattle

The following Canterbury schedule was in operation at 23rd December 1970.

		361/720 lbs	Over 720 lbs	Yield Based on Chilled Weight
G.A.Q. Ox	1	23.50	23.50	Over 64%
	2	22.00	22.00	59% – 63.9%
	3	21.00	21.00	54% – 58.9%
F.A.Q. Ox		23.00	23.00	Graded as at present
Y.A.Q. Ox	U/400	20.00		
	O/400	21.00		

		U/560 lbs	O/560 lbs	
G.A.Q. Heifer	1	23.50	23.50	Over 64%
	2	22.00	22.00	59% to 63.9%
	3	21.00	21.00	54% to 58.9%
F.A.Q. Heifer		23.00	23.00	Graded as at present
Y.A.Q. Heifer	U/400	20.00		
	O/400	21.00		

		U/600 lbs	O/600 lbs	
G.A.Q. Cow	1	21.50	21.50	Over 59%
	2	20.00	20.00	54% to 58.9%
F.A.Q. Cow		20.00	20.00	Graded as at present

Boner Cow, Ox & Heifer	1	20.00	Over 61%
	2	19.00	54% to 60.9%
Overfat Cow, Ox & Heifer		12.00	Under 54%
Boner Bull	1	21.00	U/375 lbs
	2	23.50	O/375 & over 61%
	3	22.50	O/375 54% to 60.9%

This schedule is subject to alteration without notice, and is based on the carcase with kidneys, kidney fat and channel fat removed.

Addington market prices for fat cattle for local consumption during November 1970 were as follows:–

Prime steers –	Heavy	$164–184
	Medium	$145–160
	Light	$120–140
Prime Heifers –	Heavy	$122–132
	Medium	$108–118
Prime Cows –	Heavy	$ – –123
	Medium	$100–110

The "Press" reports of the Addington Market should be followed regularly and account taken of seasonal variations in price in making budgetary estimate.

Forecasting of beef export schedule prices is very difficult owing to fluctuations in supply in the United Kingdom which affect the schedule here. The schedule should form a general guide.

(c) **Pigs**

(i) The Addington market supplies the local trade.
Addington market prices in January 1971 were as follows:–

Light Porkers	$17 – $22
Medium Porkers	$22 – $26
Heavy Porkers	$26 – $31
Light Baconers	$26 – $31
Medium and Heavy Baconers	$32 – $37
Choppers	$18 – $46

These prices are subject to seasonal variation so up-to-date newspaper reports should be consulted when budgeting.

(ii) The following schedule gives the prices per lb, paid by Canterbury Freezing Companies, to farmers for pigs sold direct to the Freezing works. This schedule is effective from 30th November 1970.

Porkers		Under 60 lb	12.00 cents/lb
		60 – 100 lb	23.00 cents/lb
		101 – 1101 lb	26.00 cents/lb
Baconers	91/110 lbs	Prime Exportable	25 cents per lb
		Second Quality	17 cents per lb
		Unexportable Prime	22 cents per lb
		Unexportable Seconds	17 cents per lb
	111/140 lbs	Prime 1	26 cents per lb
		Prime 2	23 cents per lb
		Second Quality	17.5 cents per lb
		Unexportable Prime	23 cents per lb
		Unexportable Seconds & Mutilated	17.5 cents per lb
	141/150 lbs	Prime 1	24.5 cents per lb
		Prime 2	21.5 cents per lb
		Second Quality	15.0 cents per lb
		Unexportable Prime	21.5 cents per lb
		Unexportable Seconds & Mutilated	15.0 cents per lb
	151/160 lbs	Prime 1	23.0 cents per lb
		Prime 2	20.0 cents per lb
		Second Quality	13.0 cents per lb
		Unexportable Prime	20.0 cents per lb
		Unexportable Seconds & Mutilated	13.0 cents per lb
	161/180 lbs	Prime Exportable	15 cents per lb
		Second Quality	12 cents per lb
		Unexportable Prime	12 cents per lb
		Unexportable Seconds & Mutilated	12 cents per lb

Choppers	All Weights	12 cents per lb
Boars	Up to 100 lbs	12 cents per lb
	Condemned	NO VALUE

Deductions Insurance 15c per pig, Pig Council Levy 20 cents per Pig.
Transport charges as for nearest Works. Subject to change at Short Notice.

2. WOOL

The following were the Average Gross Prices for the Christchurch sale of December 2nd 1970. These can be used in budget work, although reference should be made to up-to-date wool sales and market reports.

Count Ranges		Av. Price per lb in Cents
60/64's	Merino	36¼ cents
58/60's	Halfbred	36¼ cents
56's	Corriedale	33½ cents
48/50's	Fine Crossbred	27¾ cents
46/50's	Medium Crossbred	26¾ cents
46/48's	Strong Crossbred	25¾ cents

Note that these prices are applicable to clips of average quality in each of the count ranges. Where exceptionally good or poor wool is clipped an adjustment of 1 cent to 2 cents per lb could be made.

In following the wool sale reports from time to time in the press, the quotations for the Average grade of fleece wool in each count range should be noted particularly as this figure is an excellent guide to the overall average price per lb including oddments for the majority of clips.

3. DAIRY PRODUCE

(a) Cream to Butter Factories

The payout is based on the guaranteed price (at present 28.10c per lb) but actual payouts to suppliers will depend upon factory efficiency and transport costs of cream to factories. Advance payouts below the guaranteed price are made each month and the final payment or bonus is made in July of each year. There are three grades of cream: Finest, First and Second. The majority of the cream produced should grade Finest.

The Tai Tapu Dairy Factory for the 1970/71 season is paying the following advance payment:–

Finest	24.80	Expected final payout is 4.5 cents
First	24.30	
Second	22.30	

(b) Whole Milk to Butter Factories

In many North Island districts this is common practice. The dairy company sends round tankers to collect all the milk from the farms daily. Advantages are:

i. More efficient separation of the cream
ii. Utilization of the Skim Milk to make Skim Milk Powder
iii. For the farmer the problem of keeping pigs to utilize large quantities of skim milk is eliminated

Payouts vary with the level of factory efficiency and transport costs but usually they are about 3½ cents per lb ahead of those factories which receive only cream. This return comes from the skim milk powder and compensates the farmer in some measure for the pig profits he can no longer obtain.

(c) Whole Milk to Cheese Factories

Is paid for on a butterfat basis. The guaranteed price is 5 cents per lb of butterfat more than for butter factories. Actual payments will depend on the efficiency of factories and returns from the usage of by-products for the manufacture of such items as whey butter, and milk sugar.

(d) Whole Milk to Casein, Milk Powder and Condensed Milk Factories

Usually based on cheese but actual payouts will depend on available contracts to sell overseas. Most pay out more than cheese.

(e) Whole Milk for Town Supply

The national milk prices have been fixed at the following rate for the 1970/71 season:

23.63 cents first, plus 1.67 cents per gallon quota milk finest.
minus 3.3 cents per gallon quota milk second grade.

The Canterbury Dairy Farmers Limited seasonal payments for quota milk during the 1970/71 season are as follows:

Canterbury Dairy Farmers Limited Prices 1970/71

		Quota Milk			Surplus Milk		
Months	Full Price Paid for	Finest	First	Second	Finest	First	Second
September, 1970	105% of quota	34.696	33.026	24.696	12.71	11.04	7.71
October	105% of quota	18.42	16.75	13.42	12.71	11.04	7.71
November	105% of quota	18.42	16.75	13.42	12.71	11.04	7.71
December	105% of quota	18.42	16.75	13.42	12.71	11.04	7.71
January 1971	105% of quota	18.42	16.75	13.42	12.71	11.04	7.71
February	115% of quota	22.75	21.08	17.75	17.75	16.08	12.75
March	115% of quota	22.75	21.08	17.75	17.75	16.08	12.75
April	125% of quota	34.696	33.026	24.696	12.71	11.04	7.71
May	125% of quota	34.696	33.026	24.696	12.71	11.04	7.71
June	130% of quota1	34.696	33.026	24.696	12.71	11.04	7.71
July	130% of quota	34.696	33.026	24.696	12.71	11.04	7.71
August	120% of quota	34.696	33.026	24.696	12.71	11.04	7.71

* = estimated basis of payment less levy of 0.21c per gallon.

NOTE:

(a) Finest grade is milk which passes a 6-hour reductase test and contains not less than 3.5% butterfat, and a sediment test of 1 or 2 and freezing point 0.530 or more.

(b) First grade is milk which passes a 4-hour reductase test but fails to pass the 6-hour test and/or contains not less than 3.25% butterfat.

(c) Second grade is milk which fails to pass a 4-hour reductase test or contains less than 3.25% butterfat, or sediment test 3 or freezing point less than 0.530.

(d) A premium of 0.42c per gallon is payable on full price milk from herds which are free of brucellosis.

(e) A penalty of 0.83c per gallon is applied to milk testing 8.35% S.N.F. and below, and 1.67c per gallon to milk testing 8.20% S.N.F. and below.

The penalty is applied on a monthly basis on the average of three solids-not-fat tests per month—one in each 10 day period.

(f) The national town milk price in 1970/71 is 23.63 cents per gallon for first grade milk. A premium of 1.67 cents per gallon applies to finest grade milk and a penalty of 3.33 cents per gallon to second grade milk. A special South Island allowance, together with a special allowance for the Christchurch area of 5 cents, applies to "full price" milk of finest and first grade in September 1970 and April to August 1971. This is included in above prices.

(g) For February and March 1972, the basis of payment will be full price on quota plus 20% and normal surplus prices.

Throughout New Zealand about 96% of the milk supplied is graded Finest and less than 0.5% is graded second. Chilled milk premiums are:

.7c per gallon quota milk of chilled and held: or
.4c per gallon of chilled only.

(f) Bobby Calf Realizations

In Canterbury the majority of calves are of the Friesian breed. Prices paid by the Bobby Calf pools are based on a price per pound less cartage so that average local returns are above the national average, and above what we could expect if Jerseys were the predominant breed on a farm. Budget figures to be adopted are:

North Island		South Island	
Friesian type calves	$11.00 per head	Friesian type calves	$20–25 per head
Jersey type calves	$ 9.00 per head	Jersey type calves	$10–15 per head

4. DAIRY CATTLE

The dairy cattle offered at Addington are not of very good quality by and large, except for some lines of yearling heifers so that the Addington market prices are not a good guide to dairy cattle values. In Canterbury with a distinct emphasis on town supply dairying there is a considerable premium paid for autumn calving cows and heifers over the prices paid for spring calving cows and heifers. Price ranges are difficult to pinpoint and the following can be considered a guide only.

Good quality	Friesian cows (autumn calvers)	$150 – $190
Average quality	Friesian cows (autumn calvers)	$120 – $150
Good quality	Friesian heifers (12–18 months old)	$ 90 – $110

Spring calving cows and heifers – $20 – $30 per head below the comparable autumn calving figure.

5. BREEDING & STORE STOCK

The main sales and ewe and ram fairs are the markets for breeding and store stock.

A chart has been drawn up for an analysis of prices paid for the main classes of stock. This should be filled in by watching for the appropriate sales, and used as a guide. If all sales reports are noted, any marked changes will be picked up as the year progresses. In some cases, a figure has already been entered, and these should be used as a guide only.

(a) **Sheep**			Range
2T Ewes	Romney	Good	to
		Average	to
		Small	to
	Corriedale	Good	to
		Average	to
		Small	to
4 year old ewes	Romney	Good	to
		Average	to
	Fine Wool	Good	to
		Average	to
		Small	to
5 year old ewes	Romney	Good	to
		Average	to
		Poor	to
	Fine Wool	Good	to
		Average	to
		Poor	to
Works Ewes—Aged		Broken Mouth	to
Ewe Hoggets	Romney	Good	to
		Average	to
	Fine Wool	Good	to
		Average	to
Store Lambs	Romney	Good	to
		Average	to
		Small	to

Down Cross	Average	to
Half Bred Wether		to

Ram (flock) Average Quality

	Autumn Sales
South Down	$45 – $55
Dorset Down	$50 – $60
Romney	$40
Corriedale	$50
Halfbred	–
Border Leicester	$80 – $90
Coopworth	–

(b) Beef Cattle

The following prices are guides only—consult press reports for up to date information.

Steer calves	$50–70
Heifer calves	$40–60
Weaner Steers	$80–123
Weaner heifers	$65–90
Best 2 yr Steers	–$139
Average 2 yr Steers	$100–$120
Best 2 yr Heifers	–$156
Average 2 yr Heifers	$128–$136
Breeding Cows	$110
Beef Bulls	$300–600

(c) Pigs Prices ruling January 1971

Small Weaners	$4.50 – $6.00
Best Weaners	$6.80 – $9.10
Slips	$10.00 –$12.00
Small and Medium Stores	$12.30 –$15.00
Large Stores	$17.00
Older Sows (in pig)	$50.00

6. CROPS

(a) Wheat (South Island Prices for 1970/71 season)

Hilgendorf	$1.65 per bushel F.O.R.)
Arawa	$1.40 per bushel F.O.R.)
All other varieties	$1.45 per bushel F.O.R.)

Storage increments for wheat held on farms after harvest,

After April 30th, 5c. After May 31st, 7c.
After June 30th, 9c. After July 31st, 12c
After August 31st, 14c. After September 31st 15c.
October onwards, 16c.
South of Wakouaiti increments are delayed one month.

(b) Barley

Preferred Malting varieties	92 cents contract per bushel
Feed Barleys	80 cents contract per bushel

(If property over 40 miles from Christchurch feed barley contract price is reduced 2.5c per bushel.)

Seed Barleys Certified Mother (from Pedigree) 5c above malting
Certified Commercial (from Mother) 5c above malting

(c) Oats (Prices for A grade milling or G.A.Q. quality F.O.R.)

Gartons and other white oats	(contract) 80 cents	(free) 70–75 cents
Algerians		(free) 75 cents

(d) Peas

			1970/71
(i)	Partridge (contract)		$1.50
	free		$1.60
(ii)	Garden (contract)	Greenfeast	$1.60
	"	Onward	$1.80
	"	Wm. Massey	$1.90
	"	Victory Freezer	$1.60
	"	White Prolific	$1.40

(iii) Green Peas for Freezing

Payout depends on stage of maturity at harvest as indicated by tendrometer reading.

Freezer Pea Payouts 1970/71

Grade	Tendrometer Reading	$ per ton (2,240 lbs) Packed Weight
0	– 90	82
1	91 – 95	74
2	96 – 100	65
3	101 – 105	57
4	106 – 110	50
5	111 – 115	48
6	116 – 120	46
7	121 +	44

(e) Linseed

Budget at $68.00 per ton with bonuses for above average quality.

(f) Lupins

$1.50 per bushel

(g) Ryecorn

$1.30 per bushel to farmer

(h) Main Crop Potatoes

Prices of table potatoes vary considerably from year to year depending on the areas planted and yields obtained per acre. Prices have been stabilized to some extent by the introduction of a guaranteed payout scheme by the Potato Board for all surplus potatoes grown on contract to them. The guaranteed basic prices per ton in the South Island are as follows:

Varieties

Sutton, Aucklander Short Top, King Edward, Red King Edward, Katahdin	$20 per short ton
All other varieties	$15 per short ton

Seed potato prices vary from year to year with changes in supply and demand but usually range from $40–60 per ton. Potato growing is a specialist occupation and considerable care is needed in attempting to budget forward because of the wide fluctuations in price from year to year.

Potato Board Levy: $1.40 per ton

(i) A number of other specialist crops such as Brassicas for seed are sown in different areas for which price figures have not been obtained. Students will usually get the necessary information for budgeting when on a farm visit to these areas.

7. SMALL SEEDS

The grain and produce reports published at intervals in the "Press" give up to date prices and should be retained as additional information on this subject as the year proceeds. Prices to the farmer on a machine dressed basis vary with the purity and germination of the line of seed and the following can be considered to be a general guide only. They stand as at 25.1.71.

(a) Grass Seeds (Per Bushel)

	$
Manawa Ryegrass	
Certified 2nd generation	1.30
Certified 1st generation	1.40
Basic	1.40
Paroa Italian Ryegrass	
Certified 2nd generation	1.55
Certified 1st generation	1.65
Basic	1.70
Ruanui Ryegrass	
Certified 2nd generation + P.P.	1.45
Certified 1st generation	1.50
Basic	1.55
Ariki Ryegrass	
Certified 2nd generation	1.50
Mother 1st generation	1.60
Basic	1.65
Grasslands Apanui Coxfoot (per lb)	
Certified 1st generation	0.25
Basic	0.25
Tama (per bushel)	
2nd Generation	–
1st Generation	1.35
Basic	1.40

(b) Clover Seeds (Per lb)

	cents
Huia Clover	
Certified 2nd generation + P.P.	45 c.
Certified 1st generation	46 c.
Basic	47 c.
Turoa Montgomery Red Clover	
Uncertified	20 c.
Certified 2nd generation	24 c.
Certified 1st generation	24 c.
Basic	25 c.
Hamua Broad Red Clover	
Uncertified	20 c.
Certified 2nd generation	24 c.
Certified 1st generation	24 c.
Basic	25 c.
Subterranean Clover	
Uncertified	15 c.
Tall Fescue	20 c.
Prairie Grass	8 c.
Wairau Lucerne	
Uncertified	25 c.
Mother 2nd generation	31 c
Basic	31 c.

Kahu Timothy (per lb)	$
Certified 2nd generation	0.24
Certified 1st generation	0.25
Basic	0.25

O.E.C.D. Seed Certification Grades

N.Z. Certified Govt. Stock	=	N.Z.
Pedigree	=	Basic
Mother	=	1st Generation
Standard	=	2nd Generation

SECTION 3

FARM EXPENDITURE DATA

1. WAGES

(a) Musterers, Packers and Drovers Award – refer Fed. Farmers Handbook
Shearers and Shed Hands Award – refer Fed. Farmers Handbook
Dairy Farm and Farm and Station Wages – refer Fed. Farmers Handbook

Minimum Rates	Dairy Farm	Farm and Station
Under 17 years	$ 9.05	$6.825 p.w. & found
Between 17 and 18 years	11.325	8.775
Between 18 and 19 years	13.775	10.775
Between 19 and 20 years	16.10	12.85
Between 20 and 21 years	18.325	15.10
Over 21 years	20.55	19.25

If not found an extra $4.25 is payable
Board allowance is $3.25 for labour occupying a farm house
Allowance for house is $1.00 per week.
Include in wages to cost of keep of single men at $3.25 per week, over and above wages paid.

Wages for Dairy Farm Workers

Minimum in North Island at moment $45 rising to $60–70 for married men (gross).

Single men $30–40 per week gross

Some Managers of large herds receive up to $5,000 per annum.

Casual

	per hour		per day	
	Found	Not Found	Found	Not Found
Over 18 years	45½ cents	57 cents	$3.65	$4.25
Under 18 years	30 cents	39 cents	$2.48	$3.10

(b) **Shearing Wages**

(a) **Machines**

(1) **Main shearing of ewes and lambs**

Range: $13.00 to $18.00 per 100 shorn
Majority: $15.00 per 100 shorn, Canterbury—$18.00 per 100 shorn
Pre-lamb: $1.00 per 100 higher
Snow-comb: + additional $1.00 per 100.

(2) **Lamb Shearing only**

Some gangs have different rates for ewes and lambs, lambs being $1.00 per 100 below the ewe shearing rate.

(b) **Blades**

(1) **Contract gangs**

(i) Ranges from $26.00 to $26.00 per 100 depending on size of gang, whether a classer included or not, and whether all rations in or various items supplied by the farmers.

(ii) Formula, (all in) (2 x shearing rate) + 15%

(2) **Shearers only**

Range: $16.00 to $18.00 per 100

Full Crutch: Machines

Range: $4.50 to $6.00 per 100
Majority: $5.00

Light Crutch:

Range: $3.50 to $4.50 per 100
Majority: $3.50 tup crutch only
$4.00 tup crutch and eye-wig

Full Lamb Crutch:

Range: $3.50 to $5.00 per 100

Woolshed Hands:

(1) **Fleecies**

$1.25 per hour

(2) **Classers**

"Ringer" rate or average daily rate per shearer e.g. At 200 sheep per day at $15.00 per 100 Classer paid $30.00 per day.

2. ANIMAL HEALTH

(a) Dog registration fees and Hydatid control fees $2.10

(b) **Contract Sheep and Cattle Dipping**

(i) Sheep Dipping

(a) **Plunge**: Total Cost, including materials:

1	to	500	7½	cents per sheep
500	to	1,050	6½	cents per sheep
1,050	to	2,050	6	cents per sheep
2,050	to	4,000	5½	cents per sheep
Over 4,000			5	cents per sheep

(b) Mobile Shower:

(1) $40 per 1,000 plus materials
(2) 6c to 7c per sheep, including materials, depending on length of wool.

(ii) Cattle Dipping

Mobile Shower:

(a) 2 applications Diazinon:
18c per head per application.

(b) 1 application Dursban
25c per head.

(c)

SHEEP DIP GUIDE

Parasite	Dip to Use	Active Ingredient	Method of Application	Dilution	Average cost per 100 sheep	Cost Per Gal. concentrate
Lice, Ked, Fly	Trigon	VC1-13	Plunge	1:500	$1.70	
				1:1000	$3.40	$15.98
			Shower (CR)	1:320	$1.25	
				1:640	$2.50	
Lice, Ked Fly	Diaz-O-Spray	Diazinon	Plunge	1:1000	$3.38	
				1:2000	$1.69	
				1:500	$2.20	$19.55
			Shower	1:1000	$1.10	
			Tip Spray	1:200		
				1:100	$2.17	
Lice, Ked Maximum Fly	Supreme	Supona	Plunge	1:500	$4.90	$18.70
			Shower	1.250	$4.10	
Lice, Ked	Numix	VC1-13 Pwd.	Plunge	5 pkts:1000	$1.60	$20.00 ctn.
			Shower	5 pkts:750	$1.20	$ 4.00/bag
Lice,Ked Itchmite	Q.A.Dip	Arsenic Sulphur Rotenone	Plunge	1 pkt:100	$1.90	$13.00 ctn.
			Shower	1 pkt:100	$1.43	$ 2.60 pkt.
Lice, Ked Itchmite	I.W. Dip	Arsenic Sulphur	Plunge	1 tin:200	$2.00	$20.00 ctn.
			Shower	1 tin:200	$1.38	$ 5.00

(d) Drenches and Bloat Control

(i) Drenches

Drench	Size of Pack	Cost	Dose Rate	Cost per Head
Selenium	450 cc bottle	$ 1.50	Sheep & lambs 1 cc	0.33 cents
Thibenzole	1 gallon	21.60	Lambs 11 cc Sheep 19 cc	lambs 5.26 cents Sheep 9.07 cents
	5 gallons	100.80	(4520 cc in 1 gal.)	lambs 4.91 sheep 8.47
Nilverm	5/8 gallon	9.90	Lambs 15 cc	lambs 5.26 sheep 7.01
	1 gallon	15.57	Sheep 20 cc	lambs 5.17 sheep 6.88
	2½ gallons	35.64		lambs 4.73 sheep 6.30
	5 gallons	66.87		lambs 4.44 sheep 5.91
Loxon	1 gallon	16.65	Lambs 14 cc Sheep 21 cc	lambs 5.16 sheep 7.74
	5 gallons	78.70		lambs 4.88 sheep 7.31
Bovizole	1 pint	5.76	Calves 55 cc	57.6
	3 pints	16.56		53.4
	1 gallon	41.40		50.48
Nilverm (Cattle)	1 gallon	17.55		
	5 gallon	76.50		
	10 gallon	151.20		

(ii) Bloat Control

Emulsified Spraying Oils –	Light	5 gal. pack	$1.54 per gallon
		46 gal. drum	$1.27 per gallon
	Heavy	5 gal pack	$1.91 per gallon
		46 gal drum	$1.64 per gallon

(e) Vaccines

Vaccine	Size of Pack	Cost	Dose Rate		Cost per Head
Black disease	100 cc	$ 0.54	Sheep & lambs Cattle	2 cc 5 cc	1.08 cents 2.70 cents
Blackleg	100 cc	1.17	Sheep & lambs	2 cc	2.34 cents
	200 cc	2.34			
	500 cc	5.85			
Malignant Odema	100 cc	1.76	Sheep & lambs		3.52 cents
	200 cc	3.51	Cattle	2 cc	3.51 cents
Multine 5	100 cc	3.51	Sheep & lambs	2 cc	7.02 cents
	200 cc	6.84			6.84 cents
	500 cc	16.20			6.48 cents
	1000 cc	31.86			6.37 cents
Pulpy Kidney	50 cc	0.59	Sheep & lambs	2 cc	2.36 cents
	100 cc	1.22			2.44 cents
	200 cc	2.25			2.25 cents
	500 cc	5.13			2.05 cents
	1000 cc	9.72			1.94 cents
Scabine	150 dose	1.13			0.07 cents
Triple	100	2.79	Sheep & lambs	2 cc	5.58 cents
	200	5.58			5.58 cents
	500	13.50			5.40 cents
	1000	25.65			5.13 cents

(f) **Penicillin**

Sheep	100,000	$1.10	doz.	Cows	25,000	$0.78
	500,000	$2.20	doz.		50,000	$0.90
	1,500,000	$2.32	½ doz.		100,000	$1.15
				Adpen	100,000	$1.65

Disinfectants

Kerol	$4.10	per gal.
Detol	$4.50	per gal.
Formalin	$39.90	for 44 gal. drum
Bluestone	$29.00	per 1 cwt

Footrotting costs estimated $2.00 per 100

Docking rings $2.70 per packet of 500.

Veterinary Club Membership

Veterinary Club charges vary from club to club. A typical one would be:

Membership – $5.00 plus Building Fee of $4.00 for 1st 5 years. $4.00 per visit within 10 miles radius, $5.00 per visit within 20 mile radius. $6.00 per visit within 30 mile radius, etc. Surgery calls $0.75 All these plus drugs.

Tb. Testing

Spot testing – nil fee to farmer under normal circumstances.

Dairy Farm – total animal health expenses approximately

$2.50 – $3.00 per cow (factory supply)
$3.50 – $4.00 per cow (town milk supply)

3. BREEDING EXPENSES

(a) Artificial breeding – Canterbury

Group service $1.60 – $2.25 per cow inseminated for specific spring and winter mating seasons. Frozen semen available all year

round at $2.00 plus 10 cents per mile per insemination. Nominated bull $3.00 per insemination above basic fee or group service.

Taranaki H.I.A.

Charge for first service:

1st cow	$5.00	4th cow	$2.75
2nd cow	$4.25	5th cow	$2.00
3rd cow	$3.50	All other cows	$1.25

All subsequent return services $0.60 per cow. Deep frozen semen, above costs + $2.00 per insemination.

(b) Herd Testing

(S.I. Herd Improvement Assn.) Monthly testing, $5.00 herd fee plus $1.65 per cow. Minimum fee $38.00 for 20 cows. Bi-monthly testing $400 herd fee plus $1.10 per cow. Minimum fee $26, for 20 cows. For 2 tests per season (Nov/Jan), herd fee is $3.00 + 55 cents per cow. Minimum fee is $14 for 20 cows.

Taranaki H.I.A.

Monthly Test – Herd Fee	$15.00	+	$1.40 per cow
Alternate Mthly Test– Herd Fee	$ 9.00	+	$0.84 per cow
Production Ranking Test – Herd Fee	$4.50	+	$0.42 per cow

4. CASH CROPPING EXPENSES

(a) Contracting rates

(i) Contract Heading

Wheat & Barley:	When the crop runs 35 bus. per acre or over 17c./bus.
Oats:	When the crop runs 35 bus. per acre or over 17c./bus.
Peas & Lupins:	When the crop runs 35 bus. per acre or over 20c./bus.
Dressed Sample Peas	21c./bus.

In all cases where heading is carried out on hill country, the bushel rate shall be increased by 20%.

Linseed –	$6.00 per ½ ton and under per acre. $7.00 per ½ ton or hourly rates
Browntop & Clover	$7.00 per acre or hourly rates according to size of header.
Grass Seed	Hourly rates or $6.00 per acre where crop runs under 30 bush. per acre.

Minimum charge in all cases must be not less than $2.00 per foot front per hour, or $6.00 per acre.

i.e. 8 ft. header – $16.00 per hour
10 ft. header – $20.00 per hour
12 ft. header – $24.00 per hour.

Where a bag sewing machine and twine is supplied by a contractor, a charge of 1 cent per bag shall be made.

Where peas, browntop, white clover, linseed and grass seed are being direct-headed, then $1.00 per acre shall be charged extra.

When threshing out of a stack, and the contractor is called upon to supply labour, then this shall be charged for at $2.00 per man per hour for such extra men.

Up to 8 foot headers	– 1 bag sewer supplied by the contractor
Over 8 foot headers	– 2 bag sewers supplied by the contractor
Bulk heading	– same rates as ordinary heading
Auger hire	– 35 cents per ton each time auger is used

In case of emergency, when work has to be done on Sunday, the extra wages paid to the men shall be charged in addition to the normal rates.

2½% discount for payment within 30 days of the work's being done.

Cartage from header to silo, including use of auger, 3 cents per bushel.

Chaff Cutting:

Oatsheaf	22 cents per bag or minimum of $5.00 per ton
Straw Chaff	40 cents per bag or minimum of $5.00 per ton
Oaten Hay	40 cents per bag or minimum of $5.00 per ton
Lucerne	44 cents per bag or minimum of $5.00 per ton

These prices apply within a radius of 5 miles from the contractors head-quarters. Any work done beyond this distance will be charged at $0.45 per

mile, one way.

Wheat Levies: Total Levies amount to $0.29 per 50 bushels
$0.20 – Wheatgrowers Compensation Fund
$0.02 – United Wheat Growers
$0.07 – Wheat Research Institute

(ii) Contract Mowing

Peas – $3.50 per acre with a minimum of $7.00 per hour
Grass – $2.50 per acre with a minimum of $6.00 per hour

(iii) Contract Windrowing

$10.00 per hour, special crops $12.00

Per acre – Windrowing $2.50 per acre, 4 inches and above
– Windrowing $2.70 per acre under 4 inches. Under 10 acres, 25 cents per acre extra.

Note: The prices listed here, are minimum prices based on average conditions, and may be increased, according to conditions.

(iv) Potatoes

digging	$0.45 per bag
planting	$5.00 per hour, two men two rows: average rate ½ to 1 acre per hour.
bulk harvesting	$4.00 per ton
grading	$0.23 per bag

(b) Sacks (ex store)

The farmer pays 38.0 cents for 48" sacks and 33c for 23" sacks but
gets a rebate of 25 cents for 48" sacks and 22c for 23" sacks hence
Charge to farmer 13 cents for 48" sacks and 11c for 23" sacks

Double brushed sacks (2nd hand)

Farmer pays 34c for 48" sacks and 30c for 23" sacks but gets rebate of 22c for 48" sacks and 18c for 23" sacks, hence
Charge to farmer 12c for 48" sacks and 12c for 23" sacks.

Potato sacks – no rebate is paid. Usually second hand sacks are bought for 28 cents each.

The sacks containing the seeds bought in, would be kept for the seconds off the header and the seed held onto by the farmer for future sowings, so discount them in working out a budget.

A bale holds 250 x 23" sacks.

Capacities:

Ryegrass Perennial	7 bu.	M.D. in 48" sacks, 5 bu. F.D.
H.I. Italian	6 bu.	M.D. in 48" sacks, 4 bu. F.D.
Cocksfoot	100 lb	M.D. in 48" sacks, 60 lb F.D.
Phalaris	140 lb	in double 23" sacks, M.D. 120 lb single sacks F.D.
Timothy	140 lb	in double 23" sacks, M.D. 100 lb single sacks F.D.
Clovers & Lucerne	160 lb	in double 23" sacks, M.D. 120 lb single sacks F.D.
Wheat	3 bu.	F.D. in 23" sacks
Barley	3½ bu.	F.D. in 23" sacks
Oats	3½ bu.	F.D. in 23" sacks
Field Peas	3 bu.	F.D. in 23" sacks
Garden Peas	2½ bu.	F.D. in 23" sacks
Lupins	3 bu.	F.D. in 23" sacks
Linseed	1½ cwt	
Potatoes	160 lb	sack, 14 sacks per ton, 48" sacks.

Quantities of sacks required by farmer

The farmer requires sacks to transport his F.D. product to the store and having been Machine Dressed there, a heavier weight can be put into the bag. As indicated above, clovers, phalaris and timothy are delivered in single sacks

but when Machine Dressed are put into double sacks.

Working on a M.D. basis the approximate number of sacks required by a farmer are as follows.

Ryegrass	1 sack per 3¾ bushels M.D.
Clovers	1 sack per 80 lb M.D.

Twine

Seaming— Green Label 72 threads per hank, 2 hanks per lb @ $0.95 per lb.
Gold Label 110 threads per hank, 2 hanks per lb @ $1.25 per lb

(c) Machine Dressing and Certification as at 29.6.70

Certification charges:

Entry fee. Only payable on potatoes, the charge being $3.00 per acre. Fields for certification must be entered before 20th November.

Machine dressing certificate charges covering sealing all lines of certified seeds are:

Ryegrass all varieties	4c	bus M.D.
Cocksfoot, Timothy, Phalaris	2½c	per 10 lb M.D.
Browntop, Clovers, Lucerne	40c	per 100 lb M.D.
Wheat, Barley, Oats	2c	per bus. M.D. seed lines

Purity and germination Certificate $2.00 per line, plus 10% when business is transacted through the merchant.

Seed certified under laboratory test alone — Ryegrass $0.16 per 100 lbs
White Clover $0.37 per 100 lbs

Seed certified by field inspection — Ryegrass $0.22 per 100 lbs
Clover $0.44 per 100 lbs

Grain and Seed
(except Milling Wheat and Malting Barley)

Consolidated Dressing and Store Handling Charges

(Receiving and delivering, sampling, weighing, dressing, brushing of sacks and disposal of offal).

	Rates per 100 lbs. 1970	1971
Ryegrass – Perennial, Italian and Short Rotation	$1.00	$1.30
– each additional time through	0.50	0.65
Cocksfoot	3.10	4.05
Clovers – White, red, lucerne, Alsike etc	2.70	3.55
Wheat and Ryecorn	0.40	0.50
Barley	0.45	0.60
Field Peas and Lupins	0.45	0.60
Garden Peas and Lupins	0.60	0.80
Oats – Dressing and Clipping	0.55	0.70
Linseed	0.80	1.05
Grass seed – (Fine) – Browntop, Fescue, Dogstail and Timothy	2.70	3.55
Turnips, Chou Moellier, Kale and Mustard	2.70	3.55
Rape	2.00	2.60
Prairie Grass	4.00	5.25
Yarrow	5.25	6.90

Separating White Clover and Ryegrass	per sack	0.35
Separating Mixed Oats and Ryegrass	per sack	0.35
Ceresan or Agrosan Dusting	per bus.	0.12
Orthocide or Spergon Treating	per bus.	0.25
Blending Clovers and Blending Grass	per sack	0.60

Box Hire – $2.50

A box is deemed to hold 13 sacks of grasses.
A box is deemed to hold 18 sacks of grain.

Farmers usually get only their small seeds dressed, and in ordinary circumstances seed goes once through the dressing machines.

Field dressed ryegrass dress out approx.	25% offal leaving 75% M.D.
Field dressed clovers dress out approx.	33% offal leaving 2/3 M.D.
Field dressed tomothy dressed out approx.	25% offal leaving 75% M.D.
Field dressed cocksfoot dress out approx.	25–33% offal leaving 75–67% M.D.

In budgeting it is usual to discuss M.D. yields, thus for ease of working, the following examples have been calculated to show the relationship between actual costs incurred in dressing and what the cost is per M.D. product.

(a) Ryegrass

Twenty acres yield 30 bus/acre M.D. = 600 bus. M.D.
Actual quantity sent in for dressing was 800 bus. (600 bus. is 75% of 800 bushels).
Consolidated charge, 16,000 lbs at $1.30% $208
= 27.3 cents bu. M.D.
Certification charges–4c bushel M.D. 4.0
31.3 cents bus. M.D.
For ease of working use 31 cents per bushel M.D.

(b) White Clover

Twenty acres yielding 200 lb per acre M.D. = 4,000 lb M.D.
Actual quantity sent in for dressing was 6,000 lb F.D.
(M.D. = 2/3rds F.D.) No. of bags F.D. at 120 lb per bag = 50 bags

Consolidated charge 6,000 lbs at $3.55% = $213
Certification charge 4,000 lbs at 40c per 100 lb $16.00
$229.00
Total dressing and certification = 5.7c. per lb. M.D.

Portable Seed Cleaners

Wheat, Barley, Oats	15c per bushel in. Dressing and Pickling 16½c. bus. PLUS cost of pickle
Peas and Lupins	15c bushel in.
Grass seed	15c bushel in.
Clover, White and Red	2½c. per lb in.
Cocksfoot, Dogstail and other seeds	$4.00 per hour
Cocksfoot	2½c per lb in.

5. CULTIVATION CONTRACTS

(a) Tracklaying Machines plus implement

20–25	hp	$6.50	per hour
36–50	hp	$7.50	per hour
51–70	hp	$9.00	per hour
71–90	hp	$10.00	per hour
91–115	hp	$14.00	per hour
116–150	hp	$18.00	per hour

(b) Wheeled Tractors (plus implement)

30–40	hp	$5.00	per hour
40–50	hp	$5.25	per hour
50–60	hp	$5.75	per hour
60–70	hp	$6.50	per hour
70–80	hp	$7.00	per hour
80–90	hp	$8.00	per hour
90–100	hp	$9.50	per hour
100–120	hp	$11.00	per hour

Rotary hoeing – $0.50 per hour additional to the appropriate wheeled tractor rate.

6. DAIRY SHED EXPENSES

Cow covers	$7.95	each lined; $4.20 unlined
Inflations	$2.08	doz. changed 5–6 sets year or 1 set moulded cost $3.49 per doz.
Milk rubbers	$0.27	foot changed 1 set year
Air rubbers	$0.20	foot changed ½ set year
Claw rubbers	$1.19	doz. changed 2 sets year
Hose rings	$1.80	doz. changed 1/3 set year
Galvanised buckets	$2.05	
Milk buckets	$4.50	calf buckets $1.70
Oil–separator	$1.20	gal. plant. Teat salve $1.80 per 4 lb
Detergents – Alkali	$1.95	per 9 lb tin
Iodophor Sanitizors	$5.11	per 1 gal.
	$24.48	per 5 gal.
Iodophor Vat Cleaners	$5.37	per 1 gal.
	$24.81	per 5 gal.
Non Ionic Wetting Agents	$8.95	per 5 gal.
Sterilizers – H.T.H.	.40	lb
Brooms 14 inch	$2.05	Separator brush $0.32
Costs per cow milked	– factory supply $2.00	
	– town milk supply $2.50	

7. ELECTRICITY

Costs per cow milked –
- Factory supply shed (milking, water heater, water pump, waste disposal) $2.50 per cow.
- Town milk supply shed (milking and water heater), water pump, waste disposal $3.00 – $3.50 per cow
- Owners household is excluded
- Power to outbuildings, whares, motors, would total $30 – $55 per year

8. FEED

(a) Haybaling

(i) Contract Rates:

- Windrowing and conditioning – $3.00 per acre
- Raking hay – once over, $1.50 per acre ($6.00 per hour minimum)
- Mowing hay – $2.50 per acre ($6.00 per hour minimum)
- Conditioning hay – $2.00 per acre
- Mowing and conditioning – $3.00 per acre ($7.00 per hour minimum)
- Picking up Bales – Hay or straw $0.13 per large gale
  $0.12 per small bale

For any quantity less than 200 bales, plus $0.01 per bale.
20% surcharge on hill country

(ii) Twine:

Baling Twine – $15.80 per bale (80 lb bales)
1 ball weighs 20 lbs ∴ 4 balls per bale
200 bales (hay) per ball of twine
∴ 1.97 cents per bale

Binder Twine – 24 cents per lb; for 5½ lb ball, $1.35
= 1.1 cents per bale

(b) Forage Harvesting (Silage)

1 Forage harvester, 1 tractor and 1 man only $8.50 per hour
Farmer to supply all other men and gear required
Vacuum Pumps – $2.50 per hour (Tractor supplied by farmer)

(c) Stock Foods

Calf Rearing Costs:

Ancalf	–	$6.07 for 56 lb bag	11c/calf/day
	–	$4.20 after trading rebate	8c/calf/day
Denkavit	–	$7.25 for 50 lbs	14c/calf/day

1 lb/day Buttermilk	–	$3.30 for 56 lbs	5c/calf/day
1 lb/day Buttermilk	–	Price just risen to $4.50	7c/calf/day
Whole Milk	–	¾ gal, 4.5 test @ $0.33	11.2c/calf/day
Meal	–	$0.04 per lb, 1½ lbs/day	6c/calf/day

Moose Nuts

(i) Pure Linseed nut $87.75 per ton (2000 lbs)

(ii) Linseed Balanced nut $80.57 per ton (2000 lbs)

Peerless sheep nuts	$74.60 per ton
Molactrate block	$ 2.15 per 50 lb block
Denkavit	$ 7.25 per 50 lb bag
Molasses	$ 4.20 per 5 gallons
Agricultural salt	$ 2.50 per cwt
Rock Salt	$ 3.50 per 112 lb bag
Barley meal	$59.25 per ton $4.60 per 150 lb bag
Bran	$ 2.30 per 120 lb bag

(d) Grazing Fees (Agistment)

Payment for grazing varies according to the class of livestock the time of the year, seasonal conditions and the district. The following figures are quoted as rough guides only.

Hoggets 8c per head per week
Ewes 8–10c per head per week
Dairy cattle 45c per head per week
Young beef animals 30–40 per head per week

9. FREIGHT AND CARTAGE

Due to the unknown effects of price freeze on recent applications for increased freight rates the charges quoted below are estimates for 1971.

Railway charges, obtainable out of Railways Department Tariff book and classification book.

Stock Capacities of Railway Wagons

Type of Wagon

Cattle

H Wagon		8
H C	1/3 bigger than H	11–12
T W	2 x H	17

Sheep

J Wagon		60
J C	1/3 bigger than J	80–90
S	2 x J	126

J, JC and S Wagons are two-deck.

Classified Rates are

H and J wagons	Class	M
HC + JC wagons		M + 1/3
S + J wagons		M double rate

Produce

Fertilizers, Grain and Potatoes are Class E
Ryegrass is Class E plus 50%
Clovers are Class D
Wool is Class H

Rates in $/mile	E per ton	E + 25% per ton	E + 50% per ton	H per bale	M per wagon
30	2.52	3.24	3.72	0.69	7.92
40	2.94	3.72	4.44	0.97	9.84
50	3.36	4.20	5.04	1.21	11.70
60	3.78	4.74	5.70	1.38	12.60
70	4.20	5.28	6.30	1.52	14.40
80	4.44	5.58	6.66	1.63	15.12
90	4.62	5.76	6.96	1.75	17.64
100	4.80	6.00	7.20	1.86	20.16
110	5.04	6.30	7.56	1.96	22.68
120	5.28	6.60	7.92	2.07	25.20
130	5.46	6.84	8.22	2.17	27.72

Fertilizer Transport Subsidy Scheme

The basis of the new freight subsidy scheme is:–

For the first 20 miles	–	9 cents per ton per mile
From 21 to 40 miles	–	5 cents per ton per mile
From 41 miles and over	–	2 cents per ton per mile

Use this formula to calculate the subsidy to your farm. As an example, if your farm is 85 miles from the nearest works, take the first:–

.....	20 miles at	9 cents per ton per mile	=	1.80	
then	40 miles at	5 cents per ton per mile	=	2.00	
then	25 miles at	2 cents per ton per mile	=	0.50	
Total	Total 85 miles	TOTAL SUBSIDY	=	$4.30	per ton

Rail Rates – New Subsidies

This table compares the bulk railage rates (Class E) per ton per 10 miles, with the new freight subsidy per ton payable from August 1 1969 and the old subsidy per ton paid previously.

Every 10 miles	Bulk Railage Rates Per ton	New Freight Subsidy From 1.8.69 Amount per Ton
	$	$
20	1.70	1.80
30	2.25	2.30
40	2.65	2.80
50	3.00	3.30
60	3.40	3.80
70	3.75	4.00
80	4.00	4.20
90	4.15	4.40
100	4.30	4.60
110	4.50	4.80
120	4.75	5.00
130	4.90	5.20
140	5.10	5.40
150	5.25	5.60
160	5.45	5.80
170	5.70	6.00
180	5.85	6.20
190	6.00	6.40
200	6.25	6.60
210	6.40	6.80
220	6.55	7.00

Rail Plus Road

The table below, compiled by Federated Farmers of N.Z. (Inc.), provides the new rates based on varying combinations of road and rail distances.

Rail Miles	Plus Road 20 miles	Plus Road 40 miles	Plus Road 60 miles	Plus Road 80 miles	Plus Road 100 miles	Plus Road 120 miles
	1.8.69	1.8.69	1.8.69	1.8.69	1.8.69	1.8.69
20	2.80	3.80	4.20	4.60	5.00	5.40
40	3.80	4.20	4.60	5.00	5.40	5.80
60	4.20	4.60	5.00	5.40	5.80	6.20
80	4.60	5.00	5.40	5.80	6.20	6.60
100	5.00	5.40	5.80	6.20	6.60	7.00
120	5.40	5.80	6.20	6.60	7.00	7.40
140	5.80	6.20	6.60	7.00	7.40	7.80
180	6.60	7.00	7.40	7.80	8.20	8.60
220	7.40	7.80	8.20	8.60	9.00	9.40
260	8.20	8.60	9.00	9.40	9.80	10.20

Road Transport Rates

(1) Lime

Cartage – Works to farm by road

1m	$0.48 per ton	5m	$0.91 per ton
10m	$1.38 per ton	15m	$1.86 per ton
20m	$2.34 per ton	25m	$2.81 per ton
30m	$3.30 per ton	35m	$3.74 per ton
40m	$4.19 per ton	45m	$4.65 per ton
50m	$5.10 per ton		

Canterbury

(2) Super

Bulk

1m	$0.76	per ton	5m	$1.18	per ton
10m	$1.65	per ton	15m	$2.13	per ton
20m	$2.59	per ton	25m	$3.08	per ton
30m	$3.56	per ton	35m	$4.00	per ton
40m	$4.47	per ton	45m	$4.93	per ton
50m	$5.38	per ton			

Bags (Loads 2 tons and over)

1m	$1.04	per ton	5m	$1.45	per ton
10m	$1.92	per ton	15m	$2.40	per ton
20m	$2.87	per ton	25m	$3.36	per ton
30m	$3.84	per ton	35m	$4.29	per ton
40m	$4.74	per ton	45m	$5.20	per ton
50m	$5.65	per ton			

Canterbury

(3) Hay

40 bales or more per ton – less $0.01 per bale

1m	$0.050	per bale	5m	$0.062	per bale
10m	$0.074	per bale	15m	$0.089	per bale
20m	$0.104	per bale	25m	$0.119	per bale
30m	$0.138	per bale	35m	$0.152	per bale

40m	$0.164	per bale	45m	$0.174	per bale
50m	$0.184	per bale			

4. (a) Grain – Bagged

(Including small seeds – under 15 bags to the ton)

	Ex Paddock (includes mechanical loader and extra labour)		Ex store or Granary
1m	$0.114	per bag	$0.078 per bag
5m	$0.130	per bag	$0.098 per bag
10m	$0.160	per bag	$0.124 per bag
20m	$0.228	per bag	$0.186 per bag
30m	$0.287	per bag	$0.237 per bag
40m	$0.341	per bag	$0.292 per bag
50m	$0.381	per bag	$0.332 per bag

Ex heap bags are at ex paddock rates, less $0.01 per bag

(b) Grain – Bulk (ex acceptable silo)

1m	$1.14	per ton	5m	$1.32	per ton
10m	$1.74	per ton	15m	$2.10	per ton
20m	$2.45	per ton	25m	$2.81	per ton
30m	$3.16	per ton	35m	$3.51	per ton
40m	$3.87	per ton	45m	$4.22	per ton
50m	$4.57	per ton	55m	$4.91	per ton

Use of Carrier's Auger add $0.23 per ton

(c) Grain – in boxes

	Grain and Peas – Price per ton		
1m	$1.49	30m	$3.99
5m	$1.80	40m	$4.81
10m	$2.23	50m	$5.61
20m	$3.16		

5. Grass Seed and other small seeds

(a) (15 bags and over to the ton)

1m	$0.068	per bag	5m	$0.091	per bag
10m	$0.119	per bag	15m	$0.143	per bag
20m	$0.162	per bag	25m	$0.186	per bag
30m	$0.203	per bag	35m	$0.219	per bag
40m	$0.231	per bag	45m	$0.241	per bag
50m	$0.251	per bag	55m	$0.261	per bag

(b) In boxes (per ton)

	11–16 cwt/box	Up to 11 cwt/box	Empty boxes
1m	1.85	–	0.55
5m	2.14	–	0.55
10m	2.59	–	0.60
20m	3.50	3.97	0.70
30m	4.32	4.88	0.80
40m	5.15	5.85	0.90
50m	5.95	6.85	

6. Wool by Road

1m	$0.32	per bale	5m	$0.41	per bale
10m	$0.50	per bale	15m	$0.65	per bale
20m	$0.76	per bale	25m	$0.90	per bale
30m	$1.01	per bale	35m	$1.11	per bale
40m	$1.22	per bale	45m	$1.33	per bale
50m	$1.43	per bale	55m	$1.54	per bale
60m	$1.64	per bale			

7. Lambs By Road

	Fat Lambs		Store Lambs	
1m	$0.074	per head	$0.066	per head
5m	$0.074	per head	$0.066	per head
10m	$0.086	per head	$0.076	per head
20m	$0.128	per head	$0.114	per head
30m	$0.175	per head	$0.154	per head
40m	$0.207	per head	$0.184	per head
50m	$0.231	per head	$0.203	per head
60m	$0.253	per head	$0.225	per head
Each additional mile add	$0.0022		$0.0022	

A lamb becomes a sheep for the purpose of this schedule on 31st August in the year following its birth.

8. Sheep

	Fat Sheep		Store Sheep	
1m	$0.089	per head	$0.076	per head
5m	$0.089	per head	$0.076	per head
10m	$0.117	per head	$0.104	per head
20m	$0.182	per head	$0.156	per head
30m	$0.237	per head	$0.198	per head
40m	$0.296	per head	$0.240	per head
50m	$0.351	per head	$0.287	per head
60m	$0.395	per head	$0.331	per head

Penal Rates for Sheep and Lambs

These will apply where the farmer does not give the cartage contractor 24 hour notice of the job to be done.

up to 30 miles	Lambs	$0.017	per head
	Sheep	$0.022	per head
30–40 miles	Lambs	$0.020	per head
	Sheep	$0.026	per head
40–50 miles	Lambs	$0.024	per head
	Sheep	$0.030	per head
50–60 miles	Lambs	$0.028	per head
	Sheep	$0.038	per head
60–70 miles	Lambs	$0.035	per head
	Sheep	$0.044	per head

9. Cattle

Rates vary greatly depending on size of trucks, size of beasts and length of haul. There are no fixed rates, and rates will usually be negotiated with the farmer in each individual case. Classified Cattle Rates have, however, been proposed in a future schedule.

10. FERTILIZERS

(a) Price List of main lines of K.P. Fertilizer ex Hornby Works, July 1970. These prices apply after deduction of the $5.00 per ton fertilizer subsidy. Fertilizer Transport Subsidy is additional to the $5.00 per ton fertilizer subsidy for consignments of one ton or more

N,P,K,S Rating					Bulk	Bags
General Fertilizers:					$	$
0	6	14	7	30% Potash Super	24.70	28.30
0	7	0	29	20% Sulphur Super	25.85	29.45
4	5	10	–	Multipurpose Fertilizer	27.35	30.95
0	9	0	11	Cobalt Super	24.65	28.25
0	9	0	11	Copper Super	33.15	36.75
0	9	0	11	Molybdate Super	22.55	26.15
0	7	0	8	Serpentine Super	18.40	22.00
0	8	0	10	Aerial Super	18.80	22.40
0	9	0	11	Superphosphate	19.15	22.75
Cropping Fertilizers						
6	6	0	15	Nitrogen Super	26.40	30.00
0	4	17	–	Lucerne Fertilizer	32.80	36.40
0	9	0	11	Boron Super	22.30	25.90
0	7	0	9	Boron reverted Super	19.75	23.35
0	7	0	9	Reverted Super	16.55	20.15
4	5	10	12	Potato Fertilizer	27.35	30.95
2	6	0	8	Turnip and Rape Fertilizer	21.55	25.15
2	6	0	8	Boron Turnip and Rape Fertilizer	23.75	27.35
Hormone Fertilizer						
0	9	0	11	Weedophos MCPA (Standard)		28.25

					Bulk $	Bags $
Nitrogen and Special Fertilizers						
10	8	6	–	NPK Fertilizer		78.50
21	0	0	24	Ammonium Sulphate	40.20	44.55
0	0	48	0	Potassium Chloride	34.65	39.00
46	0	0	0	Urea		84.40
23	0	0	0	Calcium Ammonium Nitrate (Nitrofort)		65.70
0	0	40	18	Potassium Sulphate		74.85
20	0	0	–	Liquid Nitrogen – (200 gals/ton)	40.00	
34	0	0	0	Nitram – (Ammonium Nitrate)		87.20
18	20	0	0	Cropmaster DAP (Diammonium Phosphate)	85.75	90.10
15	17	5	0	Cropmaster Premium		94.50
12	15	10	0	Cropmaster Extra		94.50
9	12	15	0	Cropmaster Hi Yield		94.50
6	10	20	0	Cropmaster Boost		94.50

Fertilizer Information

30% Potash Super– contains 30% potassium Chloride. Use on pastures, forage crops, and lucerne constantly cut for hay. Topdress on soils where cattle alone are being grazed, and where dairying and irrigation is practised.

20% Sulphur Super – For topdressing soils known to be sulphur deficient, particularly marginal land including tussock grasslands.

Multipurpose – NPK complete fertilizer. Use on crops, gardens, orchards.

Cobalt Super – Contains 6 lbs of Cobalt Sulphate per ton. Cobalt is an essential element for ruminants and should be applied where known to be deficient.

Copper Super – Contains 56 lbs of Copper Sulphate per ton

Molybdate Super – 2 lbs per ton of Sodium Molybdate, an essential micronutrient for the establishment of all legumes, and turnips. For drilling, use reverted Molybdate super.

Serpentine Super – Mixture of 3 parts super with 4 parts Serpentine Rock. Approximately 5% Magnesium. Useful for minimizing grass staggers and drilling with seeds that are susceptible to germination injury e.g. Brassicas

Aerial Super – 10% ground Serpentine, 90% Super, 1% Magnesium

Superphosphate – For annual application to pasture. Split application for high phosphorus fixing soils

Nitrogen Super – 30% ammonium sulphate, 70% superphosphate. Useful for establishing new pasture, and cereals.

Lucerne Fertilizer – Contains serpentine super, potassium chloride, Boron and Molybdenum

Boron Super – Boron is an essential trace element, and prevents "brown heart" in swedes, turnips and fodder beet. Never mix seed with Boron fertilizer as germination injury may result.

Boron Reverted Super – Recommended where brassica seeds are sown with drills, or ridges where fertilizer and seed have separate boxes.

Reverted Super – 75% Super phosphate, 25% Lime. Used for sowing all small seed crops susceptible to germination injury. Serpentine Super may be an alternative.

Potato Fertilizer – 20% ammonium sulphate, 60% superphosphate, 20% potassium chloride

Boron Turnip and Rape – 68.2% serpentine super, 10% ammonium sulphate, 32 lbs per ton of fertilizer borate. Avoid allowing seed to come into direct contact with Boron.

Weedophos std MCPA – Superphosphate plus 10 lbs per ton MCPA acid. For control of flat weeds and thistles in pasture.

Ammonium Sulphate – Useful for topdressing grass seed crops in early and late spring. Also for potatoes.

Potassium Chloride – 48% potassium – cheapest form of potash available.

Urea – Prilled uniform granule. Should not be used directly with seed or mixed with super.

Calcium Ammonium Nitrate – Non acidifying form, safe for drilling with grasses, cereals and legumes at low rates.

Potassium Sulphate – Favoured by market gardeners. Suitable for crops like tobacco and tomatoes

Liquid Nitrogen – Solution of urea and ammonium sulphate plus an anti-corrosive inhibitor. Quickly available form of nitrogen.

Ammonium Nitrate – 17% ammonium, 17% nitrate, quick acting and long-lasting form of nitrogen.

Cropmaster DAP – Most concentrated fertilizer available at present. Granular, free flowing and completely water soluble.

The Comparative cost of applying one unit of nitrogen in the various forms has been worked out: 1 unit of N = 1 lb N.

Ammonium Sulphate	$0.0928
Urea	$0.0819
Nitrofort	$0.1263
Liquid Nitrogen	$0.0892
Nitram	$0.1147
D.A.P.	$0.225

However, these cannot be strictly compared without taking into account the different properties of each fertilizer, and the advantages and disadvantages of using one as distinct from another, but it will give a rough guide in situations where cost is the important factor.

Spreading Fertilizer

1–4 cwt per acre – On Grass $0.45 per acre
On worked ground $0.65 per acre

(b) Aerial Topdressing and oversowing

Basic application rate $65 per flying hour.

(1) Super application: minimum rates:-

(i) Up to 12 tons $8.00
over 12 tons under 24 tons $7.25
over 24 tons $6.50

(2) Lime Application

$3.00 to $4.50 per ton at application rate of 1 ton per acre.

(3) Prills on Crops

0–100 acres = $1.00 per acre
over 100 acres = $0.85 per acre

(4) Oversowing with small seeds

(i) If seeds mixed with super and super load not reduced, no charge
(ii) Seed sown alone: Charged by the hour at $73 per hour.

11. LIME

Cost at works $2.00 per ton

(a) Spreading: 1 ton per acre – on grass $0.55
on worked ground $0.71

An extra 10–20c. per acre on undulating country.

Together with rail and cartage, total costs spread on paddocks are from $5.00 to $6.00 per ton.

(b) Lime Transport Assistance

Lime transport assistance applies only to lime applied for the first time on previously unlimed lime responsive soils.

Assistance available is

(i) by rail
1st 15 miles nil
next 100 miles 75% of rail charge

(ii) by road after rail
1st 3 miles nil
next 7 miles 3.4 cents per ton per mile
additional mileage 5 cents per ton per mile

(iii) by road direct from limeworks in area served by rail
1st 3 miles nil
next 27 miles 3.4 cents per ton per mile
additional mileage nil

(iv) by road direct from limeworks in area not served by rail
1st 3 miles nil
next 17 miles 3.4 cents per ton per mile
additional mileage 5 cents per ton per mile

12. MISCELLANEOUS CONTRACT RATES:

Throughout this manual, contract rates listed are minimum prices based on average conditions, and may be increased according to conditions.

(a)	Saw bench	–	$5.00 per hour with one operator
(b)	Gorse cutting	–	$5.00 per hour
(c)	Tree Topping	–	$13.00 per hour
(d)	Stone picking	–	$8.00 per hour

13. SEEDS ex merchants' stores (subject to alteration)

(a) Wheat

	Aotea	Hilgendorf	Aotea
Uncertified	2.21	2.38	2.20
2nd Generation	2.23	2.49	2.21
1st Generation	2.31	2.58	2.30

Treating 15c per bushel
Sacks at $0.27 each = 9 cents bushel Total extra cost – $0.24 bushel.

(b) Barley

Uncertified	$1.60 nett	treating	$0.15 bushel
2nd Generation	$1.68 nett	sacks	$0.09 bushel
1st Generation	$1.73 nett	Total extras	$0.24 bushel

(c) Oats All varieties quoted at $1.60 – $1.80

(d) Lupins Borre and Bitter Blue $2.20 bushel nett

(e) Ryecorn Both C.R.D. and N.A.I.B. cost about $2.00 bushel nett

(f) Maize $3.50 bushel (feed)

(g) Peas Contract price plus $0.45 bushel plus treating 0.25 bushel and sacks 0.275 bushel. Total extra 0.875 bushel.

(h) Freezing Peas $5.00 bushel

(i) Small Seeds Retail prices from merchants are $0.10 to 0.15 per lb and $0.30 to 0.40 per bushel more than the price paid to the farmer.

Root Seeds	Rape	$0.30	per lb	Chou moellier	$1.80	per lb
	Turnip	$0.60	per lb	Fodder Beet –		
	Swede	$0.60	per lb	unsegmented	$1.10	per lb
				segmented	$1.20	per lb

(j) Aerial application

Variable according to quantity and distance ranging from 20 cents to 50 cents per acre.

(k) Seed Requirements

With any seed that is not grown on contract it is usual to buy a quarter of the seed requirement, the other ¾ is retained from the crop that has been harvested that season; except for Algerian oats where for best germination usually 2 year old seed is sown. If a farmer is retaining a high grade on the Certification scale then he buys all of his grass seed. If using his own seed it will be treated.

14 STOCK SELLING CHARGES

(a) Yard Fees

Addington

Sheep	5c
Fat Cattle	50c
Store Cattle	40c
Vealers	40c
Dairy Cows	50c

Addington

Calves	40c
Bulls	$1.00
Porkers	15c
Baconers	15c
Store pigs	10c

Amberley

Sheep	5c

Coalgate

Sheep shareholders	7c
Non Shareholders	8c
Rams	25c
Calves Shareholders	70c
Non Shareholders	80c
Cattle Shareholders	80c
Non Shareholders	90c
Horses	25c
Pigs	10c
Dogs	25c

Culverden

Sheep	5c
Rams	10c
Horses	25c
Dogs	25c

Hawarden

Sheep	8c

Little River

Sheep	8c
Cattle	25c
Rams	25c

Sheffield		Oxford	
Sheep Shareholders	7c	Sheep	5c
Sheep Nonshareholders	8c	Rams	12c
Rams	10c		

(b) Addington Trucking Charges

Unloading or loading at Rail siding:
Cattle, sheep and pigs 1c per head

Sheep – 1c per head for both inward and outward trucking.
Cattle – 3c per head inward trucking
5c per head outward trucking

(c) Commissions on Stock sold through a Stock and Station agent

Saleyards		Clearing Sales	
Sheep	3%	Sheep	3¾%
Fat Cattle	3%	Store Cattle	3¾%
Store Cattle	3%	Pigs	5%
Vealers	5%	Dairy Cows	5%
Bulls	5%		

Saleyards		Clearing Sales	
Dairy Cattle	5%	Implements and Sundry	5%
Pigs	3¾%	Furniture	10%
Horses (Bloodstock)	6%	Special Sales	
Horses	5%	Stud Cattle	5%

15. SHEARING EXPENSES

(a) Shed Expenses

Wool packs ex store $1.55 each
Assess number used at 3 per 1,000 lb wool
Twin 40 threads per hank 65c per hank = 7c per bale
Glue 8oz tin 37c.

Eartags		$3.75 per 100 + 70c if stamped
Emery paper	– fine	60c per sheet
	– coarse	60c per sheet
Shearing plant running expenses		– Electricity $10.00
		Full motors 20 cents per hour

(b) Wool Charges

	1970	1971
Receiving, weighing, cataloguing etc	.42c/lb	.55c/lb
Reclassing and/or Binning of Fleece	.84c/lb	.94c/lb
Reclassing and/or Binning of addments	1.36c/lb	1.46c/lb
Wool Board Levy	.7c/lb	.7c/lb
Straight bales of dags (no sorting)	$0.75/bale	$1.50/bale
Grouping or Interlotting Fee	$0.80/bale	$1.50/bale
Commission	2% gross proceeds	
Sheep's back insurance (optional)	15.4c per $100.00 gross proceeds	
Government Earthquake Insurance	1.3c per $100 gross proceeds	
Chatham Island Insurance	.50c per bale	

16. TREES

Planting (per 100)

Pinus		$3.00 2 year trees
Larch	)	
Thuya	)	
Picarta	)	
Arizonica	)	
Benthami	)	$5.00 to $6.00 2–3 year trees
Poplars	)	
Oregons	)	
Cedar	)	

17 WEED AND PESTS CONTROL

(a) Weed Sprays (with costs as the Subsidised Retail Price)

Tordon 50D	$10.97 per gal	) For controlling Gorse, blackberry
Tordon 75T	$16.03 per gal	) broom, sweet briar, woody weeds

WEED CONTROL GUIDE

Common Name of Active Ingredient	Proprietary Brand Name	% W/W AI	Retail Price Per Gal/lb Unless otherwise stated				
			1 gal		5 gal		44–46 gal
Salts of 2,4–D	Shell Weedkiller D	40		$3.81		$3.58	$3.41
2,4–d (amine salt)	Weedar 77	40		3.80		3.61	3.41
	Amine 2 4–D	40		3.81		3.66	3.49
2,4–D (Sodium Salt)	Frenekone	80	5lb	0.62	28lb	0.53	50lb 0.50
	Phenoxone	80	6lb	0.61	28lb	0.54	50lb 0.50
	Shell 2,4–D Dust	80	5lb	0.53	28lb	0.47	56lb 0.44
Volatile Esters of 24D							
2,4–D (butyl ester)	Shell Weedkiller E-Vol	36		3.50		3.16	2.98
	Weedone 57–Vol	36		3.41		3.19	2.97
2,4–D (ethyl ester)	Ethone 2,4–D	36		3.41		3.19	2.97
Low Volatile Esters of 24–D							
2,4–D (butoxyethanol ester)	Weedone 57 low Vol	36		3.69		3.48	3.26
2,4–D (octyl ester)	Ethone L.V.	36		3.69		3.48	3.19
	Shell Weedkiller A	72		–		6.96	6.74
2,4–DB	ICI 2,4–DB	40		6.00		5.63	5.44
	Shell Weedkiller L4	40		6.00		5.44	5.25
	Weedar Butyrac 2,4–DB	40		6.00		5.62	5.50
Dicamba	ICI Dicamba	20		14.43		14.25	–
	Shell Dicamba 2	20		14.36		–	–
2,2–DPA (Dalapon)	Dalapon	74		–		–	50lb 0.44
	Dowpon	74	5lb	0.50		–	–
	Icipon	74	5lb	0.50		–	55lb 0.45

Common Name of Active Ingredient	Proprietary Brand Name	% W/W AI	Retail Pric Per Gal/lb Unless otherwise stated					
			1 gal		5 gal		44–46 gal	
Dinoseb	Shell DNBP	15.9	$4.50		$4.16		–	
	ICI DNBP	26	4.22		3.91		–	
	Sinox W	26	5.71		5.53		–	
	ICI Dinoseb	36	–		5.75		–	
	Sinox PE	36	5.92		5.74			
MCPA	Agroxone 4	37.5	3.34		3.13		2.90	
	Shell Weedkiller M	37.5	3.43		3.13		2.89	
	Weedar MCPA	40	3.34		3.12		2.90	
MCPB	Bexone	40	4.88		4.50		4.38	
	Shell Weedkiller P4	40	4.88		4.50		4.38	
	Weedar Butyrac MCPB	40	4.87		4.50		4.38	
Sodium Arsenite	Weedox 90	90	2.00		1.63	40 gal	1.20	
Sodium Chlorate	Atlacide	58.5	4lb	0.25	10lb	0.23	112lb	0.15
Volatile Esters of 245–T								
2,4,5–T (butyl ester)	Butoxone, 2,4,5–T Vol	36	5.87		5.44		5.08	
	Shell 2,4,5–T extra	36	5.84		5.41		5.08	
	Stantox, 2,4,5–T Vol	36	5.87		5.44		5.08	
	Butoxone Double Strength	72	9.94		9.78		9.14	
	Shell Weedkiller B plus	72	10.44		9.81		9.11	
	Stantox 2,4,5–T Vol) Double Strength)	72	–		9.82		9.09	
Low Volatile Esters of 245–T								
2,4,5–T (butoxyethanol	Stantox 2,4,5–T Low Vol	36	6.16		5.73		5.36	
ester)	Weedone, 2,4,5,–T Low Vol	36	6.16		5.73		5.36	

Common Name of Active Ingredient	Proprietary Brand Name	% W/W AI	Retail Price per Gal/lb Unless otherwise stated					
			1 gal		5 gal		44–46 gal	
	Stantox T–6	72	$8.57		$8.30			$8.19
	Weedone T–6	72	8.57		8.30			8.19
2,4,5–T (octyl ester)	Butoxone Low Vol	36	6.16		5.73			5.36
TCA	IWD–TCA–90	79.3	8lb	0.39	14lb	0.37	110¼lb	0.32
	Stantox–TCA–90	79.3	8lb	0.37	28lb	0.36	110¼lb	0.32
Acid Equivalent of Barban	Barban	1.25lb/gal	13.56					
2,4,6–trichlorophenyl, 4 nitropheny 1 ether + 0.125lb picloram	Fodderkleen	2lb/gal	5.25					
Paraquat	Gramoxone		15.63					

MATERIAL	RATE OF APPLICATION		CROP USED ON:
MCPA	1½–4	pints/acre	Wheat, barley, oats, ryecorn, linseed, pasture
MCPB	3–4	pints/acre	Wheat, Barley, oats.
24DB	2½	pints/acre	Lucerne, wheat, barley, oats, clover, linseed
DNBP	3–4	pints/acre	Peas (broad leafed weeds)
Fodderkleen	4	pints/acre	Brassicas
TCA	20–40	lbs/acre	Non selective grass killing herbicide for twitch and other rhizometous grasses
Barban	2–3	pints/acre	Wild oat control
Gramoxone	1–4	pints/acre	For grass suppression, weeds. Potatoes
Dalapon	5–15	lbs/acre	controls couch grass, paspallum, Nassella tussock

PESTICIDE TABLE

Common Name of Active Ingredient	Proprietary Brand Name	% W/W AI	Retail Price Per Gal/lb Unless otherwise stated					
			1 gal		5 gal		44–46 gal	
Carbaryl	IWD Pestone 5D	5	5 lb	0.19	25 lb	0.16	–	
	ICI Septone 80	80					20kg	0.89
Diazinon	Gesapon Cricket Bait	2.0	–		–		50lb	0.15
	Gesapon 10 Granular	10	–		–		50lb	0.244
						Unit Price		
Dichlorvos	Vapona Concentrate	108	¾pt	4.53	16oz	4.83	–	
Disulfoton	Disyston Ten	10	4lb	0.47	32lb	0.31	–	
Fenitrothion	IWD Fenite 50 WP	50	5lb	1.65	–		–	
	Gramothion 60	60		11.94		11.81		11.65
Malathion	IWD Malathion 25	25	4lb	0.39	28lb	0.37	–	
	Malathion 25	25	4lb	0.42	28lb	0.41	56lb	0.40
	ICI Malathion	50		5.75		5.56		5.44
Parathion – methyl	IWD Parathion Methyl	50		5.59		5.41	–	
	Phosphone 50	50		5.44		5.25	–	
Phorate	Thimet 10 G.	10					50lb	0.31
Trichlorfon	Lepidex	60		7.45		7.26	–	
	Shell Trichlorfon	60		7.45		7.26	–	
	Shell Dipterex	95	9lb	1.03			56lb	0.94

Common Name	Formulation	Used to Control:	Rate (a.i./acre)
Carbaryl	Wettable Powder	Armyworm, white butterfly, corn earworm, green vegetable bug, Silver Y moth	8oz–1½lb
Diazinon	Pellets	Porina, armyworm, crickets, grass grub (tentative)	1–2lb
	Emulsifiable Concentrate	Aphids, codling moth, leaf hoppers, mites	2-4oz/100 gals spray
Dichlorvos	Emulsifiable Concentrate	Aphids, armyworm, diamond back moth, white butterfly, Clover case bearer moth	1/10–½pt
Disulfoton	Pellets	Potato aphid, green peach aphid	1¼–1¾ lb
Fenitrothion	Pellets & E.C.	Porina, armyworm	½–1 lb
Malathion	Bait	Wheat bait for crickets	2oz–4oz
	Wettable Powder or E.C.	Aphids, caterpillars, codling moth, thrips, mites, springtails	¼–2 lb
Parathion) Methyl)	Pellets	Grass Grub	2–4 lb
	E.C.	Aphids, caterpillars, thrips, mites, scale insects, codling moths	6oz
Phorate	Pellets	Aphid Control in Potatoes, green peach aphid	½–5 lb
Trichlorfon	Aqueous Concentrate	Aphids, white butterfly, Diamond back Moth	14.5 oz

(c) Hormone Weedkiller and Insecticide Application

(a) Aerial application–spraying

(1) Fixed wing 'planes (materials extra)

(i) Crops and Pasture–Weedkillers

Spraying 8–10 gallons	1 acre to 99 acres	$2.25 per acre
	100 acre and over	$2.00 per acre

This is for all hormone spraying on crops

(ii) Insecticides

$2.00 per acre for any acreage

Spraying

15 gallons	– $2.82 per acre	20 gallons	– $3.38 per acre
25 gallons	– $3.95 per acre	40 gallons	– $6.75 per acre

(2) Helicopters

Weeds or Crops	Rate Gals/acre	Approx. Acres/flight	Cost per acre
Gorse, blackberry, Heath, tutu, tutsen, broom	50	1½	$11.50
Willows, preburn	20	3¾	$ 6.75
Lupins, ragwort	10	7½	$ 3.00
Thistles, Potatoes, Crops, buttercup	4	19	$ 2.50

Minimum Flying Charge on any spray job, is $80.00

(b) Ground application (materials extra)

Spraying

(1) Boom: Range 80c to 1.50 per acre depending on quantity of water applied, type of material used, terrain, and size of paddocks.

(i) Hormone weed killers 90c to $1.00 per acre
(ii) Insecticides (depending on quantity of water and poison risk to operator) $1.25 to $1.50 per acre

(2) Gun or hand wand: $4.00 per $5.00 per hour plus $1.00 per hour per extra gun.

Granules and prills – $1.00 per acre

18. REPAIRS AND MAINTENANCE

The best way to estimate the likely expenditure on repairs and maintenance for all non-motorised machiner, buildings, fences, sheep and cattle yards tracks and culverts, is to obtain a figure direct from the farmer. However, if this is not possible then the following rates can be used as a rough guide, only.

Dwelling		2½%
Farm buildings		2½%
Piggeries		5%
Water supply	up to	5% depending on type of water
Implements and Plant		7½% – 10% depending on use
Roads, tracks and cluverts		5% – 10% depending on locality
Yards and dip		5%

Fences – Sheep 20c to 25c per chain – (for the years expenditure
Dairy 10c to 15c per chain – on repairs and maintenance)

19. VEHICLE OR MOTOR EXPENSES

(a) Fuel, Oil and Grease

Light trucks and cars	–	allow 3 cents per mile
Heavy Trucks	–	allow 5 cents per mile
Wheel tractors Petrol	–	allow 45 cents per hour
Diesel	–	allow 35 cents per hour
Crawler tractors	–	allow 35 cents per hour

Baler		–	allow 35 cents per hour
Header	– Tractor drawn	–	allow 35 cents per hour
	– Auto	–	allow 45 cents per hour

(b) Repairs and Maintenance

Once again the best way to estimate the likely expenditure on repairs and maintenace for all motorised plant is to obtain a figure direct from the farmer. However if this is not possible then the following can be used as a rough guide:

Light trucks and Cars	3 cents per mile
Wheel tractors (Petrol + Diesel)	20 cents per hour
Crawler tractors	40 cents per hour
Mobile Plant	10% of value

(c) Registration Fees

Cars	$17.95 per year
Trucks (including heavy trucks)	$18.10 per year
Wheel tractors	$ 9.15 per year
Trailers	$ 6.45 per year
Motor bikes	$11.55

In addition to registration Fees farmers with heavy trucks must pay Heavy Traffic Licence fees as follows:

Laden weight		Fee
2½	tons	$ 10.67
5	tons	$ 36.00
7½	tons	$. 84.00
10	tons	$169.33
15	tons	$318.67
20	tons	$458.67
25	tons	$598.67
30	tons	$738.67

(d) Fuels

83 octane Petrol 42.17 cents per gallon, less 18.6 cents per gallon for agricultural use.

∴ net price to farmers is 23.57 cents per gallon

93 octane Petrol 45.17 cents per gallon, less 18.6 cents per gallon for agricultural use

∴ net price to farmers is 26.57 cents per gallon

Diesoline 18.3 cents per gallon

Multi-service oil (for Diesel and Petrol engines):
$1.32 per gallon, in 44 gallon drums.

Grease (Multi-service) 29 cents per lb

(e) Delivery of bulk fuels

Free delivery up to approximately 10 miles from Christchurch
½ c. gallon up to approximately 20 miles from Christchurch
1 c. gallon up to approximately 30 miles from Christchurch

20 ADMINISTRATION EXPENSES

(a) Accountancy

Accountants have a scale of fees based on input of time taken in compiling returns and services required by their clients.

Some of the reasons why fees vary considerably are:

(i) The adequacy of the presentation of farm records to the accountant by the farmer

(ii) The form of ownership—individual, company, or partnership, and if there is a trust account involved also.

(iii) The amount of information the farmer wants: advice on management, financial advice, trial balances, etc.

(iv) The degree of intensification of the farming operations

(v) The amount of administration undertaken by the accountant.

Budgeting control, receiver of all income, and payee of all expenditure for the farmer.

The fees definitely bear no relationship to the farmer's capital or net taxable balance, or turnover.

For Lincoln College budgeting purposes assess fees based on the total capital involved, the degree of intensification of the management, and the form of ownership.

$30 fee based on Total Capital of $20,000; increase fee $1.00 for every $1,000 of capital.

For ownership as a Company or as a Partnership use a base figure of $40.

For intensively farmed units, orchards, market gardens, poultry, intensive cropping, use a base figure of $40, for individual ownership.

(b) General Administration

Legal expenses incurred by an established farmer are negligible and can be discounted in budgeting.

Banking charges, stationery and postage vary with size of unit and intensive nature of the management, from $10.00 to $20.00.

(c) Telephone

(i) Rentals

Continuous Exchange

	Individual	2	3	4	5	6–10 Party
Base rate up to 2 mls	$52.00	$45	$44	$43	$40	$36

Plus mileage from Exchange

Individual – $2.50 per furlong for the first 5 miles
$1.25 per furlong or part thereafter

2 party – $1.25 then $0.75

3 party	–	60c per furlong for first 5 miles, then $1.25 per mile thereafter
4 party	–	50c per furlong for first 5 miles, then $1.25 per mile thereafter
5 party	–	$3.50 per mile for first 3 miles, then $1.25 per mile up to 20 miles, $0.80 per mile thereafter
6–10 party	–	$2.50 per mile for first 3 miles, then $1.25 per mile up to 20 miles, $0.80 per mile thereafter

21 STANDING CHARGES

(a) Insurances

In the case of fire insurance, premiums vary according to the nature of the risk and the value of the buildings or assets insured, etc. Accident premiums vary with the nature of the work, etc. The following figures are from insurance companies as at 5.1.71

(i) Buildings (Tariff Company's) per $100 value
Dwellings Brick $0.092 Wood $0.25
Outbuildings Brick – concrete or earth floor $0.090
Wood – concrete or earth floor $0.225
Brick buildings must be double bricked, and not simply brick veneer as is most common
Brick veneer buildings are insured at a wood building rate, less 25%.

(ii) Plant: per $100 value

Fire only – (a) All powered plant or equipment, self-propelled or tractor drawn. Rate $0.500
(b) Any other farm machinery and equipment including plant manures, stores and sundry farm utensils. Rate $0.250
(c) Tractors Rate $0.500

Comprehensive – Harvesting: self-propelled $6.60 for first $400 plus $0.35 per $100
Harvesting: tractor-drawn–above less 15%

Tractor: $7.90 for first $400 plus $0.90 per $200 thereafter
Contractors pay these rates plus 50%, on their vehicles

A rebate of 1/3 no claim bonuses are paid on tractor policies.
All these premiums plus $0.05 per $100 Earthquake and War Risk.

(iii) Tractor Tyre Insurance – Tyres are insured for farmers at 2.62% of their value, and for contractors at 3.93%, with a minimum of $5.00 per tractor.

(iv) Crops: per $100 value
(a) Growing or cut in the field (including threshing) in any building or silo and transit risk 0.450% (time limit up to 12 months).

(b) As per above but excluding whilst in any building or silo 0.350%.

Hay: $0.25

(v) Employers' Liability – based on wages paid

General farm work	$1.30 per $100
Shearing etc.	$0.75
Tree felling	$6.00
Harvesting and haymaking	$1.30

(vi) Personal Accident (owners' personal cover)
Details vary, but a typical cover would be as follows:
Death $4,000. Total disablement from accident $30 per week
Total disablement from disease $30 per week. Premium $34.50 per annum.

(vii) Public Liability – to cover legal liability arising from negligence caused by employees, stock, farm vehicles or fire, but excludes motor vehicles which should be registered under the Transport Act.

Cover	$ 10,000	Premium	$ 3.75
	$ 20,000		$ 6.00
	$ 40,000		$10.00
	$100,000		$22.00

Sale of goods/products Indemnity
Additional premium

$ 10,000	$1.50
$ 20,000	$1.80
$ 40,000	$2.25
$100,000	$2.85

(viii) Wool

From sheep's back to wool store – $0.15 per $100 gross value plus earthquake $0.004 per $100 gross value for 60 days

(ix) Shelter belts (excluding live hedge fencing)

Rate 1.250%
Exclude personal and life insurance

(b) Land Tax see Taxation notes. Section IV.

(c) Rates

The main classes of rates are as follows:

(i) General County rates for the costs involved in administering the County.
(ii) Special rates for ad hoc bodies e.g. Catchment, Drainage Boards.
(iii) Special rates for repayment of loans, raised by any local body.
(iv) Water supply charges where stock water is supplied by any local body e.g. water races. County water schemes
(v) Pest Destruction Board rates where the farm is in a board district.

All countries rate on either the Capital or Unimproved values. Water and pest destruction rates may be assessed on either per acre, Capital value or unimproved value basis.

For budgeting purposes ask the farmer for the total rates.

(d) Interest

Interest rates vary with personal element, risks, and security offered. They also fluctuate with the Bank's interest charges. At present:

Flat Mortgage interest rates are	6½–7%
Table Mortgage interest rates are	6 – 7%
Bank overdraft interest rates are	7 – 8%
Stock and Station Agents interest rates are	6½–8%
Currents accounts interest	

For assessment of Working Capital see Section I. When budgeting use 7% on total Working Capital.

(e) Rent – charge actual rental paid by the farmer

Rents on Crown Renewable Leases are 5½% of Crown Rental Value, on leases passed since 1956. Prior to this rents were 4½% of C.R.V. Rentals carry a ½% rebate for prompt payment, thus to calculate C.R.V. gross rentals must be ascertained.

Short term leases–rents usually assessed 5% of Capital Value.

22. BUILDINGS

(a) Dwellings – cost $7.00 to $10.00 per square foot
(b) Garages – cost $1.50 to $ 3.00 per square foot
(c) Woolsheds – cost $3.00 to $ 3.50 per square foot
(d) Haybarns

(i) Lean–to 14' – 12' stud

	Bale Capacity	Cost/sq.ft.	Cost/bale
Steel	1120 – 2780	$1.54–$1.21	$0.84–$0.65
Wood	1120 – 2780	$1.19–$0.89	$0.63–$0.49

(ii) Gable – 14' stud

	Bale Capacity	Cost/sq.ft.	Cost/bale
Steel	1330 – 3150	$1.35–$1.10	$0.72–$0.61
Wood	1120 – 2780	$1.15–$0.91	$0.63–$0.49

(e) Implement Sheds

(i) Lean–to, 12'–10' stud

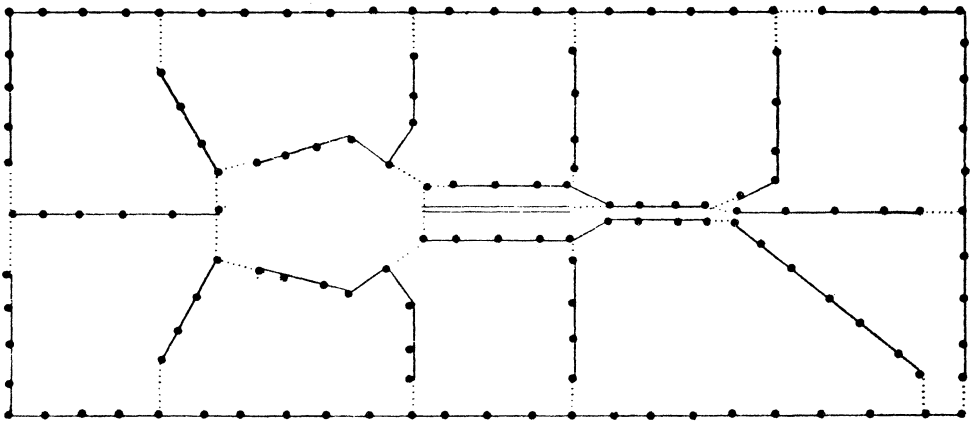
	Area	Total cost	Cost/sq.ft. earth floor	Cost/sq.ft. concrete floor
Steel	400–1500	$613–$1670	$1.53–$1.11	$1.95–$1.53
Wood	600–1500	$678–$1368	$1.13–$0.91	$1.55–$1.33

(ii) Gable – 14' stud

	Area	Total cost	Cost/sq.ft. earth floor	Cost/sq.ft. concrete floor
Wood	600–1500	$690–$1368	$1.15–$0.91	$1.57–$1.33

(f) Sheepyards

SHEEPYARD AS DESIGNED BY DEPT. OF AGRICULTURE, DUNEDIN



LIST OF MATERIALS

Length	142 feet	Area per sheep	8.5 sq. ft
Width	60 feet	Fencing per sheep	.9 feet
Area	8520 sq.ft.	Posts per sheep	.14
Capacity	1000 Sheep		

Length of fencing	686 feet
Length of fencing carrying extra board	23 feet
Length of fencing close boarded	41 feet
Number of posts	145

GATES

4	eight foot gates	2	three foot gates
14	six foot gates	3	two-foot six inch gates
2	six foot six inch gates	3	four foot drafting gates
1	four foot six inch gate	TOTAL:	28 gates

(i) Hardwood Posts, rails and gates

Capacity	400 sheep	750 sheep	1000 sheep	1500 sheep
Cost per lineal foot of yarding	$1.35	$1.30	$1.32	$1.21

(ii) "Cyclone" Sheep Yards

Standard 1200 plan $1867.00
Standard 500 plan $1522.00
Standard Sheepyard gates – 9'8" opening $21.90
7'8" opening $18.45
Yard Fences from $2.85 per linear foot

(g) Cattle Yards

"Cyclone"
Standard Cattle Gates– 3'4" x 7' wide 4 rail $28.50
5 rail $30.70
4'4" x 7' wide 6 rail $34.10

Yard Fences – 5 rail from $3.60 per linear foot
6 rail from $4.00 per linear foot
Forcing Pen Race and Drafting Gates – from $6.50 per linear foot
Dehorning Bail $129.40

(h) Bulk Storage – Cost of Storage Buildings

(1) Storage in an Existing Shed

(a) By installing plywood silos (kitset type) Depends on shed floor being moisture and vermin proof:

20	ton	–	$120.75	–	$6.04 per ton
30	ton	–	$194.25	–	$6.47 per ton
40	ton	–	$220.50	–	$5.51 per ton

(b) Wire mesh lined with scrim. Scrim lasts up to 3 years

50' (circumference) x 8' high – 34 tons	$57.69
Hessian	$18.90
Total Cost	$76.59

– $2.25 per ton.

(2) Dual Purpose Shed

(a) Implement Shed – temporary silos within it: $2.50 per ton

(3) Single Purpose Storage

(a) Corrugated Steel Silo – permanent, weather proof, vermin proof.

Tonnage	Kitset Costs	Erection Costs	Total Cost		Cost per ton	
			Level Base	Hopper Base	Level Base	Hopper Base
40	$ 634	$ 106	$ 742	$ 844	$18.55	$21.10
74	$ 836	$ 170	$ 989	$1,101	$13.36	$14.87
101	$1,127	$ 350	$1,422	$1,557	$14.08	$15.41
151	$1,604	$ 480	$1,917	$2,097	$12.61	$13.88
244	$2,276	–	–	–	–	–

(b) Plywood Bin on Sledge Base

Walls	– $6.00	–	$6.50 per ton
Base			$2.00 per ton
Roof			$1.25 per ton
			$9.75 per ton

(4) **Drying Grain**

Drying 1 batch of 80 tons wheat per season with:	Cents/bus.
(1) All electric (average Canterbury power cost)	4.88
(2) All electric (Central Canterbury)	6.60
(3) All electric (Mid Canterbury)	8.26
(4) All electric (South Canterbury)	10.68
(5) Electric motor and diesel heater (S. Canterbury)	3.94
(6) Tractor and PTO fan	4.30
(7) Second hand engine	4.00
(8) Farm built (no overheads)	0.72
(9) Contract Drying charges	8.00–10.00

Dairy Shed Costs:

– $650 – $800 per set of cups. In practice, this varies widely, with the type of shed built, and modifications made.

Two examples are:

8-a-side, highline herringbone

Building plus yards	$3,000
Machines	$1,900
Water supply (at shed only)	$ 650
Waste disposal	$ 600
Refrigerated storage	$1,600
TOTAL COST	$7,750

12-a-side, highline, herringbone

Building plus yards	$ 4,800
Machines	$ 2,400
Water supply (at shed only)	$ 750
Waste Disposal	$ 700
Refrigerated Storage	$ 2,000
TOTAL COST	$10,650

23. FARM MACHINERY

Tractors

Case	$
Model 870 Standard – 85 BHP, 70 at P.T.O.	7,855
Model 970 Standard – 103 BHP, 85 at P.T.O.	9,350
Model 1070 Standard – 118 BHP, 100 at P.T.O.	10,595
Model 1470 145 at P.T.O.	20,460

County	
County 4000 – 4 W.D., 62 H.P.	5,575
County 754 – 4 W.D., 77 H.P, 8 speed	7,150
754 – 4 W.D., 77 H.P, 10 speed	7,713
County 1124 – 4.W.D., 113 H.P., 8 speed	9,543

David Brown	
Model 770 – 36 B.H.P. including safety frame	2,485
Model 880 – 46 B.H.P. including safety frame	2,995
Model 990 – 55 B.H.P including safety frame	3,335
Model 1200 – 72 B.H.P. including safety frame	3,885

Fiat	
Model 250 – 25 B.H.P.	1,960
Model 250 – 25 B.H.P., 4.W.D.	2,622
Model 450 – 45 B.H.P.,	2,767
Model 450 – 45 B.H.P., 4.W.D.	3,545
Model 550 – 55 B.H.P.	3,210
Model 550 – 55 B.H.P., 4.W.D.	4,135
Model 650 – 65 B.H.P.	3,611
Model 650 – 65 B.H.P., 4.W.D.	5,351
Model 850 – 85 B.H.P.	7,196
Model 850 – 85 B.H.P, 4.W.D.	8,382

		$
Crawler		
Model 355	– 35 B.H.P.	3,498
Model 455	– 45 B.H.P.	4,525
Model 655	– 65 B.H.P.	5,998
Model 50C1		6,098
Model 70C1	74 B.H.P.	9,998
Ford		
Ford 2000	– 39 B.H.P.	2,648
Ford 3000	– 46 B.H.P.	2,756
Ford 4000	– 62 B.H.P.	3,438
Ford 5000	– 77 B.H.P.	3,962
International		
B. 276	– 37.5 B.H.P.	2,350
B. 434	– 43 B.H.P.	3,695
B 634	– 66 B.H.P.	3,943
B. 634	– 66 B.H.P. 4.W.D.	5,600
Crawler		
B.T.D. 6	– 50 B.H.P.	5,334
John Deere		
Model 1120	– 52 B.H.P.	3,025
Model 2120	– 72 B.H.P.	3,870
Leyland		
Model 344	– Standard 55 B.H.P. Power steering	
600 x 16, 11 x 32 6 ply		2,982
750 x 16, 11 x 32 6 ply		3,004
Model 344	– De Luxe 55 B.H.P. Power steering	
Live P.T.O. and hydraulics		
600 x 16, 11 x 32, 6 ply		3,063
750 x 16, 11 x 32,		3,086

			$
Model 384 – De Luxe	70 B.H.P.		
750 x 16, 12 x 36			3,560
750 x 16, 11 x 32			3,850

Massey Ferguson

M.F. 135 –	45 B.H.P.	Standard & Power steering	3,013
	45 B.H.P.	Multipower Power steering	3,199
M.F. 165 –	61 B.H.P.	Standard & Power steering	3,741
	61 B.H.P.	Multipower Power steering	3,853
M.F. 178 –	75 B.H.P.	Multipower Power steering	4,395
M.F. 1100 –	105 B.H.P.	Multipower Power steering	8,637

Crawler

M.F. 144C –	30 D.B.H.P. Standard	4,950
	30 D.B.H.P. 3 Pt Linkage	5,345

Same

Minetauro –	46 B.H.P, 4 W.D.	4,260
Centauro –	57 B.H.P, 4 W.D.	4,890
Leone –	67 B.H.P, 4 W.D.	5,650
	2 W.D.	4,810
Ariette	4 W.D.	8,250
	2 W.D.	6,640

Combine Harvesters

Allis Chalmers

Super C Gleaner	10 ft	10,500
	12 ft	10,650
Super A Gleaner		8,800
Model 5000		12,990

Class					$
	Corsar	10ft			8,465
	Mercury	10ft			8,648
	Consul	10ft			10,121
	Mercator	12ft			12,313
	Senator	14ft			13,532
Clayson					
	Model 135 Tanker	– 95 H.P.	12ft		12,695
			14ft		12,695
	Model 140 Tanker	– 105 H.P.	14ft		15,150
			16ft		15,150
International					
	Model 105	– 60 H.P.			9,300
	Model 8–15	– 72 H.P.		(diesel)	9,300
	Model 8–5	– 85 H.P.		(petrol)	10,750
	Model	– 85 H.P.		(diesel)	11,950
John Deere					
	Model 430	– 71 H.P.		Tanker	10,075
	Model 530	– 79 H.P.		Tanker	11,650
Massey Ferguson					
	M.F. 300	– 10 ft			8,846
	M.F. 400	– 12 ft			10,851
	M.F. 510	– 12 ft			12,056
Balers					
International					
	Model B47	– P.T.O.			2,145
	Model 57	– P.T.O.			4,350
New Holland					
	Model 276	– P.T.O.			2,395
	Model 282	– P.T.O.			4,595

Ploughs

			$
Clough			
3F	–	12" G.P. Stylemaster with land wheel	350
4F	–	12" G.P. Stylemaster with land wheel	437
5F	–	12" G.P. Stylemaster with land wheel	584
Duncan			
550 – 14 – 3F			346
		4F	429
International			
3F	–	'Ace' Semi Digger Mounted	296
4F	–	'Ace' Semi Digger Mounted	374
5F	–	'Ace' Semi Digger Mounted	452
3F	–	'Colonial' Long Board Mounted	304
4F	–	'Colonial' Long Board Mounted	384
5F	–	'Colonial' Long Board Mounted	464
Reid & Gray			
2F	–	General purpose model	262
3F	–	General purpose model	338
4F	–	General purpose model	426
2F	–	Intermediate model	282
3F	–	Intermediate model	356
4F	–	Intermediate model	448

Discs

Duncan				
7 ft	–	Standard Century 20"	Plain	388
			Scalloped	420
8 ft	–	Standard Century 20"	Plain	428
			Scalloped	464
9 ft	–	Standard Century 20"	Plain	451
			Scalloped	491

Hooper			$
8 ft –	Offset trailed, 20", 7¼" spacing	Plain	686
		Scalloped	710
9 ft –	Offset trailed, 20", 9" spacing	Plain	659
		Scalloped	680
9 ft –	Offset trailed, 24", 9" spacing	Plain	1,007
		Scalloped	1,035
7 ft –	Tandem trailed, 18"	Plain	481
		Scalloped	501
8 ft –	Tandem trailed, 18"	Plain	511
		Scalloped	532

Reid & Gray			
7 ft –	Tandem trailed, 18",	Plain	384
8 ft –	Tandem trailed, 18",	Plain	405
9 ft –	Tandem trailed, 18",	Plain	461

24. FENCING

Table of approximate weights and lengths.

No. or gauge of wire	Length of 1 cwt	$
7	467 yds 21¼ chains	12.19/cwt
8 (25 chain per cwt)	566 yds 25¾ chains	12.19/cwt
9	700 yds 33 chains	12.25/cwt
10	882 yds 40 chains	12.32/cwt
12	1293 yds 59 chains	12.49/cwt
12½ high tensile	1458 yds 66 chains	14.39/cwt
14	2186 yds 100 chains	12.87/cwt
12½ gauge bard 3" apart	448 yds 20½ chains	14.65/cwt
12½ gauge barb 6" apart	533 yds 24¾ chains	14.56/cwt

Wire – Lacing 12 14 & 16 gauge	$ per coil
7 lb coils	1.79
14 lb coils	3.58
28 lb coils	6.78

Standards – Flat Wrought Iron

4'6" x 1¼" x 5/16"	59 cents each
5' x 1¼" x 5/16"	66 cents each
5'6" x 1¼" x 5/16"	72 cents each

Standards – Y section (undipped)		Approx No. in 2 tons
4'6"	59 cents each	383
5'	62 cents each	358
5' 6"	63 cents each	325
6'	66 cents each	300

Waratahs

5'6"	65 cents each
6'	68 cents each

H Irons

5' x 1½' x 5/8"	69 cents each

Mild Steel Tees

5' x 1½" x 3/16"	$1.06 each
5'6" x 1¾" x ¼"	$1.60 each
6'6" x 2½" x 5/16"	$3.65 each

Posts – Concrete Intermediates

6'	$1.05 each
5'6"	$1.00 each
9' paling posts	$1.65 each

Posts – Concrete Strainers

6' x 5" x 5"	$2.40 each
6'6" x 6" x 6"	$3.00 each
7' x 6" x 6"	$3.40 each
7' x 7" x 7"	$4.00 each
7' x 8" x 8"	$4.90 each
8' x 8" x 8"	$5.60 each

Posts – Tanolised Intermediates

(a) Natural Round

5'6" x 4"	minimum top	85	cents each
6' x 4" –	minimum top	86	cents each

(b) ½ round

6' x 6–7" face	71	cents each
5'6" x 6–7" face	70	cents each

(c) ¼ round

6'	50	cents each

Posts – Tanolised Strainers

7' x 6"	$1.95 each
7' x 7"	$2.20 each
8' x 6"	$2.10 each
8' x 7"	$2.60 each
8' x 8"	$3.10 each

Stays

(a)	**Concrete**	8'	$1.40 each
		10'	$1.75 each
(b)	**Tanolised**	9' x 3"	$1.15 each

Stay Blocks

(a)	**Concrete**	16" x 10"	35 cents each
		18" x 12"	45 cents each
(b)	**Tanolised**	2'	23 cents each

Staples

(a)	**Plain**	8,9, 10 & 11 gauge	18 cents per lb
		12 gauge	19 cents per lb
		14 gauge	20 cents per lb
(b)	**Barbed**	8 gauge	21 cents per lb
		9, 10 gauge	22 cents per lb
(c)	**Concrete Post Staples**		18 cents per lb

Battens – Tanolised

2" x 1½" x 3'4"	$10.70 per 100
2" x 1½" x 3'6"	$11.20 per 100
2" x 1½" x 3'10"	$12.20 per 100

Stakes – Tanolised

3" x 2" x 4'6"	$36.00 per 100
3" x 2" x 5'	$40.00 per 100

Gates – Cyclone	**Economy Gate**	**Cyclone Special**
12'	$16.60 each	$23.20 each
14'	$18.09 each	$27.50 each

Boundary Fences – Cyclone

		Nominal Height	**Stays**	**Per Chain $**
(a)	**Tightlock Boundary** (45 ton Hi tensile)			
Tight 8		30" 8 line	12"	5.56
Tight Hog 30"		30" 8 line	6"	6.24
(b)	**Twinlock Boundary** (45 ton Hi tensile)			
		36" 7 line	12"	4.96
		28" 6 line	12"	4.36

(c) Twinlock Boundary (80 ton Hi tensile)	Nominal Height	Stays	Per Chain $
	36" 7 line	12"	4.21
	34" 8 line	9"	4.97
	28" 6 line	12"	3.76

Contract Fencing rate

(a) On Canterbury Plains

(1) 2 posts to the chain, 5 standards between posts.
5 plain and 2 barbed wires: $4.50 to $5.00 per chain
Varies according to number of strainers and gateways.

(2) 4 posts, 4 droppers, 5 plain and 2 barbs: $7.75 per chain

(3) 1 post, 5 waratahs, Hurricane boundary netting, 1 barb, $4.00 per chain.

(b) On hills and downs

(1) Rough going:
(i) 2 posts, 4 to 5 standards, 5 plain, 2 barbs: $7.75 per chain
(ii) 2 T-irons in place of posts: $5.50 per chain.

(2) Good going:
(i) 2 posts, 4 to 5 standards, 5 plain 2 barbs: $6.00 per chain
(ii) 3 posts, Hurricane (boundary) netting, 1 barb wire, 6 plain, $5.00 per chain.

Contract Post Driving

35 cents per post, minimum $5.00 per hour.

Contract Post hole digging $0.25 per hole, minimum $5.00 – $7.00 per hour according to conditions.

25 WATER SUPPLY

Piping	½"	Alkathene	Low Pressure	$3.23 per 100
			High Pressure	$12.00 per 100
	¾"	Alkathene	Low Pressure	$6.00 per 100
			High Pressure	$16.00 per 100
	1"	Alkathene	Low Pressure	$7.80 per 100
			High Pressure	$21.00 per 100
	1¼"	Alkathene	Low Pressure	$10.21 per 100
	1½"	Alkathene	Low Pressure	$11.83 per 100
	2"	Alkathene	at 1/8" thick	
			Low Pressure	$17.20 per 100
	2"	Alkathene	at 3/16" thick	
			Low Pressure	$29.74 per 100

Concrete Water Troughs

200	gallon	round	$27.50
100	gallon	round	$18.50
70	gallon	round	$13.90
60	gallon	round	$13.00
40	gallon	round	$10.00

Concrete Tanks

2000	gallon	10'	High	$160	10'	stand	$124
1000	gallon	10'	High	$103	10'	stand	$ 66
800	gallon	10'	High	$ 83	10'	stand	$ 62
600	gallon	10'	High	$ 70	10'	stand	$ 51
400	gallon	10'	High	$ 53	10'	stand	$ 48

26 DRAINAGE

Drainage Costs

Field Tiles
4 inch $12.00 per 100'
6 inch $17.00 per 100'

To dig 1 chain of trench – average depth 20" – $6.00 per chain

4" tiles $ 8.00 per chain
6" tiles $11.22 per chain

Plus 2 men at 1 chain per hour at $1.00 per hour – $2.00

Cost of laying
4" tiles = $16.00 per chain
6" tiles = $19.22 per chain

In Sandy Soil, shingle is required:
at ½" – ¾" shingle round pipes:
$1.70 per yard of shingle,
2 yards of shingle per chain of pipe

Additional Cost is $3.40 per chain

Cartage costs must be included in this:
To lay 6" tile in sandy soil, including back fill and cartage cost will be $25.00 per chain approximately.

Open Drains

Draglines 25 cents per cubic yard (add 15 cents per cubic yard if machine is on soft ground and working on mats.) Work on approximately $7.00 per hour for a small dragline.

Hydraulic backactor 12" bucket does 1 chain per hour of trench suitable for tiles at $6.00 per chain.

Well drilling Cost of pipe plus drilling plus screen at bottom of well:
6" pipes $11.00 per foot
8" pipes $13.00 per foot

Mole draining Rate of work approximately 1 acre per hour. Contract rates for wheel tractors $6.50 per hour, and for crawler tractors $9.00 per hour.

27. DEPRECIATION (refer Taxation notes Sec. Four.)

Depreciation is the diminution in the value of an asset, caused by lapse of time despite maintenance charges being met. The amount to be written off is largely a matter of opinion, as it is difficult to assess the life of plant when it is purchased.

The normal depreciation rates allowed are:

Agricultural Plant and Equipment

–	tractor drawn implements	10	DV
–	Self propelled equipment and P.T.O.	20	DV

Buildings General

–	Reinforced concrete throughout, steel or reinforced concrete framed with brick walls or other permanent material	1	CP
–	Brick stone or concrete walled, without steel or reinforced	2	CP
–	Other wooden framed buildings not specified elsewhere	2½	CP
Barns	Simple, loafing	10	CP
	Wintering, all types of construction	10	CP
Bridges	Wooden	2½	CP
	Other	2	CP
Slaughterhouses	concrete	5	CP
	timber & concrete	6	CP
	timber	10	CP
Milking Shed	(Town Supply and Factory Supply Farms)		
	all types erected before 1.4.66	4	CP
	all types erected before and first used on or after 1.4.66	10	CP
	Costs of converting to Herringbone design after 1.4.66	10	CP
Bulk Lime Spreader		10	DV
Concrete Mixers		15	DV

Crates	Sheep & cattle	15	DV
Dams and reservoirs	other than reinforced concrete	Maintenance	
	reinforced concrete	1	CP
Dips	Sheep, spray type, including concrete tank or race	10	DV
Ensilage Pits	underground, concrete walls with sliding roof	10	DV
Feeding out units for cattle	all types of construction	4	CP
Fences	ordinary	Maintenance	
	electric	10	DV
Grain Drying and Storage Bins		5	DV
Grain Drying Plant		10	DV
Motor Trucks	(licensed operators) used at least 50% of running time on farm tracks and country roads	25	DV
Motor Bikes		20	DV
Pig Sties	all types	10	CP
Pipe Lines	Farmers and other	Maintenance	
Radio Equipment		20	DV
Saws	Chain	50	DV
Seed Cleaning plant	operating up to 16 hours per day	10	DV
	operating 16–24 hours per day	15	DV
Silos	grain	5	DV
Threshing Plant	Farmer	20	DV
Windmill		10	DV

Depreciation Allowable as a Deduction:

Farm depreciation is generally a deductible expense. There are some special cases:

(1) Proportion of car expenses applicable to use in the business.
   (a) Where farmer has both car and truck – half of 20% DV
   (b) Where farmer has car only – three quarters of 20% DV

(2) Depreciation on farm buildings is deductible, and on one quarter of the cost price of the farm dewelling if situated on the farm.

(3) Depreciation is allowable on farm bridges.

(4) Maintenance cost in respect of stock yards, sheep dips and fencing. Depreciation may not be claimed on these assets. If stock yards are roofed in, the roof remains a separate asset from the fencing in the yards, which should be capitalized, and ordinary and special depreciation claimed as for other farm buildings.

(5) Special Depreciation allowance on accommodation for employees:
A farmer is able to claim a special depreciation allowance of 20 per cent (in addition to ordinary depreciation) of the cost price of any building acquired or erected for the accommodation of employees of the business. The dwelling must be acquired or erected before 1st April 1972.

(6) Special depreciation allowance on new farm buildings.
A taxpayer carrying on a farming business in New Zealand is entitled to claim 20 per cent special depreciation on the cost of new farm buildings and extensions to existing farm buildings (not residences) and capital alterations or improvements to such buildings erected or carried out between 1 April 1964 and 31st March 1972.

(7) Supplementary Depreciation on Farm Buildings

A farmer, who on or after 1st April 1969 first used any new building (including extensions) wholly for farming purposes (but not for the accommodation of any person) is entitled to supplementary depreciation (in addition to ordinary and special depreciation) equal to 6% of the cost of the building or extension, unless the combined rate of supp-

lementary and ordinary depreciation would exceed 10% of cost, in which case the supplementary depreciation is reduced to a rate which would bring the combined rates to 10% of cost.

(8) Special Depreciation on Plant and Machinery
20% special depreciation is allowable on plant and machinery acquired to 31st March 1972:

Asset	How to be written off:
On each asset costing up $2,000	20% in first year
On assets costing $20001 – $4000	10% first year 10% second year
On assets costing over $4000	6% first year 5% second year 4% third year 3% in fourth year

or 10%, 5% 3%, 2%.

except when the asset has been in use for less than 6 months in which case the allowance should be spread 5%, 10%, 3%, 2%, or the claim deferred until the next financial year.

(9) Depreciation on Tractor Safety Frames:
A deduction of 100% of the cost price including the cost of attachment of an approved safety frame is allowable. The deduction is in substitution of all other depreciation allowances and is recoverable on sale.

(10) Investment Allowance of 10% on CP will be given in the first year of use of qualifying plant and machinery. To qualify plant must be new and purchased before 31st March 1972. It is additional to depreciation and means that 110% of the cost of the asset can be written off over its life. It is not recoverable for tax purposes if the asset is sold at a profit.

28 WAGES OF MANAGEMENT

For Lincoln College purposes Wages of Management (W.O.M.) should be based on a married man's salary plus 1% of total farm capital (T.F.C.).

Use the following estimations for a married man's salary.

Town Milk Dairy	$2,500
Factory Supply Dairy	$2,300
Sheep and Mixed Cropping	$2,200

SECTION 5

TAXATION

AN INTRODUCTION TO TAXATION PRINCIPLES AND METHODS

January 1971, R.H.B. Tonkin

Students must appreciate that the following notes give a far from complete coverage of this subject and that further reading is essential for a workable knowledge on the topic.

1. Introduction

1.1 Principles of Taxation in theory are summarised as:

1. Equality of sacrifice
2. Certainty of assessment and collection
3. Convenience of collection from taxpayer
4. Economy of operation in the tax system and
5. Maintain economic neutrality or not adversely affect the consumers' sovereignty.

1.2 Incidence of Taxation in New Zealand 1969–70

		$M	%
(a)	Direct Taxes		
	Income tax	779.198	65.97
	estate and gift duty	26.303	2.22
	land tax	2.854	0.25
		808.355	68.44
(b)	Indirect Taxes		
	Customs and excise	115.473	9.78
	Sales tax	97.615	8.28
	Highways tax	82.289	6.97
	Stamp duty	11.475	0.97
	Beer duty	37.282	3.15
	Racing duty	12.054	1.02
	Other	16.435	1.39
		372.623	31.56
	TOTAL TAXES	1,180.978	100.00

2. General Interpretation

2.1 Income

Arises from the pursuit of gain from either capital or labour. It infers net income, or that after allowing deductions as limited by statute and within the confines of sound accounting principles. The Act does not define the word income but there is case law on the subject.

Once income is established and declared, it cannot be altered unless by express statutory authority.

The transfer or assignment of future income from one source for tax purposes must be for a period of no less than 7 years from the date which the income is to be applied, and it must be outside the control of the settler when so transferred for it not to be assessable in the income of the transferor. Section 105 of the 1954 Act.

2.2 Classes of Income

1. Assessable income—not exempt from income tax other than by special exemptions.
2. Exempt income—not subject to income tax.
3. Non assessable income—not liable for tax but is assessable, i.e. income which only affects the rate of tax.
4. Taxable income—residual of assessable income after special exemptions have been deducted.

2.3 Essential Elements of Income

1. It must be derived or come in, i.e. a gain on revenue, matched against costs.
2. It must be separate from capital.
3. It must not include the accretion or addition of capital.
4. A product of labour, capital or reward: a gift unless made compulsory is not income, nor is a return of a private expense e.g. travelling expenses.
5. Not reduced by private expenses.
6. Purpose of the transaction is to generate a gain.
7. Contain both elements of conformity and regularity, and
8. Expressed in terms of N.Z. money currency.

2.4 Assessable and Exempt Income

The difference between assessable and exempt income is that the latter is not taxable while assessable includes all other income. Care should be taken to distinguish between exempt and non assessable income. Non assessable income is not liable for tax but does affect the tax rate. It mainly concerns company taxation and dividends received.

2.5 Assessable Income includes

1. Profits or gains from income including inventory valuations.
2. Wages, salaries, bonuses, allowances, and gratuities,
3. Personal gains accrued by a dealer, prize money won at A & P Shows
4. Rent from leases or licences,
5. Royalties, rents, annual payments received for water rights,
6. Interest above $100, dividends received, annuities and pensions,
7. Compensation (refer below), depreciation recovered on sale of asset, insurance claims on crops etc.,
8. Refunds of income from wool retention or income equalisation deposits,
9. Income from hire of stock, grazing fees, stud fees, timber sales (apportional over year of sale and 4 subsequent years on application),
10. Nominal value of farm produce consumed by the farmer,
11.* Rental value of dwelling by shareholder/employee * – farm dwelling assessment may be ¾ of (3% C.P. of building less depreciation, repairs and maintenance, and insurance).
12. Livestock or produce gifted, transferred or exchanged, value is at market value unless made to farmers child, step child or grand child over 18, and
13 Income from any other source

* Sharemilker – rental value of free house except where he owns the herd.

2.6 Compensation and Damages

The general rules in establishing whether or not this is assessable is in the following:

Does the compensation purport to make good a loss of trading profits or is it recompense for the deprivation of a capital asset? If income is not assessable then costs directly associated to the generation of that income are not deductable.

For example, compensation received by fruit growers for hail damage is based on restoration of revenue and is assessable income. Compensation for injury under the Workers' Compensation Act, 1956 is exempt from taxation.

2.7 Exempt Income

Common types are:

1. Gains of a capital nature. (Note—where a farm is sold within 5 years of purchase date any profit on the sale of land up to the amount of development expenditure allowed previously as a deduction will be treated as assessable income in the year of sale or spread back over the years in which the expenditure occurred).
2. War pensions.
3. First $100 interest and investment society dividends received by N.Z. resident individuals.

2.8 Deductions

Sections 110 and 111 of principal Act.

Expenditure which is deductible is that which is exclusively incurred in the production of assessable income or as expressly provided for in the Act.

2.9 Specific Items of Deductible Expenditure

A. – General

(a) Land Tax. (In land producing the assessable farm income).
(b) Legal expenses except those incurred in respect of the acquisiton of a capital asset.
(c) Car Expenses (three quarters of car expenses—fuel—repairs and in surance, registration—where both car and truck used, the former is reduced to 50%).
(d) Interest and rent
(e) Rations. Where food and lodging provided for employees, an actual cost cannot be computed—$2.00 per week, per man allowable.
(f) Fire Damage—Where farm generally subject to dry summer condi-

tions. Expenditure in repairing damage is deductible.

B. Development Work

Total Deductible Expenditure: can be spread over nine years after the year of expenditure. If a farm is sold within 5 years of purchase date, any profit on the sale of land up to the amount of the development expenditure will then become assessable income.

(1) Eradication and extermination of pests, both animal and vegetable,
(2) Clearing land of timber, stumps, scrub or undergrowth,
(3) Destruction of weeds,
(4) Preparation of land for farming, draining swamp,
(5) Constructing access tracks or roads, dams, stopbanks, irrigation or stream diversion channels,
(6) Preventing erosion and repairing flood or erosion damage,
(7) constructing airstrips, fences, sinking bores, etc., but not including troughs and pumps.
(8) Feeding platforms and yards, plunge, sheep dips, self-feed silage pits and cost of erecting electric and power lines on farm land.

C Farm Forestry

Deductible expenditure in the year of payment:-

(1) Loan interest plus costs over and above expenditure covered by the loan.
(2) Costs over and above expenditure covered by the loan.
(3) Repayments of the loan.

D Fertilizer and Lime

All this expenditure is deductible but the taxpayer can elect to defer the deduction, or any part of it, for a period of up to 4 years from the year of expenditure.

E Depreciation (Sections 113 to 117 of principal Act).

Abbreviations: D.V. – diminishing value
C.P. – cost price

(a)	Building structures–	wooden frame and structure	2½% C.P.
		brick, stone, etc. with wooden framework	2% C.P
		reinforced concrete or steel	1% C.P.
		portable huts	10% D.V.

(Dwelling–¼ depreciation deductible as farm expense)

Milk sheds built before 1.4.66	4%	C.P.
built after 1.4.66	10%	C.P.
Loafing or wintering barns	10%	C.P.
Pig houses–all types	10%	C.P.
Ensilage pits–concrete walls	10%	D.V.
Other	4%	C.P.
Concrete dams and reservoirs	1%	C.P.

(b)	Plant–	Tractor safety frames (approved) 100% plus fitting
		Saws–chain 50% D.V.
		Self-propelled equipment–tractors, headers, balers, trucks 20% D.V.
		Motor car–with both car and truck ½ of 20% D.V. farm expense
		with only car ¾ of 20% D.V. farm expense
		Dips–spray type, Electric fences, Irrigation pipelines, etc. 10% D.V.
		Grain drying and storage bins 5% D.V.
		Grain drying plant 10% D.V.
		All other non-motorised plant and equipment 10% D.V.

Assets acquired during income year:-

(1) Other than buildings–asset used for less than six months allowed full schedule rate.

(2) Buildings–claim at one-twelfth of the appropriate rate of each

month or part month it is available for use.

Loss on disposal of assets:-

Where a loss on sale or disposal is incurred claim the difference between written down value and the amount realised in the year of disposal.

Profit on sale of assets:-

(1) Other than buildings—where sold for more than its depreciated value, for tax purposes depreciation recovered is assessable income of:-

(a) The year of sale, or

(b) At the taxpayer's request either

(i) partly in the year of sale and the four proceeding years, or

(ii) the years in which depreciation was allowed as a deduction, or

(c) At the taxpayer's request offset against the cost of a replacement asset provided written application is made within six months after the end of the income year in which the asset was sold and the replacement is acquired before application.

(2) Buildings—where the selling price exceeds book value, the difference is allocated firstly to ordinary depreciation recovered and then to special or initial depreciation and any residual balance to capital profit. Only special or initial depreciation recovered is assessable income in the year of sale. No depreciation is allowed on a building in the year in which it is sold or disposed of.

Supplementary Depreciation

Farm buildings, excluding residences and employee accommodation, first used after 1 April 1969 qualify for an additional allowance of up to 6 per cent a year of cost. But the combined supplementary and ordinary depreciation are limited to 10 per cent of cost.

Taxpayers are able to provide in their accounts whatever depreciation rates as are considered necessary, but those claimed for tax purposes will continue to be those laid down by the commissioner of Inland Revenue.

Special Depreciation

On plant and machinery purchased, excluding motor cars or station wagons, and on new farm buildings, or extensions, excluding homesteads but including employee accommodation:-

(1) asset costing less than $2000 claim 20% C.P. in first year.
(2) asset costing between $2001 and $4000 claim 10% first year and 10% second year.
(3) asset costing over $4000 claim either
6%, 5%, 4%, 3%, 2%, in consecutive years, or
10%, 5%, 3%, 2%, in consecutive years.

When an asset costing over $4000 is used for less than six months special depreciation should be spread 5%, 10%, 3% and 2% or 4%, 6%, 5%, 3%, 2%.

2.10 General Information

For detailed notes on such topics as deductible expenditure, balance dates, provisional taxation, records to be kept, tax diary, etc., refer to the Information Pamphlets, Farmers Tax Guide or other recommended references. Similar pamphlets on Special Exemptions and Depreciation Allowances, should also be obtained for fuller coverage omitted above.

Other tax saving incentives and livestock relief on sale are also discussed in detail in the Farmers Tax Guide pamphlet.

3. Methods of Assessment

3.1 Individuals or Sole Traders

YEAR 1971-1972

Basic Rates of Income Tax for Individuals				Tax Rate	Cumulative Total
	$		$	%	$
From	1	to	650	7.85	51.03
	651	to	1,700	21.00	271.32
	1,701	to	2,000	24.5	344.58
	2,001	to	2,500	27.5	481.81
	2,501	to	3,000	30.5	634.01
	3,001	to	3,500	34.0	803.67
	3,501	to	4,000	37.0	988.30
	4,001	to	4,500	39.0	1182.91
	4,501	to	5,000	41.0	1387.50
	5,001	to	5,500	43.0	1602.07
	5,501	to	6,000	45.0	1826.62
	6,001	to	7,000	46.0	2286.16
	7,001	to	8,000	47.0	2755.69
	8,001	to	10,000	48.0	3735.20
	10,001	to	12,000	49.0	4714.71
	OVER 12,000			50.0	

YEAR 1970–71

Basic Rates of Income Tax for Individuals:				Tax Rate %	Cumulative Total
	$		$	from 1st April, 1969	$
Up to	650			7.85 %	51.02
	651	to	1,700	21.00 %	271.52
	1,701	to	2,000	24.50 %	345.02
	2,001	to	2,500	27.50 %	482.52
	2,501	to	3,000	33.00 %	647.52
	3,001	to	3,500	34.00 %	817.52
	3,501	to	4,000	37.00 %	1,002.52
	4,001	to	4,500	40.00 %	1,202.52
	4,501	to	5,000	43.00 %	1,417.52
	5,001	to	5,500	45.00 %	1,642.52

Basic Rates of Income Tax for Individuals:			Tax Rate	Cumulative Total from 1st April, 1969
$		$		
5,501	to	6,000	49.00 %	1,887.52
6,001	to	6,500	50.00 %	2,137.52
6,501	to	7,000	54.00 %	2,407.52
7,001	to	7,500	60.00 %	2,707.52
7,501	to	8,000	65.00 %	3,032.52
8,001	to	10,000	66.00 %	4,352.52
10,001	to	12,000	67.00 %	5,692.52
OVER 12,000			67.50 %	

The effective rate of tax for each dollar of income is found by dividing the tax computed as above by the number of dollars included in the income.

e.g. on $5,500 the effective rate is:

$$\frac{1602.07}{5500} = \$0.29129$$

i.e. 29 cents in the dollar.

Example, using Rates of tax for Individuals:

Total Assessable Income	=	$5,300
Taxation on $5,000 (cumulative total)	=	$1,387.50
Taxation on balance 300 at the rate of 43%	=	$ 129.00
Total tax payable	=	$1,516.50

Tax Adjustment

per Mini Budget, 28th October 1970
PAYE surcharge tax – for the 1970–71 year and the 1971–72 year – an additional 3-1/3% tax on all taxable income received for the whole of the income year.

Special Exemptions

1. Personal Exemption $275
2. Spouse reduced $1 for every $1 by which wife's income exceeds $375 a year $275

3. Children —$135 for each child up to the fourth
—$140 for each child after the fourth
(dependent infants under 18 and whose individual income does not exceed $1,040 a year).
4. Dependent Relative $135 or amount contributed if smaller (includes a separated or divorced wife, foster child, parents and grandparents whose individual incomes do not exceed $700 or dependent children over 18 whose income does not exceed $1,040.)
5. Housekeeper smaller of $275 for full year or amount paid plus value for keep (qualifies only if taxpayer is a widow, widower, divorced, separated or unmarried and employs a housekeeper to care for any child or infirm adult: a married person may qualify where the taxpayer or spouse is mentally or physically infirm).
6. Charitable donations and School fees—$100 or amount paid if smaller.
7. Life Insurance and Superannuation—the lesser of the amount paid of $700 for taxpayers belonging to employer-subsidised superannuation funds, or $950 for other taxpayers.
(Life, personal accident, sickness, wife and child insurance premiums plus approved superannuation contributions paid by the taxpayer qualify but exclude endowment insurance policies of less than 10 years except where the policy matures for males over 65 and females over 55 years of age and the minimum term is 5 years).

Other Deductions and Rebates

8. Rents and Royalties—less the deduction of actual direct expenses including depreciation at the schedule rates.
9. Dividends The rebate allowable on taxable dividends will be withdrawn, except where the taxable income is less than $4,000. As from the 1st April 1971, the position will be:
—where the total taxable income (including dividends) exceeds $4,000 the dividends are to be assessed as ordinary assessable income with no rebate allowed.
—where the total taxable income (including dividends) does not exceed $2,000, the dividends are to be assessed as ordinary assessable income, but a rebate of tax equal to 10% the taxable dividends or the actual tax payable, whichever is less, will be allowed.

—where the total taxable income, including dividends is between $2,001 and $4,000, the rebate will be the smaller of—

10% of the taxable dividends

or

$200 reduced by $1 for every $10 by which the total taxable income exceeds $2,000.

i.e. —take 10% of the smaller of:
—taxable dividends, or
—$4,000 less total taxable income.

Example

Total taxable income—$3,400 of which $900 is from dividends
Rebate is 10% of smaller of:
—$900 or
—$600 ($4,000 – 3,400)
Rebate in this is case is $60.
Similarly—total taxable income exceeds $2,000 by $1400.
Reduce $200 by $1 for every $10 income in excess of $2,000.
= ($200 – 140)
= $60

3.2 Company Assessment (Resident in N.Z.)

Basic rate of income tax:

20 cents in the $1 plus 1/48000 of a $1 for every $1 of taxable income up to a maximum of $7,200 and thereafter at a flat rate of 50 cents in the $1.

There are no special exemptions, but the following also apply

(1) Non Assessable Income—that income which is not liable for tax in the hands of the recipients, but is used for the purpose of increasing the rate of tax payable on his assessable income.

Included in the class of non assessable income are dividends, or interest on debentures carrying a floating rate of interest, derived by a N.Z. company from other companies (N.Z. or overseas) except dividends from companies which are themselves exempt from income tax (i.e. building societies). (Refer

Company Tax

Amounts of Tax at Basic Rates

$ amount	$ tax	$ amount	$ tax	$ amount	$ tax	$ amount	$ tax
1	.20						
100	20.20	2100	511.87	4100	1170.20	6100	1995.20
200	40.83	2200	540.83	4200	1207.50	6200	2040.82
300	61.87	2300	570.20	4300	1245.20	6300	2086.87
400	83.33	2400	600.00	4400	1283.33	6400	2133.33
500	105.20	2500	630.20	4500	1321.87	6500	2180.20
600	127.50	2600	660.83	4600	1360.83	6600	2227.50
700	150.20	2700	691.87	4700	1400.20	6700	2275.20
800	173.33	2800	723.33	4800	1440.00	6800	2323.32
900	196.87	2900	755.20	4900	1480.20	6900	2371.87
1000	220.83	3000	787.50	5000	1520.83	7000	2420.83
1100	245.20	3100	820.20	5100	1561.87	7100	2470.20
1200	270.00	3200	853.33	5200	1603.33	**7200**	**2520.00**
1300	295.20	3300	886.87	5300	1645.20	7300	2570.00
1400	320.83	3400	920.83	5400	1687.50	7400	2620.00
1500	346.87	3500	955.20	5500	1730.20	7500	2670.00
1600	373.33	3600	990.00	5600	1773.32	7600	2720.00
1700	400.20	3700	1025.20	5700	1816.87	7700	2770.00
1800	427.50	3800	1060.83	5800	1860.83	7800	2820.00
1900	455.20	3900	1096.87	5900	1905.20	7900	2870.00
2000	483.33	4000	1133.33	6000	1950.00	8000	2920.00

Example

Taxable income of $7,300

$(20c. + \frac{7,200)}{48,000)} \times \$7,200$

$= (0.20 + 0.15) \times 7,200$	=	$ 2,520.00
plus (7,300 – 7,200)		
= $100 @ 50c. in $1	=	$ 50.00
Total Tax payable	=	$ 2,570.00

This calculation has been worked out for varying incomes in the previous table.

Effective tax rate may be calculated:

$$\text{Effective tax rate} = \frac{2570}{7300} = .352 \text{ per } \$1$$

Taking an example to show the effect of non-assessable income:

Taxable income	=	$15,500
Non assessable income	=	$ 2,250
Total Income	=	$17,750

Effective rate of tax on $17,750:

$$= \frac{7795}{17750} = 0.439154$$

Assessment is therefore based on taxable income $15,500 @ 0.439154
= $6,806.88

3.3 Bonus Issue Tax

Definition of bonus Issue

The capitalisation of the whole, or part of –

(a) Amounts standing to the credit of the company's reserves or profit and loss account; or

(b) Amounts otherwise available for capitalization–

– Where the bonus is made by way of fully or partly paid-up shares in the company or giving credit for amounts unpaid on existing shares in the company.

Bonus issue tax is imposed at a flat rate of 17½c per $ on the nominal value of an issue of bonus shares. This flat rate is payable at source, i.e. by the company, and is not assessable in the hands of the shareholder and is a final tax. It is liable for payment on the 7th of February of the year following the income year in which the bonus issue was made.

Should a company wind up within 3 years of issuing a B.I. and the Commissioner considers the distribution includes the B.I. capitalization he is empowered to charge a further 17½c per $.

3.4 Losses Carried Forward: (Sec 137 of principal Act plus amendments)

Accounting losses may be set off against a taxpayer's assessable income derived from another source during that year or be carried forward and deducted from his assessable income of a future tax year, provided that the loss carried forward shall as far as possible be deducted from the assessable income of the first succeeding year and consecutively thereafter.

For companies to qualify for this exemption it is necessary for their shareholders to remain substantially the same from one last day of the respective income year to the next. Substantially the same is held to be 40% or more of the shareholders.

4. Farm Income Equalisation Scheme

4.1 Purpose of Scheme

This scheme is to help the farmer carry out a planned development programme and increase production with the least possible interference through rising and falling incomes. In good income years the farmer can make tax free deposits in the Income Equalisation Account. These reserves will then be available for withdrawal at the planned time to continue a development programme.

4.2 Conditions of Scheme

(1) Voluntary deposits of up to 25% of assessable farming income in any one

year may be made. The minimum deposit is $200 unless the 25% of assessable income is less than $200. (IR 133 form for deposits).

(2) Deposits may be made during the income year or up to one month after the due date of filing a tax return or 6 months after balance date which ever is the earlier. The Commissioner has extended the time to make a deposit until January 31 where a return has been furnished earlier.

(3) The deposit is allowed as a deduction in the year in which it is made. A deposit made within the specific period may be related back to the previous income year as above.

(4) The minimum period for a deposit is 12 months from the date of deposit and the maximum is five years from the end of the accounting year in which the tax deduction was granted.

(5) Where hardship or urgent development work exists the deposit can be withdrawn before the expiry of 12 months. The minimum refund is $100.

(6) All refunds are made on the first in, first out basis and become assessable income in the year in which the application is made or when compulsory refunds are made.

Where an application for refund is given within a "specified period" it may be related back to the previous accounting year. The "specified period" for a farmer with a 30 June balance date is 30 September in any year.

(7) A withdrawal from the fund and then a deposit in the same year is not allowed, except in the case where a compulsory refund has been made or, if the refund has been spent on development.

(8) Development expenditure or fertilizer expenditure carried forward is not taken account of when assessing the maximum deposit of 25% assessable income. The latter is adjusted to the year in which it occurred.

(9) No interest is payable on deposits made.

(10) It is ensured that a refund will not attract more tax than would have been paid if the deposit had not been made.

e.g. Year 1 –

Marginal rate of tax	= 40%
Amount put into fund	= $500

Tax payable on $500 would have been $200. In the 5 years the $500 remains in the fund, assessable income rises, so that:

Year 5 –

Marginal Rate of tax = 50%

Amount withdrawn from fund = $500

Tax payable on $500 at marginal rate of tax in Year 5:

= $250 > $200

So tax is calculated at a marginal rate of 40% (from Year 1) on the $500 withdrawn.

4.3 Advantages to the Taxpayer

(1) Money is available for a programme of farm development.

(2) Saving of taxation – example:

No Income Equalisation Deposit	Year 1	Year 2	Income Equalisation Deposit Made	Year 1	Year 2
Assessable Income	$10,000	$4,000	Assessable Income	$10,000	$4,000
less development expenditure	–	$2,000	less development expenditure	–	$2,000
Amended Income	$10,000	$2,000	Amended Income	$10,000	$2,000
			Deposit	$ 2,000	
			Withdrawal		$2,000
				$ 8,000	$4,000
Less Exemptions	$ 1,200	$1,200	Less Exemptions	$ 1,200	$1,200
Taxable Balance	$ 8,800	$ 800	Taxable Balance	$ 6,800	$2,800
Income Tax	$ 3,139.69	$ 51.03	Income Tax	$ 2,194.62	$ 533.31

Income Tax saved by making a $2,000 deposit is $461.

5. Trusts

5.1 Definition

An equitable obligation binding a person (called the trustee) to deal with property over which he has control (and which is called the trust property) for the benefit of persons (called the beneficiaries) of whom he himself may be one, and any one of whom may enforce the obligation.

5.2 Objects of Trust

– To spread taxation, but this must be incidental to the overall scheme and not the prime objective. See the later example.
– To reduce estate and save duties
– To "peg" the value of the estate i.e. by selling to a trust at present Government Valuation, and leaving the whole of the purchase money owing by the trust to him, he has pegged the value of his Estate at its then value.
– To provide a fund for the payment of Death Duties.

5.3 Trust Taxation (for Trusts intervivos) *

A trustee shall make a return of income derived by him as trustee, separately and distinct from income derived by him in his individual capacity or under any other trust. (Section 155(c) of the principal Act, 1954).

Procedure under P.A.Y.E.

The trustee is required to pay provisional tax. For terminal tax the Inland Revenue Department, where necessary, will issue a notice to the trustee showing any balance of tax due or refundable.

5.4 Specified and Ordinary Trusts

Sec. 32, 33 and 34 of Part A Land and Income Tax Amendment Act (No.2) 1968 alters taxation of trusts by creating two classes of trusts:

(1) Specified trusts–those intervivos trusts created after 19 July, 1968.
(2) Other trusts–those arising on a will or intestacy and intervivos trusts not classified as specified trusts.

Income is assessed as beneficiary's income in the following circumstances:-

For adult beneficiaries– (a) where the beneficiary is entitled in possession to the receipt of the trust income during the accounting year, or
(b) the income is applied for the benefit of or paid to the adult beneficiary during the accounting year or within six months after.

For infant beneficiaries in specified trusts only if the trust income is

* Trust formed during the life of the settlor.

paid or applied in the accounting year or six months after. There is no provision for vesting. In other trusts it is assessable as beneficiary's income only if for vesting. In other trusts it is assessable as beneficiary's income only if it is indefeasibly vested during the accounting year as authorised by the trust instrument or is paid or applied within the accounting year or six months thereafter. Vesting by the trustees discretionary act is not recognised.

Paid or applied is defined as a bona fide transaction which puts the income in question beyond the possession or control of the trustee. With regards to infant beneficiaries in specified trusts should beneficiaries' income subsequently come back under the control of the trustee it will be treated as trustee's income.

All other income not included above will be treated as trustee's income.

5.5 Special Exemptions

A Beneficiaries Income–In respect of each beneficiary who is entitled to income of the trust during the income year, the trustee is allowed for tax purposes all special exemptions to which the beneficiary would be entitled if he had derived the income direct instead of through a trustee.

B Trustee's Income–The trustees income is assessable in respect of all income not paid or audited to a beneficiary or not paid or applied for the benefit of a beneficiary during the income year. Payment on application of income may be executed by the Trustee up to six months after balance date in reference to any one income year.

The trustee is only entitled to a special exemption of $100 against income assessed for tax purposes of other trusts. Specified trusts do not qualify for the Trustees special exemption. The rate of tax for specified trusts of 35 cents in the $1 or the effective rate of tax on that income, whichever is the greater.

Example: A – for the Beneficiaries

– A settlor in a trust formation will loose his special exemptions on those who now become the beneficiaries to the trust and who in so doing claim their respective personal exemptions of $275 per annum. Where applicable, the special exemptions lost to the settlor are:

Wife's exemptions	$275 p.a.
Child's exemptions	$135 or $140 p.a.

The child's exemption is only claimable where his/her income does not exceed $1,040, for trusts intervivos the child's income comprises the following:

(i) sums paid in support of child from trust monies within year,
plus (ii) income paid to trust not in support of child;
plus (iii) accumulations of previous years income in trust.

Example

Situation (1) Without the Trust

Farmer, with a wife, 4 children, paying $950 Life Insurance premiums, and an income of $10,000.

Exemptions:

Personal	$ 275
Wife	$ 275
Children (135 x 4)	$ 540
Insurance	$ 950
	$2,040

Taxable Income = $10,000 – $2,040
= $ 7,960

Tax Payable (from table) = $2,304.96

Situation (2) With the Trust

This trust was formed after the 19th July 1968, so no trustee exemption will apply.

A scheme has been devised whereby $4,000 of this $10,000 income is diverted from the farmer to a trust for the benefit of his wife and four children.

The income in the trust is treated thus:

Wife	$ 300
Four Children ($700ea)	$2,800
Accumulated	$ 900
	$4,000

Taxation for the Trust

Wife–

Income	=	$300
Exemption	=	-$275

Children –

Income	=	$2,800
Exemptions (4 x 275)	=	$1,700

Accumulation = $900

If this trust had been formed before 1st July 1968, a trustee exemption of $100 would apply here.

Accumulation of Exemption under the trust, in the circumstances of a trust income of $4,000

(1)	Wife	275
(2)	Children	1,700
	Total Exemptions	1,975

Taxable Trust Income – (4,000 – $1,975) = $2,025

Tax payable on trust income = $351.18

The effective rate of tax on trust income is $\frac{351.18}{2025}$ = 17c per $1

This, however is less than 35c per $1, so 35c will be the rate of tax on the trust income

i.e. Tax payable on trust income = $708.75

Farmers Taxation

Income	$6,000	
Exemptions		
– wife	275	
– children	540	Note–each child's income does exceed $1,040, so the full child exemption is claimed.
– Insurance	950	
– Personal	275	
	$2,040	

Taxable Income = ($6,000 – 2,040)
= $3,960

Tax payable on farmers income = $960.07

∴ Total Tax = $708.75
$906.17
$1,668.92

This represents a tax saving of $636.04 through the trust, at 1970 rates of Taxation.

5.4 General

For elaboration on what constitutes trust income and allowable deductions on the same refer to the section on Trustees in "A Guide to N.Z. Income Tax Practice" by Staples.

6 Land Tax

Land used solely or principally for farming or agricultural activities is to be exempted from land tax (Budget 1970).

Farming or agriculture will include:
– Breeding or keeping of livestock, poultry or bees.
– Growing of fruit, crops or vegetables.
– Horticulture and viticulture.

Land used for:
– Forestry
– Sale yards and stock dealing
– Racecourses will not be exempted.

The exemption will first apply to land held as at 31st March 1970.

7 Estate Duty (Estate and Gift Duties Act 1968)

7.1 Property Liable to Estate Duty

Estate duty is payable on a deceased persons wealth according to the

following:

(1) all property situated in New Zealand

(2) all property outside N.Z. if the deceased was domiciled in N.Z. at the date of death. A credit is allowed in respect of death duties payable overseas.

(3) Notional estate being–
gifts made within 3 years of death, valued at the date of making the gift and credit being allowed for gift duty paid against the death duty (exceptions are those gifts made to charities, education or maintenance of relatives) joint tenancy of property such as that jointly owned taken as a half share for estate purposes, joint family home taken at that by which his share exceeds $8,000 for example:

J.F. Home	$20,000
at half share	$10,000
less exemption	$ 8,000
dutiable portion	$ 2,000

property disposed of by the deceased prior to death but in which he reserves an interest for his life: property in annuities purchased or provided by the deceased so that a beneficial interest arised on his death. The first $1,000 payable to a widow from a superannuation scheme pension is excluded from the estate.

7.2 Deductions and Expenses Allowable

Debts owing by the deceased at his death are deducted from the total value of the estate.

Reasonable funeral expenses and income tax on income to date of death are also deducted. Estate duty is charged on the balance of the estate.

All accrued Social Security benefits (including war pensions) will be exempt from duty. This change will apply in estates of persons dying on or after 25th June 1970.

7.3 Valuation of Property

Land is valued under the Valuation of Land Act 1951 at an up to date Government Valuation. Timber value of trees growing on the land is exclud-

ed from the valuation, subject to certain conditions. Other property such as furniture and effects requires the administrator to submit an inventory and valuation by a qualified valuer to the Inland Revenue Department. For property other than land or furniture and effects, the Commissioner will accept a valuation made by person competent to value the same.

7.4 Schedule of Death Duty Rates

Scale of Rates of Estate Duty to apply in Estates of Persons Dying on or after 25th June 1970.

Note – "Excess" means excess of the final balance

Final Balance of Estate	Rate (In complete dollars)
Not exceeding $12,000	Nil.

Exceeding	Not Exceeding					
$	$			$		$
12,000	14,000			7	percent of excess over	12,000
14,000	16,000	140	+	8	percent of excess over	14,000
16,000	18,000	300	+	9	percent of excess over	16,000
18,000	20,000	480	+	10	percent of excess over	18,000
20,000	22,000	680	+	11	percent of excess over	20,000
22,000	24,000	900	+	12	percent of excess over	22,000
24,000	26,000	1,140	+	13	percent of excess over	24,000
26,000	28,000	1,400	+	14	percent of excess over	26,000
28,000	30,000	1,680	+	15	percent of excess over	28,000
30,000	32,000	1,980	+	16	percent of excess over	30,000
32,000	34,000	2,300	+	17	percent of excess over	32,000
34,000	36,000	2,640	+	18	percent of excess over	34,000
36,000	38,000	3,000	+	19	percent of excess over	36,000
38,000	40,000	3,380	+	20	percent of excess over	38,000
40,000	42,000	3,780	+	21	percent of excess over	40,000
42,000	44,000	4,200	+	22	percent of excess over	42,000
44,000	46,000	4,640	+	23	percent of excess over	44,000
46,000	48,000	5,100	+	24	percent of excess over	46,000
48,000	50,000	5,580	+	25	percent of excess over	48,000
50,000	52,000	6,080	+	26	percent of excess over	50,000
52,000	54,000	6,600	+	27	percent of excess over	52,000

Exceeding	Not Exceeding					
$	$				$	$
54,000	56,000	7,140	+	28	percent of excess over	54,000
56,000	58,000	7,700	+	29	percent of excess over	56,000
58,000	60,000	8,280	+	30	percent of excess over	58,000
60,000	70,000	8,880	+	31	percent of excess over	60,000
70,000	80,000	11,980	+	32	percent of excess over	70,000
80,000	90,000	15,180	+	33	percent of excess over	80,000
90,000	100,000	18,480	+	34	percent of excess over	90,000
100,000	110,000	21,880	+	35	percent of excess over	100,000
110,000	120,000	25,380	+	36	percent of excess over	110,000
120,000	130,000	28,980	+	37	percent of excess over	120,000
130,000	140,000	32,680	+	38	percent of excess over	130,000
140,000	150,000	36,480	+	39	percent of excess over	140,000
Exceeding $150,000		40,380	+	40	percent of excess over	150,000

Note – excess means excess of the final balance in complete dollars.

7.5 Special Exemption

Widow's exemption–the value of her succession, or the sum of $40,000 whichever is the lesser.

Widower's exemption–the value of his succession, or the sum of $40,000 whichever is the lesser.

Children's exemption (minors only)–the benefit received from the estate, or the sum of $1,000 per child, whichever amount is the lesser.

The first $2,000 in value of furniture and personal effects of persons dying on or after 25th June 1970 will be exempt from estate duty.

In each case the exemption is limited to the duty at scale rates applicable to above dependence. Refer to examples.

7.6 Quick Successions

To reduce the effect of a double impact of estate duty less duty is payable in the second estate on property indentified as being or representing property received from the first estate.

The reduction is on the lesser of the duty payable on the particular

property in the first and in the second estate. It is graduated according to the period which has passed between the two dates of death, as follows:

Period between Death of Successor and Predecessor	Duty Reduced by
4 months	75 percent
8 months	60 percent
1 year	50 percent
2 years	40 percent
3 years	30 percent
4 years	20 percent
5 years	10 percent

7.7 Interest or Penalty on Unpaid Estate Duty

Interest at the rate of 5%, is payable on unpaid duty after 6 months from date of death.

A 5% penalty can be levied where no efforts are being made to settle the liability within 3 months of assessment. Extention of time may be granted.

7.8 When Estate Duty Accounts are Re-opened

From time to time it is necessary to re-open estate duty accounts to include assets which come to light. The commissioner will be given discretionary powers not to recover sum of $200 or less in any one estate re-opened after 25th June 1970, if he is satisfied that the omission of the asset from the estate was not wilful or the result of negligence.

Examples

(1) Value of succession where there is a life interest in a dutiable estate of say $108,000.
Method of assessment is as follows:-

Value of asset in which life tenancy exists: annuity of $5400 per annum
asset $108,000 at 5%
Life expectancy—widow aged 70 (from tables) 11.46 years
Present value of annuity factor at 5%
P.V. of $1 for 11.46 years at 5% $8.56256

Present value of succession $5400 x 8.56256 =	$46,237
Remainderman's estate	$61,763
	$108,000

(2) Estate duty payable on a $108,000 dutiable estate where the widow's succession is $46,000 (as in No. 1) and the balance is to be succeeded by the four children of the deceased.

Exemption Entitlement:

Widows Succession	$46,000	exemption	$40,000	max.
Childrens Succession	$62,000	exemption	$ 4,000	max.
			$44,000	

Death Duty on $108,000 is	$24,680
Less exemption $\frac{(44000}{108000}$ of $24,680)	$10,055
Estate Duty Payable	$14,625

(3) Where on a dutiable estate of $108,000, there is no life interest clause in the will and the deceased's widow dies within 12 months of the predecessor, and leaves the estate to the four infant children then the position is as follows.

First Estate Assessment:-

Widows Succession	$104,000	exemption	$40,000
Childrens Succession	$ 4,000	exemption	$ 4,000
			$44,000

Estate duty on $108,000 is	$24,680
Less exemption $\frac{(44000}{108000}$ of $24,680)	$10,055
First estate duty payable	$14,625

Widows estate – succession	$104,000
Less estate duty paid	$ 14,625
	$ 89,375

Estate of deceased widow after 12 months say $85,000
Childrens exemption 4,000

Second Estate assessment

Second Estate assessment		
Estate duty on $85,000 is	$16,830	
Less exemption (4000/80000 of 16,830)	842	
	$15,988	
Less quick succession relief at 50%	$ 7,994	
Second estate duty payable		$7,994
Total Estate Duty payable in 12 months		$22,619

Note, the saving in death duties in this example by the inclusion of a life interest clause in the predecessors will amounts to the duty payable in the second assessment, namely $7,994.

8 Gift Duty

(Estate & Gift Duties Act 1968)

8.1 Definition

A gift is any gratuitous or partly gratuitous disposition of property other than by will, whether with or without an instrument in writing and without full consideration passing.

The disposition of property covers any conveyance, transfer, settlement or assignment. It is used with the widest of meanings, including any transactions involving a person diminishing the value of his estate to the betterment of another's.

8.2 Property liable to Gift Duty

(1) gifts of all property situated in New Zealand
(2) gifts of all foreign property if the donor is domiciled in New Zealand

8.3 Gifts Exempt from Duty

(1) gifts made towards the maintenance of a relative or the education of a relative and which are not excessive.
(2) small gifts not exceeding an aggregate of $200 to the same beneficiary in the same calendar year are not taken into account if they

are made as part of the normal expenditure of the donor.

(3) special exemptions including
settlement of a joint family home
gift of property in aid of a charitable trust
contributions by an employer to superannuation fund.

8.4 Valuation of Property

A Government valuation will be made for realty and all other property will be assessed at market value as provided by a competent valuer to the donor.

8.5 Schedule of Gift Duty Rates

Value of Gift (together with all aggregated gifts within the previous 12 months)		Rate (excess means excess of the value)			
Not exceeding $4,000			Nil		
Exceeding	Not Exceeding				
$	$	$			$
4,000	6,000		9%	of excess over	4,000
6,000	8,000	180 +	11%	of excess over	6,000
8,000	10,000	400 +	13%	of excess over	8,000
10,000	12,000	660 +	15%	of excess over	10,000
12,000	14,000	960 +	17%	of excess over	12,000
14,000	16,000	1,300 +	19%	of excess over	14,000
16,000	18,000	1,680 +	21%	of excess over	16,000
18,000	20,000	2,100 +	23%	of excess over	18,000
20,000	22,000	2,560 +	25%	of excess over	20,000
22,000	24,000	3,060 +	27%	of excess over	22,000
24,000	28,000	3,600 +	23%	of excess over	24,000
28,000	32,000	4,520 +	25%	of excess over	28,000
32,000	36,000	5,520 +	27%	of excess over	32,000
36,000	40,000	6,600 +	29%	of excess over	36,000
40,000	44,000	7,760 +	31%	of excess over	40,000
44,000	48,000	9,000 +	33%	of excess over	44,000
48,000	52,000	10,320 +	35%	of excess over	48,000

Exceeding	Not Exceeding					
			Rate			
$	$	$				$
52,000	56,000	11,720	+	37%	of excess over	52,000
56,000	60,000	13,200	+	39%	of excess over	56,000
60,000	64,000	14,760	+	31%	of excess over	60,000
64,000	and over	16,000	+	25%		

8.6 Timing of Gifts

Because a donor can make a series of duty free gifts not exceeding $4,000 in any 12 month period the timing of when a gift is made becomes important. In general it can be said that a gift is not complete until the donor has put himself in the position where he is unable to revoke it.

The date of completion of some of the more common forms of gift is illustrated in the following chart.

Description of Gift	When Complete
Cash	On delivery to the beneficiary
Cheques	When the cheque has been cashed, because until the cheque has been cashed it may be revoked.
Land Subject to the Land Transfer Act 1952	Except where a valid trust is created, either the date on which – (a) the instrument of transfer is registered in the Land Transfer Office, or (b) the beneficiary has in his possession all the necessary documents to enable the registration to be effected, whichever is the earlier.
Chattels	When 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.

8.7 Disclosure of Gifts for Assessment

Although the beneficiary has a duty to see that gifts are disclosed, the

onus rests with the donor. Where the value of a gift exceeds $2,000 or where the aggregate of gifts over the previous 12 months exceeds $2,000 then the donor is required to file a statement giving particulars with the Inland Revenue Department (IR 635 form).

Failure to file a statement within one month (or three months if the gift is made out of N.Z.) renders the donor liable to a fine of $4 per day or $200 maximum.

Interest accrues on unpaid gift duty at the rate of 5% from 3 months following the date the gift was made. Likewise, a penalty of an additional 5% accrues on unpaid duty six months from the date of gift.

8.8 Relief from Other Duties When Gift Duty is Payable

When gift duty is payable the document of conveyance which constitutes the gift is exempt from conveyance or stamp duty and is charged with a duty of $1.50 only.

When property is liable to gift duty and also estate duty (notional estate), the amount of the gift duty paid or payable is deducted from the sum which would otherwise be payable on the property as estate duty. Gift duty paid will be deducted from the estate duty payable where gifts are included as notional estate.

There is provision for 3% interest on gift duty paid within three years of the donor's death. This refund becomes part of the deceased's dutiable estate.

8.9 Example

An illustration of gift duty assessment –

Gifts made were $ 3,000 on 15th November 1968
$ 3,000 on 12th November 1969
$10,000 on 11th November 1970

The duty assessment is:-

	Gift		Basic Duty	Excess	Total	Appartion	To Pay
15.11.68	$3,000		Nil			50%	$90
		$6,000	Nil	2,000 @	$180		
						50% $90	

	Gift		Basic Duty	Excess	Total	Appartion	To Pay
12.11.69	$3,000					23%	$260
		$13,000	$960 +	$170	$1130		
11.11.70	$10,000					77%	$870
	Total gift duty payable						$1,220

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Farmers Tax Guide, November 1969
Estate and Gift Duty in N.Z., 1969

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(Farm Management Notes, Volume 4)

SECTION 5

GROSS MARGINS

GROSS MARGIN ANALYSIS – A CRITICAL EVALUATION

G.F. Tate

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 the 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.

In the last decade 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 Aotea wheat and Arawa wheat in a particular paddock, 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 relia-

bility with which the critical 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 bushels of yields 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 50 bushels per acre over the four good years, but in the fifth dry season nothing. A gross margin analysis calculated on the 50 bushels yield would show a return of about $60 per acre. However on the true crop mean yield over the five years of 40 bushels per acre, the gross margin would be reduced to about $44 per acre.

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.

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 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.

Let us assume that the gross margin per ewe equivalent for a ewe flock is $6. At 6 ewes per acre the gross margin per acre would be $36. For a cattle policy, buying in weaners and selling prime stock, let us assume a gross margin per ewe equivalent of $7, or at 6 ewe equivalents per acre $42. On this basis of gross margin per acre cattle look more profitable by $6 per acre ($42 compared with $36).

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 ewe equivalent in sheep costs $5 and a ewe equivalent in cattle costs $17.50 (if we assume a weaner steer being the equivalent of 3 ewes this values the weaner at about $52 per head). With 6 ewe equivalents per acre we find the following position:-

Cattle $\quad \dfrac{\text{Gross margin per acre}}{\text{Livestock capital per acre}} = \dfrac{\$42}{\$105}$

i.e. a 40% return to livestock capital

Sheep $\quad \dfrac{\text{Gross margin per acre}}{\text{Livestock capital per acre}} = \dfrac{\$36}{\$30}$

i.e. a 120% return to livestock capital

Recognising capital as 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 $\quad$ $105 invested returns $42
i.e. a gross margin return of 40 cents per $1 invested.

Sheep	$30 invested returns $36 i.e. a gross margin return of $1.20 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, then the absolute return from cattle is going to be higher than for sheep. For example –

	Cattle	Sheep
Gross margin per acre	$42	$36
Less interest at 6% on capital invested in livestock = approximately	$ 6	$ 2
Residual margin per acre	$36	$34

If capital is available at 6% then the farmer on a thousand acre property with the above figures is likely to be better off by $2,000 by running cattle. If however, in the above example capital was only available at 8% then the residual margin per acre would be equal and there would be no financial advantage in running one class of stock over the other.

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 $1,200 if he uses his capital to buy sheep, but only $400 if he used his capital to buy cattle.

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 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.

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 substitution 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 a 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 1.5 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 substituiton rate appropriate at 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 budgeting would be better methods of analysis.

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, September, the correct substitution rate to im-

pose 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 five ewes per acre may be in the position where in August each grass paddock carries seven ewes. Seven ewes then is the substitution rate to be used in comparing the two enterprise, not five.

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 – choumoellier 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 acre	Direct Costs per acre	Gross Margin per acre
Choumoellier seed	$150	$20	$130
Wheat	$ 75	$10	$ 65
White Clover Specialist	$ 60	$15	$ 45
White Clover Pasture	$ 45	$12	$ 33
Peas	$ 56	$16	$ 40
Ryegrass Seed	$ 85	$25	$ 60
Grazing ewes			$ 36

Looking simply at the calculated gross margins one would say that most of the farm should be in choumoellier seed. The true position however is not so clear-cut. While over a 10 year period the gross margin for choumoellier 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 choumoellier 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 choumoellier 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 sown 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.

The specialist white clover permits the carrying of, say, two ewes per acre from May to November, increasing profitability by about $12 an acre. 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 six ewes from February to November, increasing profitability by $36 an acre. The ryegrass permits ewe grazing from May to October, an additional $30 an acre of gross margin. The peas boost the subsequent yield of ryegrass by five bushels per acre. Therefore an additional $7 per acre profit is earned from the ryegrass crop.

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 gross margin return of $420 over its six-year time period. Consider also rotation B, which yields a gross margin return of $480 over its eight-year time period. Clearly, when the total revenue earned is divided by the number of years involved, rotation A returning $70 per annum would appear more profitable than rotation B returning $60 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 decisionmaker. 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.

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—

(1) 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.
(2) Should the cost of fencing maintenance be a charge against livestock.
(3) 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 on the property's fixed costs of a management change can result in illogical decision making.

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 tech-

nique 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 limitations of the technique employed.

ENTERPRISE GROSS MARGINS

A.M. Mulholland 1.1.71

Gross Margin per acre equals the gross revenue less direct costs. It is therefore the amount contributed by the enterprise to the meeting of costs which are fixed in the short term and to profit. In the following Gross Margin calculations, yield and price have been varied to show the effect, of variation of these two parameters on the relative profitability of any particular enterprise.

Gross Margins can be thought of as mechanical guides to short term planning and budgeting. They do not take into account such basic considerations as the husbandries, labour and machinery availability, personal preferences, risk and uncertainty etc.

A Crops

1. Garden Peas (ex Old Grass)

a.	**Price** **25 bus @**	*$ 1.45*	*$ 1.60*	*$ 2.00*
	Gross Revenue	**$36.25**	**$40.00**	**$50.00**
	Direct Costs	$	$	$
	Cultivation – 3½ hours @ $0.35	1.23	1.23	1.23
	Seed – 4 bus. @ $2.78	11.12	11.12	11.12
	Fertilizer – 1¼ cwt reverted super. @ $1.01	1.26	1.26	1.26
	Spray – MCPB (1lb ai/acre @ $4.50) + ¼ hr @ $0.35	4.59	4.59	4.59
	Mowing – 1 hour @ $0.35	0.35	0.35	0.35
	Heading – ½ hour @ $0.45	0.23	0.23	0.23
	Sacks – 8 @ $0.12	0.96	0.96	0.96
	Cartage – 8 sacks @ $0.26	2.08	2.08	2.08
	– 1¼ cwt fertilizer, covered by subsidy			
	Total Direct Costs	*21.82*	*21.82*	*21.82*
	GROSS MARGINS	**14.43**	**18.18**	**28.18**
b.	**Price** **35 bus. @**	*$ 1.45*	*$ 1.60*	*$ 2.00*
	Gross Revenue	**$50.75**	**$56.00**	**$70.00**

Direct Costs	$	$	$
Cultivation – 4 hours @ $0.35	1.40	1.40	1.40
Seed – 4 bus. @ $2.78	11.12	11.12	11.12
Fertilizer – 2 cwt reverted super @ $1.01	2.02	2.02	2.02
Spray – MCPB (1lb ai/acre @ $4.50) + ¼ hr @ $0.35	4.59	4.59	4.59
Mowing – 1 hour @ $0.35	0.35	0.35	0.35
Heading – ¾ hour @ $0.45	0.34	0.34	0.34
Sacks – 12 @ $0.12	1.44	1.44	1.44
Cartage – 12 sacks @ $0.26	3.12	3.12	3.12
–Fertilizer covered by subsidy			
Total Direct Costs	*24.38*	*24.38*	*24.38*
GROSS MARGINS	**26.37**	**31.62**	**45.62**
c. **Price** **45 bus. @**	*$ 1.45*	*$ 1.60*	*$ 2.00*
Gross Revenue	**$65.25**	**$72.00**	**$90.00**

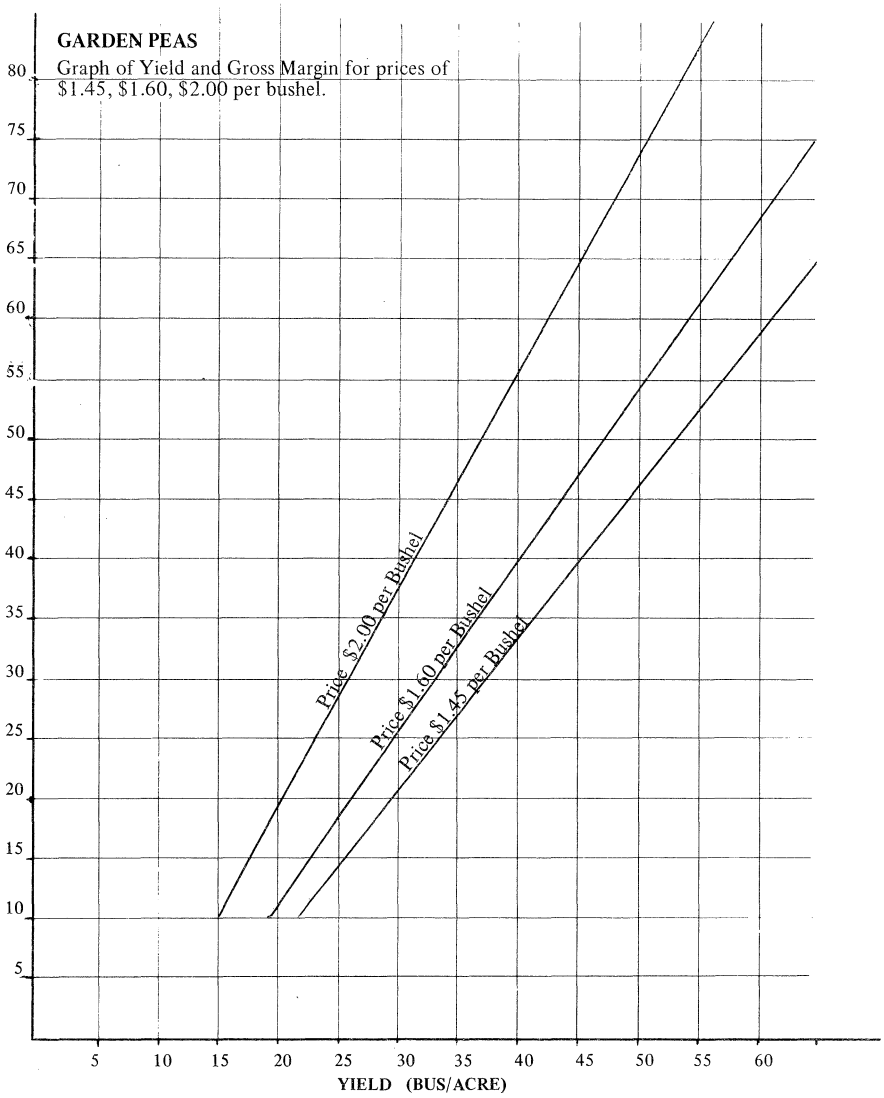
Direct Costs	$	$	$
Cultivation – 4 hours @ $0.35	1.40	1.40	1.40
Seed – 4 bus. @ $2.78	11.12	11.12	11.12
Fertilizer, 2 cwt reverted super @ $1.01	2.02	2.02	2.02
Spray – MCPB (1lb ai/acre @ $4.50) + ¼ hr @ $0.35	4.59	4.59	4.59
Mowing – 1 hour @ $0.35	0.35	0.35	0.35
Heading – 1 hour @ $0.45	0.45	0.45	0.45
Sacks – 15 @ $0.12	1.80	1.80	1.80
Cartage – 15 sacks @ $0.26	3.90	3.90	3.90
–Fertilizer, covered by subsidy			
Total Direct Costs	*25.63*	*25.63*	*25.63*
GROSS MARGINS	**39.62**	**46.37**	**64.37**

Summary of Garden Pea Gross Margins

	Yield		
Price	25 bus.	35 bus.	45 bus.
$1.45	14.43	26.37	39.62
$1.60	18.18	31.62	46.37
$2.00	28.18	45.62	64.37

GARDEN PEAS

Graph of Yield and Gross Margin for prices of $1.45, $1.60, $2.00 per bushel.



2. Partridge Peas (ex Old Grass)

a.	**Price**	**25 bus. @**	*$ 1.20*	*$ 1.60*	*$ 2.00*
	Gross Revenue		**$30.00**	**$40.00**	**$50.00**
Direct Costs			$	$	$
Cultivation – 3 hours @ $0.35			1.05	1.05	1.05
Seed – 3 bus. @ $2.48			7.44	7.44	7.44
Fertilizer – 1 cwt super @ $1.14			1.14	1.14	1.14
Spray – MCPB (1lb ai/acre @ $4.50) + ¼ hr @ $0.35			4.59	4.59	4.59
Heading – ½ hour @ $0.45			0.23	0.23	0.23
Sacks – 8 sacks @ $0.12			0.96	0.96	0.96
Cartage – 8 sacks @ $0.26			2.08	2.08	2.08
–Fertilizer, covered by subsidy					
Total Direct Costs			*17.49*	*17.49*	*17.49*
GROSS MARGINS			**12.51**	**22.51**	**32.51**

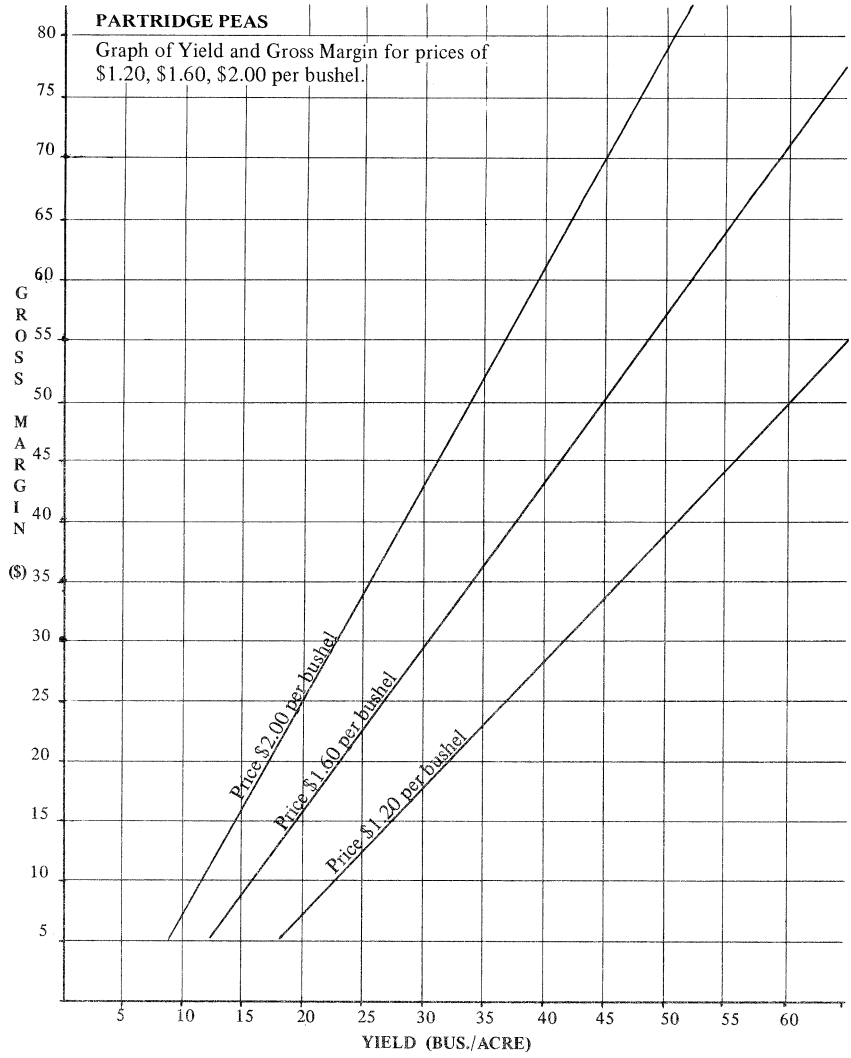
b.	**Price**	**35 bus. @**	*$ 1.20*	*$ 1.60*	*$ 2.00*
	Gross Revenue		**$42.00**	**$56.00**	**$70.00**
Direct Costs			$	$	$
Cultivation – 3½ hours @ $0.35			1.23	1.23	1.23
Seed – 3 bus. @ $2.48			7.44	7.44	7.44
Fertilizer – 1½ cwt super @ $1.14			1.71	1.71	1.71
Spray – MCPB (1lb ai/acre @ $4.50) + ¼ hr @ $0.35			4.59	4.59	4.59
Heading – ¾ hour @ $0.45			0.34	0.34	0.34
Sacks – 12 @ $0.12			1.44	1.44	1.44
Cartage – 12 sacks @ $0.26			3.12	3.12	3.12
–Fertilizer, covered by subsidy					
Total Direct Costs			*19.87*	*19.87*	*19.87*
GROSS MARGINS			**22.13**	**36.13**	**50.13**

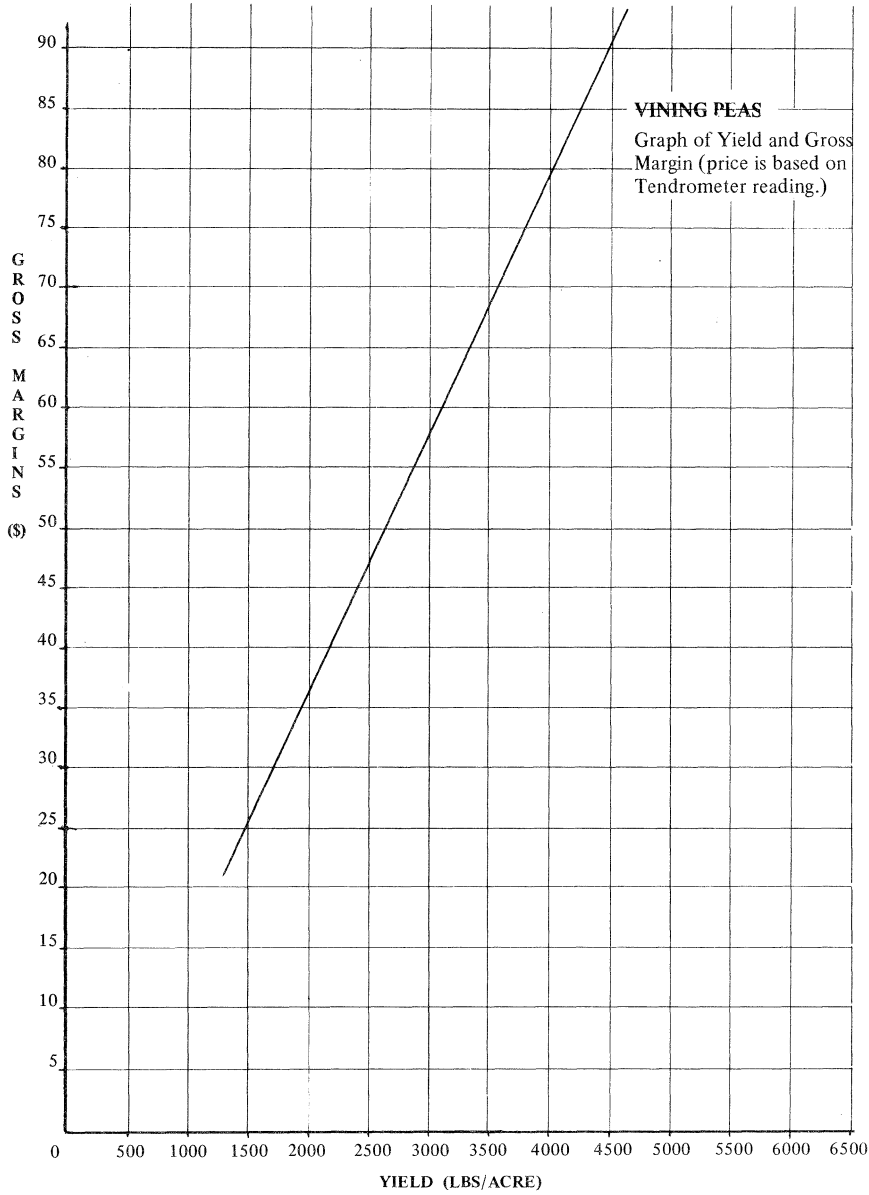
c.	**Price**	**45 bus. @**	*$ 1.20*	*$ 1.60*	*$ 2.00*
	Gross Revenue		**$54.00**	**$72.00**	**$90.00**
Direct Costs			$	$	$
Cultivation – 4 hours @ $0.35			1.40	1.40	1.40
Seed – 3 bus. @ $2.48			7.44	7.44	7.44
Fertilizer – 2 cwt super @ $1.14			2.28	2.28	2.28
Spray – MCPB (1lb ai/acre @ $4.50) + ¼ hr @ $0.35			4.59	4.59	4.59
Heading – 1 hour @ $0.45			0.45	0.45	0.45
Sacks – 15 @ $0.12			1.80	1.80	1.80
Cartage – 15 sacks @ $0.26			3.90	3.90	3.90
–Fertilizer, covered by subsidy					
Total Direct Costs			*21.86*	*21.86*	*21.86*
GROSS MARGINS			**32.14**	**50.14**	**68.14**

Summary of Partridge Pea Gross Margins

YIELD

Price	25 bus.	35 bus.	45 bus.
$1.20	$12.51	$22.13	$32.14
$1.60	$22.51	$36.13	$50.14
$2.00	$32.51	$50.13	$68.14


PARTRIDGE PEAS
Graph of Yield and Gross Margin for prices of $1.20, $1.60, $2.00 per bushel.
GROSS MARGIN ($)
80
75
70
65
60
55
50
45
40
35
30
25
20
15
10
5
Price $2.00 per bushel
Price $1.60 per bushel
Price $1.20 per bushel
5
10
15
20
25
30
35
40
45
50
55
60
YIELD (BUS./ACRE)


VINING PEAS
Graph of Yield and Gross Margin (price is based on Tendrometer reading.)
GROSS MARGINS ($)
90
85
80
75
70
65
60
55
50
45
40
35
30
25
20
15
10
5
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
6000
6500
YIELD (LBS/ACRE)

3 Vining Peas (ex Old Grass or Chou)

a. Gross Revenue:
Payout based on tendrometer reading
2,500 lbs at average reading of 97 @ $65 per ton = $72.54

Direct Costs	$	
Cultivation – 3 hours @ $0.35	1.05	
Seed – 4 bus. @ $4.00	16.00	
Fertilizer – 1½ cwt reverted super @ $1.01	1.52	
Spray – MCPB (1lb ai/acre @ $4.50) + ¼ hr @ $0.35	4.59	
Cartage – Fertilizer, covered by subsidy		
Total Direct Costs	=	$23.16
GROSS MARGIN	$49.38	

b. Gross Revenue:
3,500 lbs of average reading of 101 @ $57 per ton = $89.06

Direct Costs	$	
Cultivation – 3½ hours @ $0.35	1.23	
Seed – 4 bus. @ $4.00	16.00	
Fertilizer – 2 cwt reverted super @ $1.01	2.02	
Spraying – MCPB (1lb ai/acre @ $4.50) + ¼ hr @ $0.35	4.59	
Cartage – Fertilizer covered by subsidy		
Total Direct Costs	=	$23.84
GROSS MARGIN	$65.22	

c. Gross Revenue
4,500 lbs at average reading of 101 @ $57 per ton = $114.51

Direct Costs	$	
Cultivation – 3½ hours @ $0.35	1.23	
Seed – 4 bus. @ $4.00	16.00	
Fertilizer – 2 cwt reverted super @ $1.01	2.02	
Spray – MCPB (1lb ai./acre @ $4.50) + ¼ hr @ $0.35	4.59	
Cartage – Fertilizer, covered by subsidy		
Total Direct Costs	=	$23.84
GROSS MARGIN	$90.67	

4 Wheat (ex Peas)

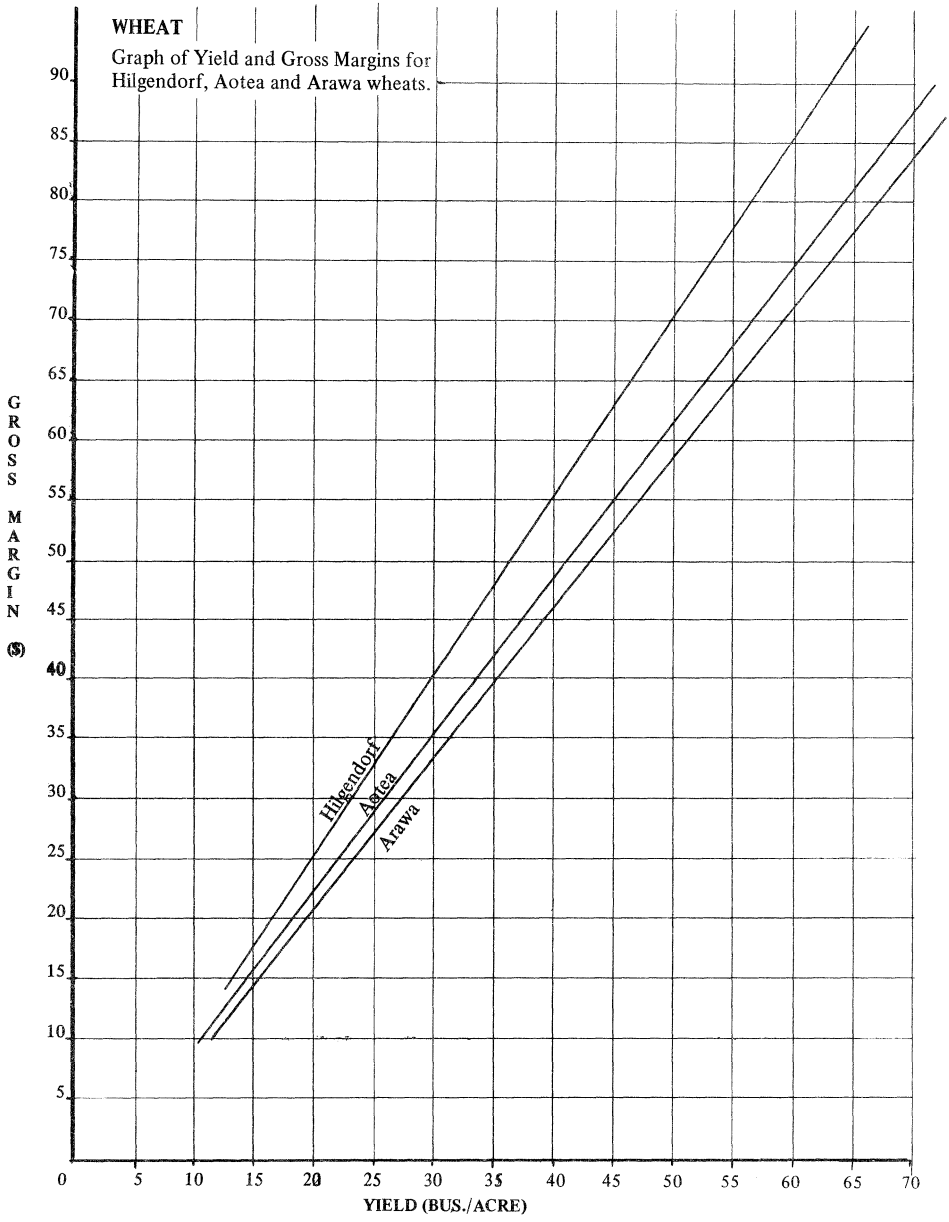
			Aotea	Hilgendorf	Arawa
a.	**Price**	**30 bus. @**	*$ 1.45*	*$ 1.65*	*$ 1.40*
	Gross Revenue		**$43.50**	**$49.50**	**$42.00**
Direct Costs			$	$	$
Cultivation – 2 hours @ $0.35			0.70	0.70	0.70
Seed – 1.5 bus. @ $2.51			3.77		
Seed – 1.5 bus. @ $2.78				4.17	
Seed – 1.5 bus. @ $2.50					3.75
Heading – 1/3 hour @ $0.45			0.15	0.15	0.15
Sacks – 10 @ $0.12			1.20	1.20	1.20
Cartage – 10 sacks @ $0.26			2.60	2.60	2.60
Levy – 30 bus. @ $0.29 per 50 bus.			0.17	0.17	0.17
Raking, ploughing for firebreak – 1/3rd hour @ $0.35			0.12	0.12	0.12
Total Direct Costs			*8.71*	*9.11*	*8.69*
GROSS MARGINS			**34.79**	**40.39**	**33.31**

b.			Aotea	Hilgendorf	Arawa
	Price	**50 bus. @**	*$ 1.45*	*$ 1.65*	*$ 1.40*
	Gross Revenue		**$72.50**	**$82.50**	**$70.00**
Direct Costs			$	$	$
Cultivation – 2½ hours @ $0.35			0.88	0.88	0.88
Seed – 1.5 bus. @ $2.51			3.77		
Seed – 1.5 bus. @ $2.78				4.17	
Seed – 1.5 bus. @ $2.50					3.75
Heading – 1/3rd hour @ $0.45			0.15	0.15	0.15
Sacks – 17 @ $0.12			2.04	2.04	2.04
Cartage – 17 sacks @ $0.26			4.42	4.42	4.42
Levy – 50 bus @ $0.29 per 50 bus.			0.29	0.29	0.29
Raking, ploughing for firebreak – 1/3rd hour @ $0.35			0.12	0.12	0.12
Total Direct Costs			*11.67*	*12.07*	*11.65*
GROSS MARGINS			**60.83**	**70.43**	**58.35**

c.			Aotea	Hilgendorf	Arawa
	Price	**70 bus. @**	*$ 1.45*	*$ 1.65*	*$ 1.40*
	Gross Revenue		**$101.50**	**$115.50**	**$98.00**
Direct Costs			$	$	$
Cultivation – 3 hours @ $0.35			1.05	1.05	1.05
Seed – 1.5 bus. @ $2.51			3.77		
Seed – 1.5 bus. @ $2.78				4.17	
Seed – 1.5 bus. @ $2.50					3.75
Heading – 1/3rd hour @ $0.45			0.15	0.15	0.15
Sacks – 23 @ $0.12			2.76	2.76	2.76
Cartage – 23 sacks @ $0.26			5.98	5.98	5.98
Levy – 70 bus @ $0.29 per 50 bus.			0.41	0.41	0.41
Raking, ploughing for firebreak – 1/3rd hour @ $0.35			0.12	0.12	0.12
Total Direct Costs			*14.24*	*14.64*	*14.22*
GROSS MARGINS			**87.26**	**100.86**	**83.78**

WHEAT

Graph of Yield and Gross Margins for Hilgendorf, Aotea and Arawa wheats.



Summary of Wheat Gross Margins

YIELD

	30 bus.	50 bus.	70 bus.
Aotea	34.79	60.83	87.26
Hilgendorf	40.39	70.43	100.86
Arawa	33.31	58.35	83.78

5 Wheat (ex Wheat)

Price	**Aotea –**	**45 bus @**	*$ 1.45*	
	Gross Revenue			**$65.25**

Direct Costs	$	
Cultivation – 2½ hours @ $0.35	0.88	
Seed – 1.5 bus. @ $2.51	3.77	
Fertilizer – 1 cwt super @ $1.14	1.14	
Heading – 1/3rd hour @ $0.45	0.15	
Sacks – 15 @ $0.12	1.80	
Cartage – 15 sacks @ $0.26	3.90	
– fertilizer, covered by subsidy		
Levy – 45 bus. @ $0.29 per 50 bus.	0.26	
Raking, ploughing for firebreak– 1/3rd hour @ $0.35	0.12	
Total Direct Costs		*$12.02*
GROSS MARGIN		**$53.23**

Compare this Gross Margin with that of 50 bus. Aotea (ex peas) i.e. $60.83. This lower Gross Margin for Wheat (ex Wheat) is due to lower yield for the second year and to slightly higher cultivation and fertilizer costs.

6 Bulk Wheat (ex Peas)

Price	**50 bus. Aotea @ $1.45**	$72.50
	In October, 50 bus. Aotea @ $0.16 storage increment	$ 8.00
	Gross Revenue	$80.50

Direct Costs	$	
Cultivation – 2½ hours @ $0.35	0.88	
Seed – 1.5 bus. @ $2.51	3.77	
Heading – 1/3rd hour @ $0.45	0.15	
Cartage in bulk $2.88 per ton	3.86	
Levy – 50 bus. @ $0.29 per 50 bus.	0.29	
Raking, ploughing for firebreak – 1/3rd hour @ $0.35	0.12	
Total Direct Costs		*$ 9.07*
GROSS MARGIN		**$71.43**

Compare this Gross Margin with that for bagged Aotea, i.e. $61.00. Note the economy of bulk handling.

7 (i) Barley (Malting)

a Price	**50 bus. @**	*$ 0.90*	*$ 0.95*	*$ 1.00*
	Gross Revenue	**$45.00**	**$47.50**	**$50.00**

Direct Costs	$	$	$
Cultivation – 3 hours @ $0.35	1.05	1.05	1.05
Seed – 2 bus. @ $1.95	3.90	3.90	3.90
Fertilizer – 1 cwt super @ $1.14	1.14	1.14	1.14
Spray MCPA (1lb ai/acre @ $3.13) + ¼ hour @ $0.35	3.22	3.22	3.22
Heading – 1/3rd hour @ $0.45	0.15	0.15	0.15
Sacks – 17 @ $0.12	2.04	2.04	2.04
Cartage – 17 sacks @ $0.26	4.42	4.42	4.42
– Fertilizer, covered by subsidy			
Raking, ploughing for firebreak 1/3rd hour @ $0.35	0.12	0.12	0.12

Total Direct Costs		*16.04*	*16.04*	*16.04*
GROSS MARGINS		**28.96**	**31.46**	**33.96**
b **Price**	**60 bus. @**	*$ 0.90*	*$ 0.95*	*$ 1.00*
Gross Revenue		**$54.00**	**$57.00**	**$60.00**
Direct Costs		$	$	$
Cultivation – 3½ hours @ $0.35		1.23	1.23	1.23
Seed – 2 bus. @ $1.95		3.90	3.90	3.90
Fertilizer – 1½ cwt super @ $1.14		1.71	1.71	1.71
Spray MCPA (1lb ai/acre @ $3.13) + ¼ hr @ $0.35		3.22	3.22	3.22
Heading – ½ hour @ $0.45		0.23	0.23	0.23
Sacks – 20 @ $0.12		2.40	2.40	2.40
Cartage – 20 sacks @ $0.26		5.20	5.20	5.20
– Fertilizer, covered by subsidy				
Raking, ploughing for firebreak –				
1/3rd hour @ $0.35		0.12	0.12	0.12
Total Direct Costs		*18.01*	*18.01*	*18.01*
GROSS MARGINS		**35.99**	**38.99**	**41.99**

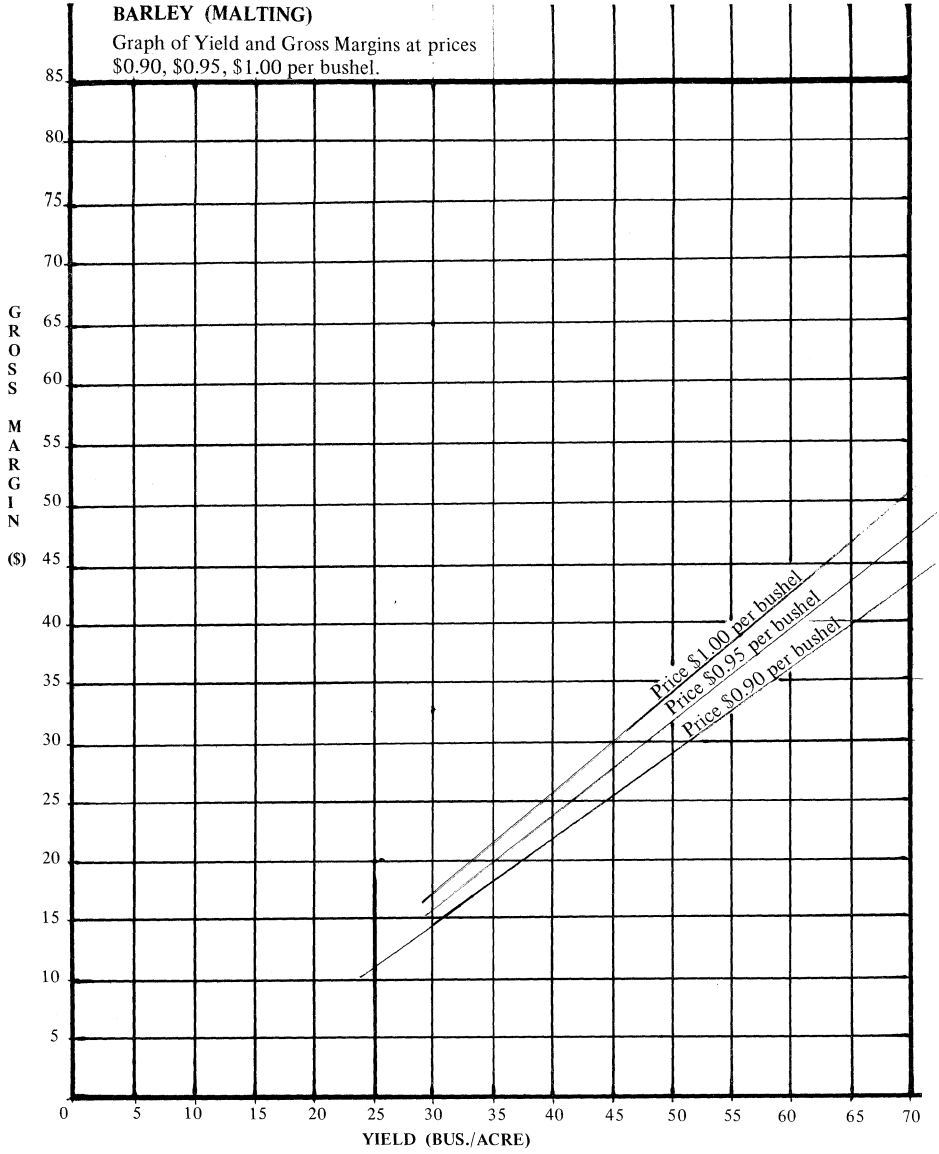
c	Price –	70 bus. @	*$ 0.90*	*$ 0.95*	*$ 1.00*
	Gross Revenue		**$63.00**	**$66.50**	**$70.00**
Direct Costs			$	$	$
Cultivation – 4 hours @ $0.35			1.40	1.40	1.40
Seed – 2 bus. @ $1.95			3.90	3.90	3.90
Fertilizer – 2 cwt super @ $1.14			2.28	2.28	2.28
Spray MCPA (1lb ai/acre @ $3.13) + ¼ hr @ $0.35			3.22	3.22	3.22
Heading – ½ hour @ $0.45			0.23	0.23	0.23
Sacks – 23 @ $0.12			2.76	2.76	2.76
Cartage – 23 sacks @ $0.26			5.98	5.98	5.98
– Fertilizer, covered by subsidy					
Raking, ploughing for firebreak – 1/3rd hour @ $0.35			0.12	0.12	0.12
Total Direct Costs			*19.89*	*19.89*	*19.89*
GROSS MARGIN			**$43.11**	**$46.61**	**$50.11**

Summary of Malting Barley Gross Margins

	YIELD		
Price	50 bus.	60 bus.	70 bus.
$0.90	28.96	35.99	43.11
$0.95	31.46	38.99	46.61
$1.00	33.96	41.99	50.11

BARLEY (MALTING)

Graph of Yield and Gross Margins at prices $0.90, $0.95, $1.00 per bushel.



8 (ii) Barley (Stock Feed)

a	**Price**	**55 bus. @**	*$ 0.75*	*$ 0.80*	*$ 0.85*
	Gross Revenue		**$41.25**	**$44.00**	**$46.75**
Direct Costs			$	$	$
Cultivation – 3 hours @ $0.35			1.05	1.05	1.05
Seed – 2 bus. @ $1.95			3.90	3.90	3.90
Fertilizer, 1 cwt super @ $1.14			1.14	1.14	1.14
Spray MCPA (1lb ai/acre @ $3.13) + ¼ hr @ $0.35			3.22	3.22	3.22
Heading – 1/3rd hour @ $0.45			0.15	0.15	0.15
Sacks – 19 @ $0.12			2.28	2.28	2.28
Cartage – 19 sacks @ $0.26			4.94	4.94	4.94
– fertilizer, covered by subsidy					
Raking, ploughing for firebreak –					
1/3rd hour @ $0.35			0.12	0.12	0.12
Total Direct Costs			*$16.80*	*$16.80*	*$16.80*
GROSS MARGINS			**$24.45**	**$27.20**	**$29.95**

b	**Price**	**65 bus. @**	*$ 0.75*	*$ 0.80*	*$ 0.85*
	Gross Revenue		**$48.75**	**$52.00**	**$55.25**
Direct Costs			$ $	$	$
Cultivation – 3½ hours @ $0.35			1.23	1.23	1.23
Seed – 2 bus. @ $1.95			3.90	3.90	3.90
Fertilizer – 1½ cwt super @ $1.14			1.71	1.71	1.71
Spray – MCPA (1lb ai/acre @ $3.13) + ¼ hr @ $0.35			3.22	3.22	3.22
Heading – ½ hour @ $0.45			0.23	0.23	0.23
Sacks – 22 @ $0.12			2.64	2.64	2.64
Cartage – 22 sacks @ $0.26			5.72	5.72	5.72
– Fertilizer, covered by subsidy					
Raking, ploughing for firebreak –					
1/3rd hour @ $0.35			0.12	0.12	0.12
Total Direct Costs			*$18.77*	*$18.77*	*$18.77*
GROSS MARGINS			**$29.98**	**$33.23**	**$36.48**

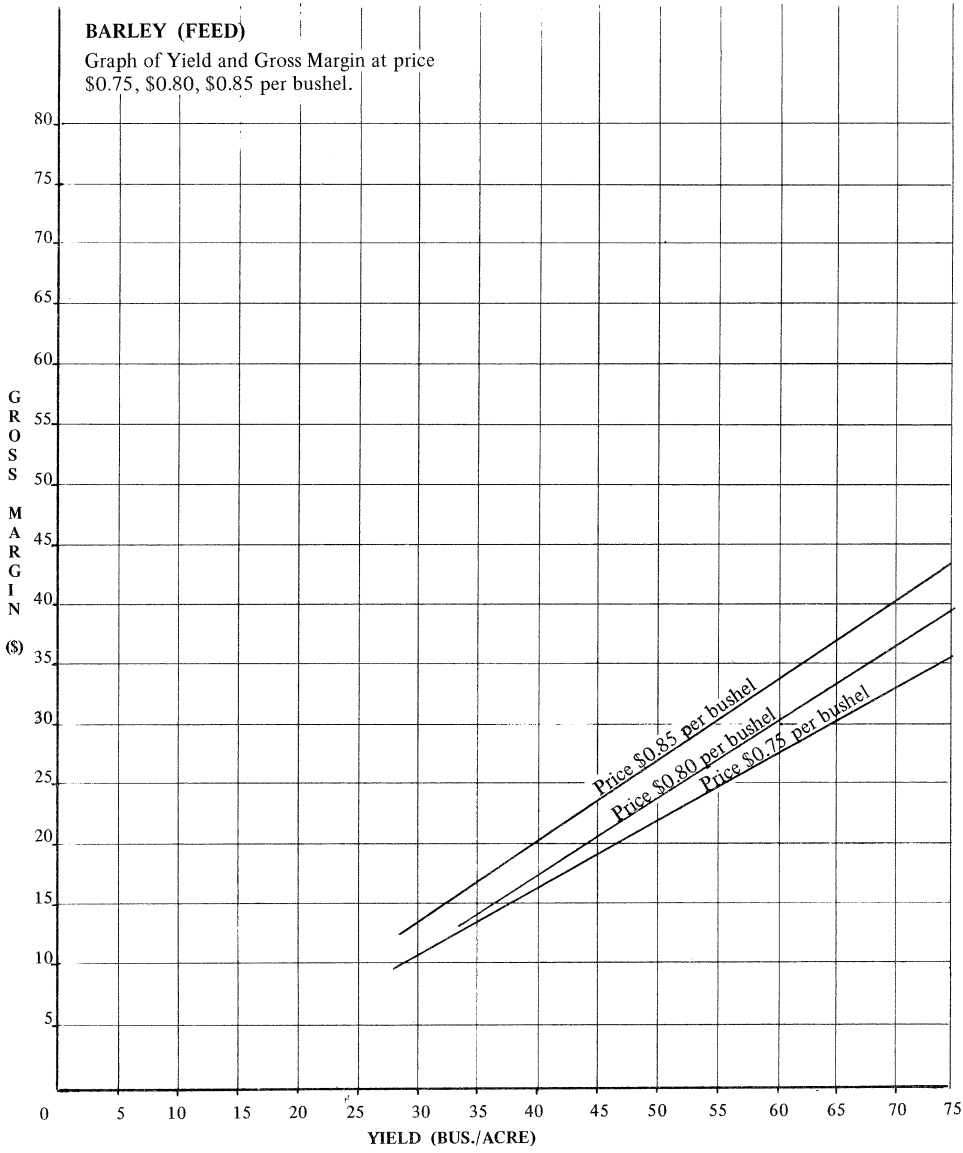
c	**Price**	**75 bus. @**	*$ 0.75*	*$ 0.80*	*$ 0.85*
	Gross Revenue		**$56.25**	**$60.00**	**$63.75**
Direct Costs			$	$	$
Cultivation – 4 hours @ $0.35			1.40	1.40	1.40
Seed – 2 bus. @ $1.95			3.90	3.90	3.90
Fertilizer – 2cwt super @ $1.14			2.28	2.28	2.28
Spray MCPA (1lb ai/acre @ $3.13) + ¼ hr @ $0.35			3.22	3.22	3.22
Heading – ½ hour @ $0.45			0.23	0.23	0.23
Sacks – 25 @ $0.12			3.00	3.00	3.00
Cartage – 25 sacks @ $0.26			6.50	6.50	6.50
– Fertilizer, covered by subsidy					
Raking, ploughing for firebreak – 1/3rd hour @ $0.35			0.12	0.12	0.12
Total Direct Costs			*$20.65*	*$20.65*	*$20.65*
GROSS MARGINS			**$35.60**	**$39.35**	**$43.10**

Summary of Feed Barley Gross Margins

	YIELD		
Price	55 bus.	65 bus.	75 bus.
$0.75	24.45	29.98	35.60
$0.80	27.20	33.23	39.35
$0.85	29.95	36.48	43.10

BARLEY (FEED)

Graph of Yield and Gross Margin at price $0.75, $0.80, $0.85 per bushel.



8 (i) Potatoes

a	**Price**		
	6 tons seed potatoes @	*$40.00*	*$60.00*
	2 tons table potatoes @	*$20.00*	*$30.00*
	Gross Revenue	**$280.00**	**$420.00**

Direct Costs	$	$
Cultivation – 9 hours @ $0.35	3.15	3.15
Seed – 1½ tons @ $70 per ton	105.00	105.00
Preplanting seed dipping @ $2.50 per ton	3.13	3.13
Fertilizer – 5cwt super @ $1.14	5.70	5.70
Roguing @ $2.00 per acre	2.00	2.00
Spraying– Aphids, Disyston – 20lb @ $0.31 per lb	6.20	6.20
– Arsenic (dessicant) 1½ gal @ $1.50	2.25	2.25
– Tractor – 2/3rd hour @ $0.35	0.23	0.23
Picking 140 bags @ $0.45 per bag	63.00	63.00
Cartage – 140 bags to grader @ $0.01 per bag	1.40	1.40
140 bags FOB Table @ $0.20 per bag	28.00	28.00
– Fertilizer covered by subsidy	–	–
Sacks – 140 @ $0.28	32.20	32.20
Grading – 140 bags @ $0.23 per bag	2.80	2.80
Levy 2 tons @ $1.40 per ton	3.00	3.00
Certification @ $3.00 per acre	*$265.06*	*$265.06*
Total Direct Costs	**$14.94**	**$154.94**
GROSS MARGINS		

b	**Price**		
	9 tons seed potatoes @	*$40.00*	*$60.00*
	3 tons table potatoes @	*$20.00*	*$30.00*
	Gross Revenue	**$420.00**	**$630.00**

Direct Costs	$	$
Cultivation – 9 hours @ $0.35	3.15	3.15
Seed – 1½ tons @ $70 per ton	105.00	105.00
Preplanting seed dipping @ $2.50 per ton	3.13	3.13
Fertilizer – 5 cwt super @ $1.14	5.70	5.70
Roguing @ $2.00 per acre	2.00	2.00
Spraying– Aphids, disyston – 20 lb @ $0.31 per lb	6.20	6.20
– Arsenic (dessicant) 1½ gal @ $1.50	2.25	2.25
– Tractor, 2/3rd hour @ $0.35	0.23	0.23
Picking 168 bags @ $0.45 per bag	75.60	75.60
Cartage – 168 bags to grader @ $0.01 per bag	1.68	1.68
168 bags FOB Table @ $0.20 per bag	33.60	
– Fertilizer, covered by subsidy	–	–
Sacks – 168 @ $0.28	47.04	47.04
Grading 168 bags @ $0.23 per bag	38.64	38.64
Levy – 3 tons @ $1.40 per ton	4.20	4.20
Certification @ $3.00 per acre	3.00	3.00
Total Direct Costs	*$331.42*	*$331.42*
GROSS MARGINS	**$88.58**	**$298.58**

c **Price**

12 tons seed potatoes	*$40.00*	*$60.00*
4 tons table potatoes	*$20.00*	*$30.00*
Gross Revenue	**$560.00**	**$840.00**

Direct Costs	$	$
Cultivation – 9 hours @ $0.35	3.15	3.15
Seed – 1½ tons @ $70 per ton	105.00	105.00
Preplanting seed dipping @ $2.50 per ton	3.13	3.13
Fertilizer, 5 cwt super @ $1.14	5.70	5.70
Roguing @ $2.00 per acre	2.00	2.00
Spraying– Aphids, Disyston – 20 lb @ $0.31 per lb	6.20	6.20
– Dessicant, Arsenic – 1½ gal @ $1.50	2.25	2.25
– Tractor – 2/3rd hour @ $0.35	0.23	0.23

	$	$
Picking 224 bags @ $0.45 per bag	100.80	100.80
Cartage – 224 bags to grader @ $0.01 per bag	2.24	2.24
224 bags FOB Table @ $0.20 per bag	44.80	44.80
– Fertilizer, covered by subsidy	–	–
Sacks – 224 @ $0.28	62.70	62.70
Grading – 224 bags @ $0.23 per bag	51.52	51.52
Levy – 4 tons @ $1.40 per ton	5.60	5.60
Certification @ $3.00 per acre	3.00	3.00
Total Direct Costs	*$398.32*	*$398.32*
GROSS MARGINS	**$161.68**	**$441.68**

Summary of Potato Gross Margins

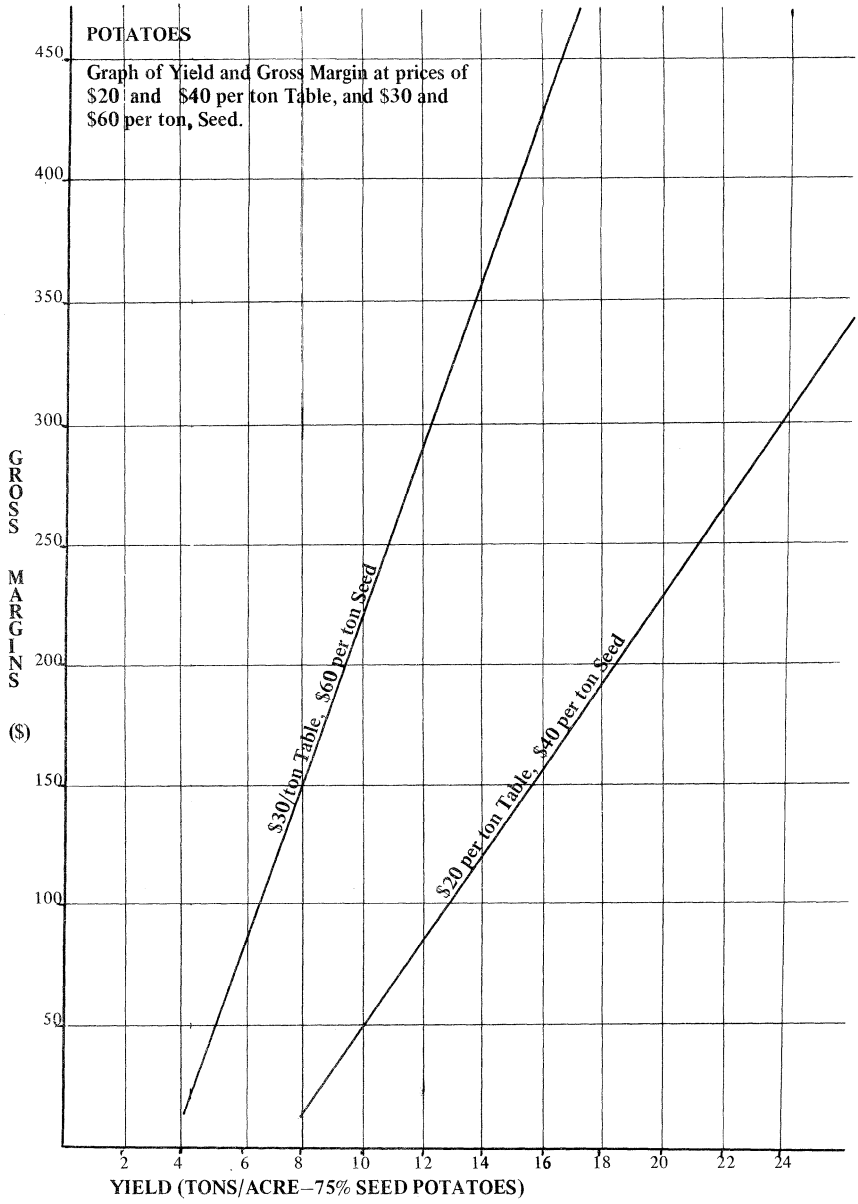
	YIELD		
	6 ton seed/ 2 ton table	9 ton seed/ 3 ton table	12 ton seed/ 4 ton table
$40 seed/$20 table	14.94	88.58	161.68
$60 seed/$30 table	154.94	298.58	441.68

(ii) Potatoes (Bulk Harvested)

Price		
9 tons seed potatoes @	*$40.00*	*$60.00*
3 tons table potatoes @	*$20.00*	*$30.00*
Gross Revenue	**$420.00**	**$630.00**
Direct Costs	$	$
Cultivation – 9 hours @ $0.35	3.15	3.15
Seed – 1½ tons @ $70 per ton	105.00	105.00
Preplanting seed dipping @ $2.50 per ton	3.13	3.13
Fertilizer – 5 cwt super @ $1.14	5.70	5.70

	$	$
Roguing @ $2.00 per acre	2.00	2.00
Spraying– Aphids, disyston – 20 lb @ $0.31 per lb	6.20	6.20
– Dessicant – Arsenic, 1½ gal @ $1.50	2.25	2.25
– Tractor, 2/3rd hour @ $0.35	0.23	0.23
Bulk harvesting – $1.25 per ton	15.00	15.00
Boxes – R & M, $0.20 per box	2.40	2.40
Cartage – Bulk trailor to shed $1.00 per ton	12.00	12.00
–Fertilizer, covered by subsidy		
Grading – 12 tons @ $3.22 per ton	38.64	38.64
Levy – 3 tons @ $1.40	4.20	4.20
Certification	3.00	3.00
Total Direct Costs	*$202.90*	*$202.90*
GROSS MARGINS	**$217.10**	**$427.10**

Compare this gross margin for bulk harvested potatoes with the corresponding gross margin for those harvested by hand. This shows a saving in the labour involved, which has represented a large proportion of the direct costs previously.


POTATOES
Graph of Yield and Gross Margin at prices of $20 and $40 per ton Table, and $30 and $60 per ton, Seed.
GROSS MARGINS ($)
450
400
350
300
250
200
150
100
50
$30/ton Table, $60 per ton Seed
$20 per ton Table, $40 per ton Seed
2
4
6
8
10
12
14
16
18
20
22
24
YIELD (TONS/ACRE–75% SEED POTATOES)

9 Wheat U/S White Clover

Part a	**Wheat**		
Price –	**50 bus. @**	*$ 1.45*	
Gross Revenue			**$72.50**
Direct Costs		$	
Cultivation – 2½ hours @ $0.35		0.88	
Seed – 1.5 bus. @ $2.51		3.77	
Heading 1/3rd hour @ $0.45		0.15	
Sacks – 17 @ $0.12		2.04	
Cartage – 17 sacks @ $0.26		4.42	
Levy – 50 bus. @ $0.29 per 50 bus.		0.29	
Raking and ploughing for firebreak – 1/3rd hour @ $0.35		0.12	
Total Direct Costs		*$11.67*	
GROSS MARGIN			**$60.83**

Part b	**White Clover**		
(i) Price	**240 lbs F D yields 160 lbs MD @**	*$ 0.35*	
Gross Revenue			**$56.00**
Direct Costs		$	
Cultivation – ½ hour @ $0.35		0.18	
Seed – 3 lbs clover @ $0.45		1.35	
1 cwt reverted super @ $1.01		1.01	
Mowing – 2/3rd hour @ $0.35		0.23	
Heading – 1 hour @ $0.45		0.45	
Sacks – 2 @ $0.12		0.24	
Cartage – 1 sack @ $0.185		0.19	
– Fertilizer, covered by subsidy			
Consolidated Dressing Charge – 240 lbs @ $3.55 per 100 lbs		8.52	
Certification charge – 160 lbs @ $0.01 per 3lbs MD		0.53	

Total Direct Costs		*$12.70*
GROSS MARGIN	**$43.30**	

(ii)	**Price 480 lbs F.D. yielding 320 lbs MD @**	*$0.35*	
	Gross Revenue		**$112.00**

Direct Costs	$
Cultivation – ½ hour @ $0.35	0.18
Seed – 3 lbs @ $0.45	1.35
1 cwt reverted super @ $1.01	1.01
Mowing – 2/3rd hour @ $0.35	0.23
Heading – 1 hour @ $0.45	0.45
Sacks – 4 @ $0.12	0.48
Cartage – 2 sacks @ $0.185	0.37
– Fertilizer, covered by subsidy	
Consolidated handling charge – 480 lbs @ $3.55 per 100 lbs FD	17.04
Certification charge – 320 lbs @ $0.01 per 3 lbs MD	1.07

Total Direct Costs		*$22.18*
GROSS MARGIN	**$89.82**	

The yearly Gross Margin for a Wheat/White clover rotation is as follows:

$$\frac{\text{GM Wheat + GM White Clover}}{2}$$

Case (i) 50 bus wheat and 160 lbs white clover, gives a yearly Gross Margin of:

$$\frac{\$60.83 + \$43.30}{2}$$

$$= \$52.07$$

Case (ii) 50 bus. wheat and 320 lbs white clover, gives a yearly Gross Margin of:

$$\frac{\$60.83 + \$89.82}{2}$$

$$= \$75.33$$

The effect on the yearly Gross Margin if wheat yield is increased to 70 bus., can be seen thus:

Price	**70 bus wheat @**	*$ 1.45*	
	Gross Revenue		**$101.50**
Direct Costs		$	
Cultivation - 3 hours @ $0.35		1.05	
Seed – 1.5 bus. @ $2.51		3.77	
Heading – 1/3rd hour @ $0.45		0.15	
Sacks – 23 @ $0.12		2.76	
Cartage – 23 sacks @ $0.26		5.98	
Levy – 70 bus. @ $0.29 per 50 bus.		0.41	
Raking, ploughing for firebreak, 1/3rd hour @ $0.35		0.12	
Total Direct Costs			*$14.24*
GROSS MARGIN		**$87.26**	

White Clover

(i) Gross Margin for a yield of 160 lbs per acre $43.30
(ii) Gross Margin for a yield of 320 lbs per acre $89.82

Therefore, yearly Gross Margin for case (i) – 70 bus. wheat + 160 lbs white clover is:

$$\frac{\$87.26 + \$43.30}{2}$$

$$= \$65.28$$

Case (ii) $\frac{\$87.26 + \$89.82}{2}$

= $88.54

Summary of Wheat/White Clover Gross Margins

	160 lbs white clover	320 lbs white clover
Wheat – 50 bus. per acre	$52.07	$75.33
Wheat – 70 bus. per acre	$65.28	$88.54

10 Greenfeed

Direct Costs	$
Cultivation – 2 hours @ $0.35	0.70
Seed – 2 bus. Amuri Oats @ $1.70	3.40
Fertilizer – 1 cwt super @ $1.14	1.14
Cartage – Fertilizer, covered by subsidy	
Total Direct Costs	*$5.24*

Forage Crop Seeds

Forage crop seeds are not taken off the College Farms. A property in the Highbank area on Barrhill silt loam, was used to collect the following data. In this analysis, both yield and price are varied for each of the crops to show the effect of variation of these two parameters on the Gross Margin.

11 Rape (ex old grass)

Price	**840 lbs FD yielding 700 lbs MD @**	*$ 0.075*	*$ 0.15*
	Gross Revenue	**$52.50**	**$105.00**
Direct Costs		$	$
Cultivation – 4½ hours @ $0.35		1.57	1.57
Seed – 5 lbs @ $0.30		1.50	1.50
Fertilizer – 1½ cwt Serpentine super @ $1.10		1.65	1.65
Windrowing – $2.20 per acre		2.20	2.20
Heading – 1 hr @ $0.45		0.45	0.45
6 sacks @ $0.12		0.72	0.72
Cartage – 6 sacks @ $0.185		1.11	1.11
– Fertilizer, covered by subsidy			
Consolidated handling charge – $2.60 per 100 lb		18.20	18.20
Total Direct Costs		*$27.40*	*$27.40*
GROSS MARGINS		**$25.10**	**$77.60**

b Price	**1200 lbs FD yielding 1000 lb MD @**	*$0.075*	*$ 0.15*
	Gross Revenue	**$75.00**	**$150.00**
Direct Costs		$	$
Cultivation – 4½ hours @ $0.35		1.57	1.57
Seed – 5 lbs @ $0.30		1.50	1.50
Fertilizer – 1½ cwt serpentine super @ $1.10		1.65	1.65
Windrowing		2.20	2.20
Heading – 1 hour @ $0.45		0.45	0.45
Sacks – 9 @ $0.12		1.08	1.08
Cartage – 9 sacks @ $0.185		1.67	1.67
– Fertilizer, covered by subsidy			
Consolidated handling charge – 1200 lbs @ $2.60 per 100 lbs		31.20	31.20

Total Direct Costs	*$41.32*	*$41.32*
GROSS MARGINS	**$33.68**	**$108.68**

c	**Price**	**1680 lbs FD yielding 1400 lbs MD @**	*$ 0.075*	*$ 0.15*
		Gross Revenue	**$105.00**	**$210.00**

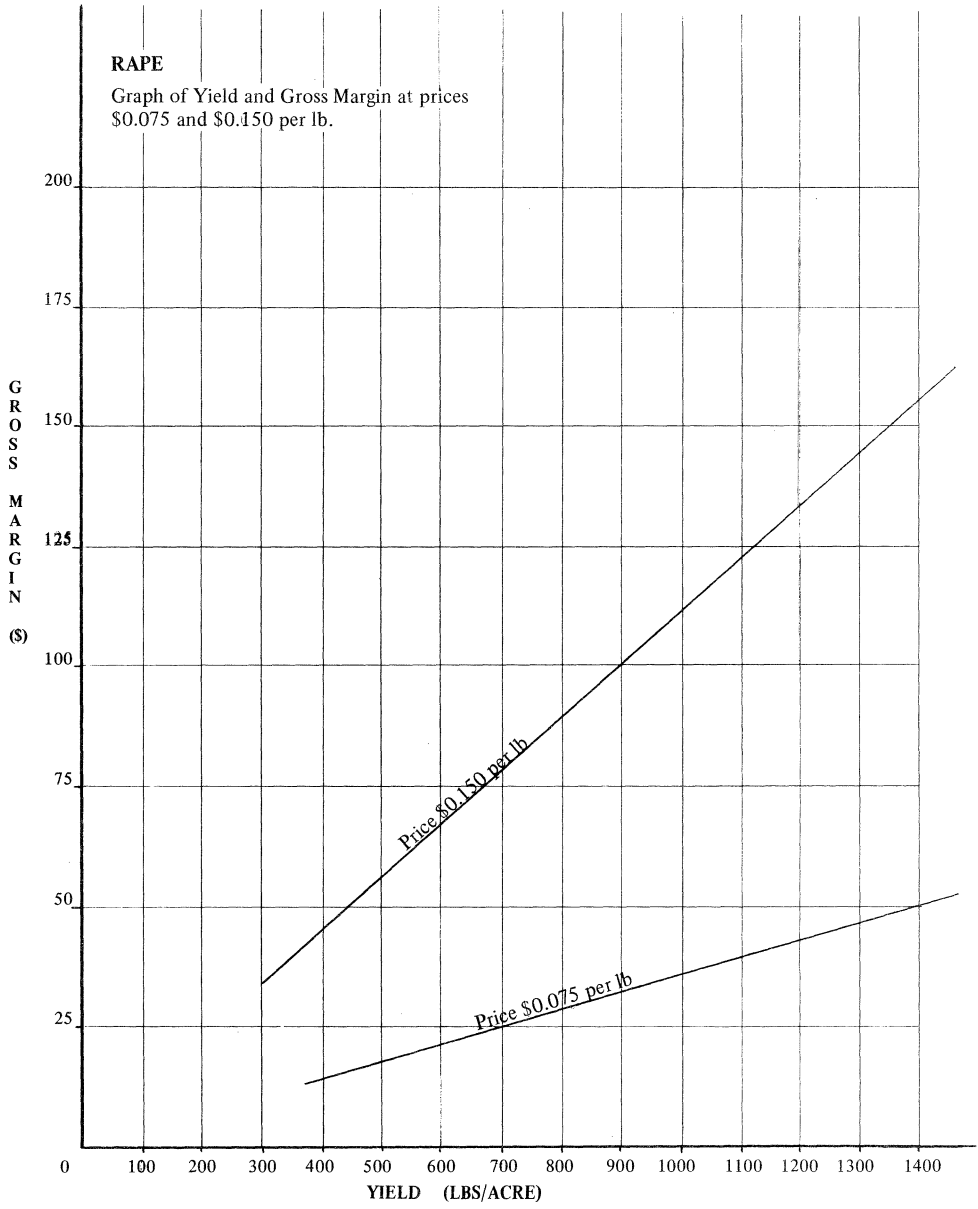
Direct Costs	$	$
Cultivation – 4½ hours @ $0.35	1.57	1.57
Seed – 5 lbs @ $0.30	1.50	1.50
Fertilizer – 1½ cwt serpentine super @ $1.10	1.65	1.65
Windrowing	2.20	2.20
Heading – 1 hour @ $0.45	0.45	0.45
Sacks – 12 @ $0.12	1.44	1.44
Cartage – 12 sacks @ $0.185	2.22	2.22
– Fertilizer, covered by subsidy		
Consolidated handling charge –		
1680 lbs @ $2.60 per 100 lbs	43.68	43.68
Total Direct Costs	*$54.71*	*$54.71*
GROSS MARGINS	**$50.29**	**$155.29**

Summary of Rape Seed Gross Margins

	YIELD		
Price	700 lbs	1000 lbs	1400 lbs
$0.075	25.10	33.68	50.29
$0.15	77.60	108.68	155.29

RAPE

Graph of Yield and Gross Margin at prices $0.075 and $0.150 per lb.



12 Chou Seed

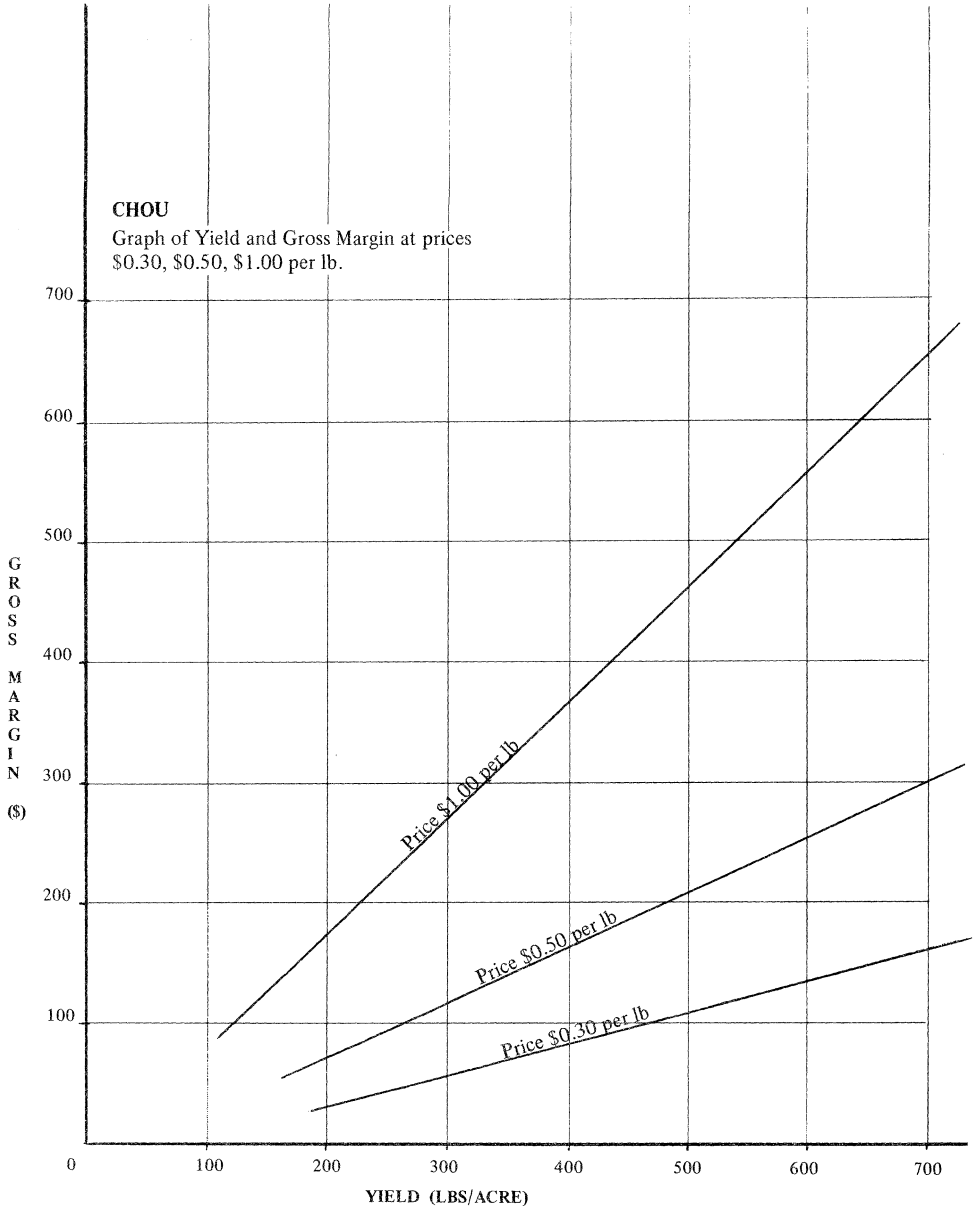
a	**Price 360 lbs FD yielding 300 lb MD @**	*$ 0.30*	*$ 0.50*	*$ 1.00*
	Gross Revenue	**$90.00**	**$150.00**	**$300.00**
Direct Costs		$	$	$
Cultivation – 5 hours @ $0.35		1.75	1.75	1.75
Seed – 6 lbs @ $1.80 per lb		10.80	10.80	10.80
Fertilizer – 3 cwt serpentine super @ $1.10		3.30	3.30	3.30
Windrowing		2.50	2.50	2.50
Heading – 1 hour @ $0.45		0.45	0.45	0.45
Sacks – 3 @ $0.12		0.36	0.36	0.36
Cartage – 3 sacks @ $0.185		0.56	0.56	0.56
– Fertilizer, covered by subsidy				
Consolidated handling charges – 360 lbs @ $3.55 per 100 lbs		12.78	12.78	12.78
Total Direct Costs		*$32.50*	*$ 32.50*	*$ 32.50*
GROSS MARGINS		**$57.50**	**$117.50**	**$267.50**

b	**Price 600 lbs FD seed yielding 500 lbs MD @**	*$ 0.30*	*$ 0.50*	*$ 1.00*
	Gross Revenue	**$150.00**	**$250.00**	**$500.00**
Direct Costs		$	$	$
Cultivation – 5 hours @ $0.35		1.75	1.75	1.75
Seed – 6 lbs @ $1.80		10.80	10.80	10.80
Fertilizer – 3 cwt serpentine super @ $1.10		3.30	3.30	3.30
Windrowing		2.50	2.50	2.50
Heading – 1 hour @ $0.45		0.45	0.45	0.45
Sacks – 5 @ $0.12		0.60	0.60	0.60
Cartage – 5 sacks @ $0.185		0.93	0.93	0.93
– Fertilizer covered by subsidy				
Consolidated handling charges – 600 lbs @ $3.55 per 100 lbs		21.30	21.30	21.30

Total Direct Costs	*$ 41.63*	*$ 41.63*	*$ 41.63*
GROSS MARGINS	**$108.37**	**$208.37**	**$458.37**
c **Price 840 lbs FD seed yielding 700 lbs MD @**	*$ 0.30*	*$ 0.50*	*$ 1.00*
Gross Revenue	**$210.00**	**$350.00**	**$700.00**
Direct Costs	$	$	$
Cultivation – 5 hours @ $0.35	1.75	1.75	1.75
Seed – 6 lbs @ $1.80	10.80	10.80	10.80
Fertilizer – 3 cwt serpentine super @ $1.10	3.30	3.30	3.30
Windrowing	2.50	2.50	2.50
Heading – 1½ hours @ $0.45	0.68	0.68	0.68
Sacks – 7 @ $0.12	0.84	0.84	0.84
Cartage – 7 sacks @ $0.185	1.30	1.30	1.30
– Fertilizer, covered by subsidy			
Consolidated handling charges – 840 lbs @ $3.55 per 100 lbs	29.82	29.82	29.82
Total Direct Costs	*$ 50.99*	*$ 50.99*	*$ 50.99*
GROSS MARGINS	**$159.01**	**$299.01**	**$649.01**

Summary of Chou Seed Gross Margins

	YIELD		
Price	300 lbs.	500 lbs.	700 lbs.
$0.30	57.50	108.37	159.01
$0.50	117.50	208.37	299.01
$1.00	267.50	458.37	649.01


CHOU
Graph of Yield and Gross Margin at prices
$0.30, $0.50, $1.00 per lb.
700
600
500
400
300
200
100
0
GROSS MARGIN ($)
100
200
300
400
500
600
700
YIELD (LBS/ACRE)
Price $1.00 per lb
Price $0.50 per lb
Price $0.30 per lb

B Pastures

Estimates of the costs and returns from pasture are complicated by the fact that the average annual costs depend on the life of the pasture, and also because returns may be in the form of livestock or pasture seeds. That is, there is a complementary relationship between the alternative products from pasture.

The following is an estimate of the annual average direct costs per acre of pasture, based on a five year life, and excluding any direct costs associated with the harvesting of small seeds.

1. Summer Fallow to New Grass

Establishment Cost	$	
Cultivation 6½ hours @ $0.35	2.28	
Seed – 1 bus Pedigree @ $2.20	2.20	
3 lbs Pedigree white clover @ $0.45	1.35	
Lime, 1 ton	6.00	
Super, 2 cwt @ $1.14	2.28	
Cartage–covered by subsidy	–	
		$14.11
Maintenance Cost (5 years)	$	
10 cwt super @ $1.14	11.40	
Cartage – covered by subsidy	–	
Contract Topdressing @ $0.40 per acre	2.00	
Pesticide, every 2nd year, i.e. 1/3 lb Diptrex (@ $7.25 per gal/lb)	2.42	
		$15.82
Total Cost (Establishment & 5 year Maintenance)		$29.93

Annual Cost: $5.99

2. Lucerne

Establishment Cost	$
Cultivation – 6 hours @ $0.35	2.10
Seed – 12 lbs @ $0.75	9.00
Lime, 1 ton @ $6.00	6.00
Fertilizer, 2 cwt reverted super @ $1.01	2.02
Cartage–covered by subsidy	–
	$19.12

Estimated Life of Stand 7 years

Therefore, annual average establishment cost

$19.12 ÷ 7 = $2.74

Maintenance	$
Fertilizer, 2 cwt lucerne mixture @ $1.82	3.64
Spreading	0.40
Cartage–covered by subsidy	–
	4.04

Therefore, annual average total costs = $2.74 + $4.04

= $6.78

Haymaking:

a. Own baling and carting

Estimated yield – 3 cuts @ 40 bales per acre giving 120 bales per acre

Direct Costs	$
Mowing and Raking – 5 hours @ $0.35	1.75
Baling – 1½ hours @ $0.35 (tractor)	0.53
1½ hours @ $0.35 (baler)	0.53
Twine – 120 @ $0.019	2.28

Carting, 1.5 hours @ $0.45	0.68	
		$ 5.77
Add annual average cost of lucerne stand		$ 6.78
		$12.55

$$\text{Cost per bale} = \frac{12.55}{120} = \$0.105$$

Note: – excludes storage and insurance

b. Contract Baling and Carting

	$	
Mowing @ $1.50 per acre and raking @ $1.00 per acre Total – $2.50 per cut, 3 cuts @ $2.50	7.50	
Baling – 120 bales @ $0.12	14.40	
Carting – 120 bales @ $0.09	10.80	
		$32.70
Add annual average cost of lucerne stand		$16.78
		$39.48

$$\text{Cost per bale} = \frac{39.48}{120} = \$0.329$$

3. Lucerne Hay For Sale

a. Own baling and Carting

Price – 120 bales @	*$ 0.50*	*$ 0.60*	*$ 0.70*
Gross Revenue	$60.00	$72.00	$84.00
Direct Costs	$	$	$
120 bales @ $0.105	*12.60*	*12.60*	*12.60*
GROSS MARGINS	**$47.40**	**$59.40**	**$71.40**

b	Contract baling and carting			
	Price 120 bales @	*$ 0.50*	*$ 0.60*	*$ 0.70*
	Gross Revenue	$60.00	$72.00	$84.00
Direct Costs		$	$	$
	120 bales @ $0.329	*39.48*	*39.48*	*39.48*
GROSS MARGINS		**$20.52**	**$32.52**	**$44.52**

Note: excluding storage and insurance.

4. Lucerne Production for Dehydration

Payment to Growers is divided thus:

Full season contracts – Price @ $12.00 per unit of 2000 lbs dry weight
Part Season Contracts – Price @ $11.00 per unit of 2000 lbs dry weight
Spot Cuts – Price @ $10.00 per unit of 2000 lbs dry weight

Lucerne Stand – 6 year life

1	Establishment Costs	$	
	Cultivation – 5 hours @ $0.35	1.75	
	Seed – 15 lb @ $0.55	8.25	
	Inoculant	0.60	
	Lime – 2 tons @ $5.00	10.00	
	2 cwt reverted super @ $1.01	2.02	
Total Establishment Cost –			$22.62

2	Annual Maintenance – no stocking	$	
	Fertilizer – 6 cwt lucerne mix applied @ $1.82	10.92	
	Lime – 1 ton per 3 years	1.66	
	Weed control – 24DB, 4 pints per acre per 3 years @ $6.00 per gal	1.00	
			$13.58

a Non irrigated Lucerne			
(i) Price – 10,000 lbs @	$10.00	$11.00	$12.00
Gross Revenue	$50.00	$55.00	$60.00
Direct Costs	$	$	$
Establishment cost per year (6 years life)	3.77	3.77	3.77
Annual Maintenance Cost	13.58	13.58	13.58
Total Direct Costs	*17.35*	*17.35*	*17.35*
GROSS MARGINS	**$32.65**	**$37.65**	**$42.65**
(ii) Price – 12000 lbs @	$10.00	$11.00	$12.00
Gross Revenue	$60.00	$66.00	$72.00
Total Direct Costs	*$17.35*	*$17.35*	*$17.35*
GROSS MARGINS	**$42.65**	**$59.65**	**$54.65**
(iii) Price – 14000 lbs @	$10.00	$11.00	$12.00
Gross Revenue	$70.00	$77.00	$84.00
Total Direct Costs	*17.35*	*17.35*	*17.35*
GROSS MARGINS	$52.65	**$59.65**	**$66.65**
b Irrigated Lucerne			
(i) Price – 16000 lbs @	$10.00	$11.00	$12.00
Gross Revenue	$80.00	$88.00	$96.00
Direct Costs	$	$	$
Establishment cost per year (6 year stand life)	3.77	3.77	3.77
Annual Maintenance Cost	13.58	13.58	13.58

	$	$	$
Sprinkler Irrigation – 3" effective, 5 waterings Require 20 acre inches @ $0.40 per acre inch	8.00	8.00	8.00
Total Direct Costs	*$25.35*	*$25.35*	*$25.35*
GROSS MARGINS	**$54.65**	**$62.65**	**$70.65**
(ii) Price – 18000 lbs @	$10.00	$11.00	$12.00
Gross Revenue	$90.00	$99.00	$108.00
Total Direct Costs	*$25.35*	*$25.35*	*$25.35*
GROSS MARGINS	**$64.65**	**$73.65**	**$82.65**
(iii) Price – 20000 lbs @	$ 10.00	$ 11.00	$ 12.00
Gross Revenue	$100.00	$110.00	$120.00
Total Direct Costs	*$25.35*	*$25.35*	*$25.35*
GROSS MARGINS	**$74.65**	**$84.65**	**$94.65**

Summary of Lucerne Production for Dehydration Gross Margins

	YIELD					
	Non-irrigated Lucerne			Irrigated Lucerne		
Price	10,000 lbs.	12,000 lbs.	14,000 lbs.	16,000 lbs.	18,000 lbs.	20,000 lbs.
$10.00	32.65	42.65	52.65	54.65	64.65	74.65
$11.00	37.65	48.65	59.65	62.65	73.65	84.65
$12.00	42.65	54.65	66.65	70.65	82.65	94.65

C Small Seeds

1. White Clover Seed From Pasture

a	**Price – 120 lbs FD yields 80 lbs MD @**	*$ 0.25*	*$ 0.35*	*$ 0.40*
	Gross Revenue	**$20.00**	**$28.00**	**$32.00**
Direct Costs		$	$	$
Harvesting – Mowing 2/3rd hour @ $0.35		0.23	0.23	0.23
– Heading ½ hour @ $0.45		0.23	0.23	0.23
Sacks – 1 @ $0.12		0.12	0.12	0.12
Consolidated charge – 120 lbs @ $3.55 per 100 lbs FD		4.26	4.26	4.26
Certification charge – 80 lbs @ $0.01 per 3 lb MD		0.27	0.27	0.27
Cartage – ½ bag @ $0.185		0.09	0.09	0.09
Total Direct Costs		*$ 5.20*	*$ 5.20*	*$ 5.20*
GROSS MARGINS		**$14.80**	**$22.80**	**$26.80**

b	**Price – 240 lbs FD yielding 160 lbs MD @**	*$ 0.25*	*$ 0.35*	*$ 0.40*
	Gross Revenue	**$40.00**	**$56.00**	**$64.00**
Direct Costs		$	$	$
Harvesting – Mowing, 2/3rd hours @ $0.35		0.23	0.23	0.23
– Heading 2/3rd hour @ $0.45		0.30	0.30	0.30
Sacks – 2 @ $0.12		0.24	0.24	0.24
Consolidated charge – 240 lbs @ $3.55 per 100 lbs FD		8.52	8.52	8.52
Certification charge – 160 lbs @ $0.01 per 3 lb MD		0.53	0.53	0.53
Cartage – 1 bag @ $0.185		0.19	0.19	0.19
Total Direct Costs		*$10.01*	*$10.01*	*$10.01*
GROSS MARGINS		**$29.99**	**$45.99**	**$53.99**

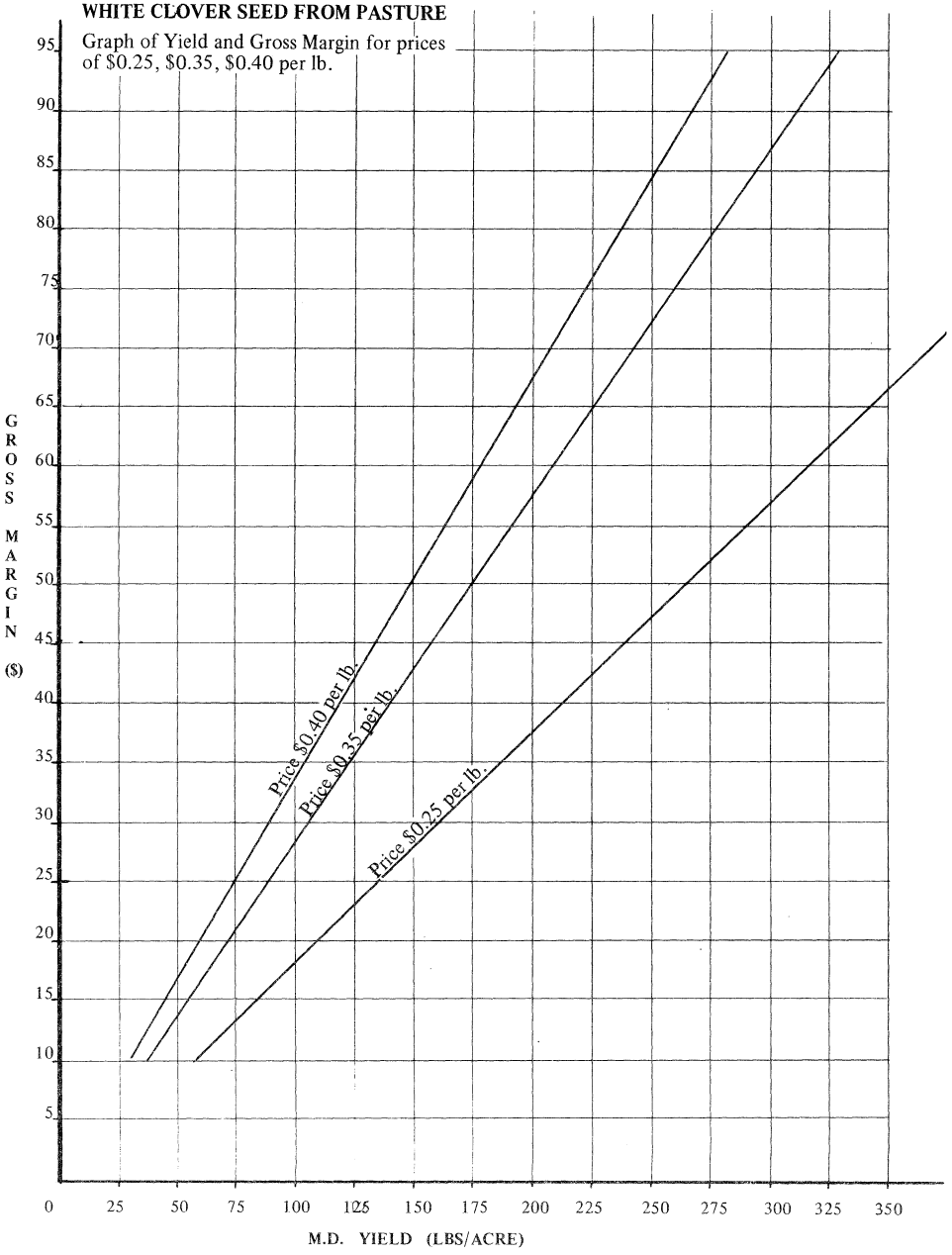
c	**Price – 480 lbs FD yielding 320 lb MD @**	*$ 0.25*	*$ 0.35*	*$ 0.40*
	Gross Revenue	**$80.00**	**$112.00**	**$128.00**
Direct Costs		$	$	$
Harvesting – Mowing 2/3 hour @ $0.35		0.23	0.23	0.23
	– Heading 1 hour @ $0.45	0.45	0.45	0.45
Sacks – 4 @ $0.12		0.48	0.48	0.48
Consolidated Charge – 480 lbs @ $3.55 per 100 lbs FD		17.04	17.04	17.04
Certification Charge – 320 lbs @ $0.01 per 3 lb MD		1.07	1.07	1.07
Cartage – 2 bags @ $0.185		0.37	0.37	0.37
Total Direct Costs		*$19.64*	*$19.64*	*$19.64*
GROSS MARGINS		**$60.36**	**$92.36**	**$108.36**

Summary of White Clover Seed Gross Margins

	YIELD		
Price	80 lbs.	160 lbs.	320 lbs.
$0.25	14.80	29.99	60.36
$0.35	22.80	45.99	92.36
$0.40	26.80	53.99	108.36

WHITE CLOVER SEED FROM PASTURE

Graph of Yield and Gross Margin for prices of $0.25, $0.35, $0.40 per lb.



2 Manawa Ryegrass Seed from Pasture

a	**Price – 40 bus. FD yields 30 bus. MD @**	*$ 1.50*	*$ 2.00*	*$ 2.50*
	Gross Revenue	**$45.00**	**$60.00**	**$75.00**
	Direct Costs	$	$	$
	Nitrogen – 2 cwt S/A @ $2.23	4.46	4.46	4.46
	Harvesting – Mowing ½ hour @ $0.35	0.18	0.18	0.18
	– Heading 1/3rd hour @ $0.45	0.15	0.15	0.15
	Sacks – 10 @ $0.12	1.20	1.20	1.20
	Cartage – 10 sacks @ $0.185	1.85	1.85	1.85
	– Fertilizer, covered by subsidy			
	Spreading Nitrogen – (¼ hr @ $0.35) x 2 (split dressing)	0.18	0.18	0.18
	Consolidated handling charge – 40 bus. @ $1.30 per 100 lbs FD	10.40	10.40	10.40
	Certification Charges – 30 bus. MD @ $0.03 per bus.	0.90	0.90	0.90
	Total Direct Costs	*$19.34*	*$19.34*	*$19.34*
	GROSS MARGINS	**$25.68**	**$40.68**	**$55.68**

b	**Price – 53 bus. FD yields 40 bus. MD @**	*$ 1.50*	*$ 2.00*	*$ 2.50*
	Gross Revenue	**$60.00**	**$80.00**	**$100.00**
	Direct Costs	$	$	$
	Nitrogen – 2 cwt S/A @ $2.23	4.46	4.46	4.46
	Harvesting – Mowing, ½ hour @ $0.35	0.18	0.18	0.18
	– Heading, 1/3 hour @ $0.45	0.15	0.15	0.15
	Sacks – 13 @ $0.12	1.56	1.56	1.56
	Cartage – 13 sacks @ $0.185	2.41	2.41	2.41
	– Fertilizer, covered by subsidy			
	Spreading Nitrogen (¼ hour @ $0.35) x 2 split dressing)	0.18	0.18	0.18
	Consolidated handling charge – 53 bus. @ $1.30 per 100 lbs	13.78	13.78	13.78

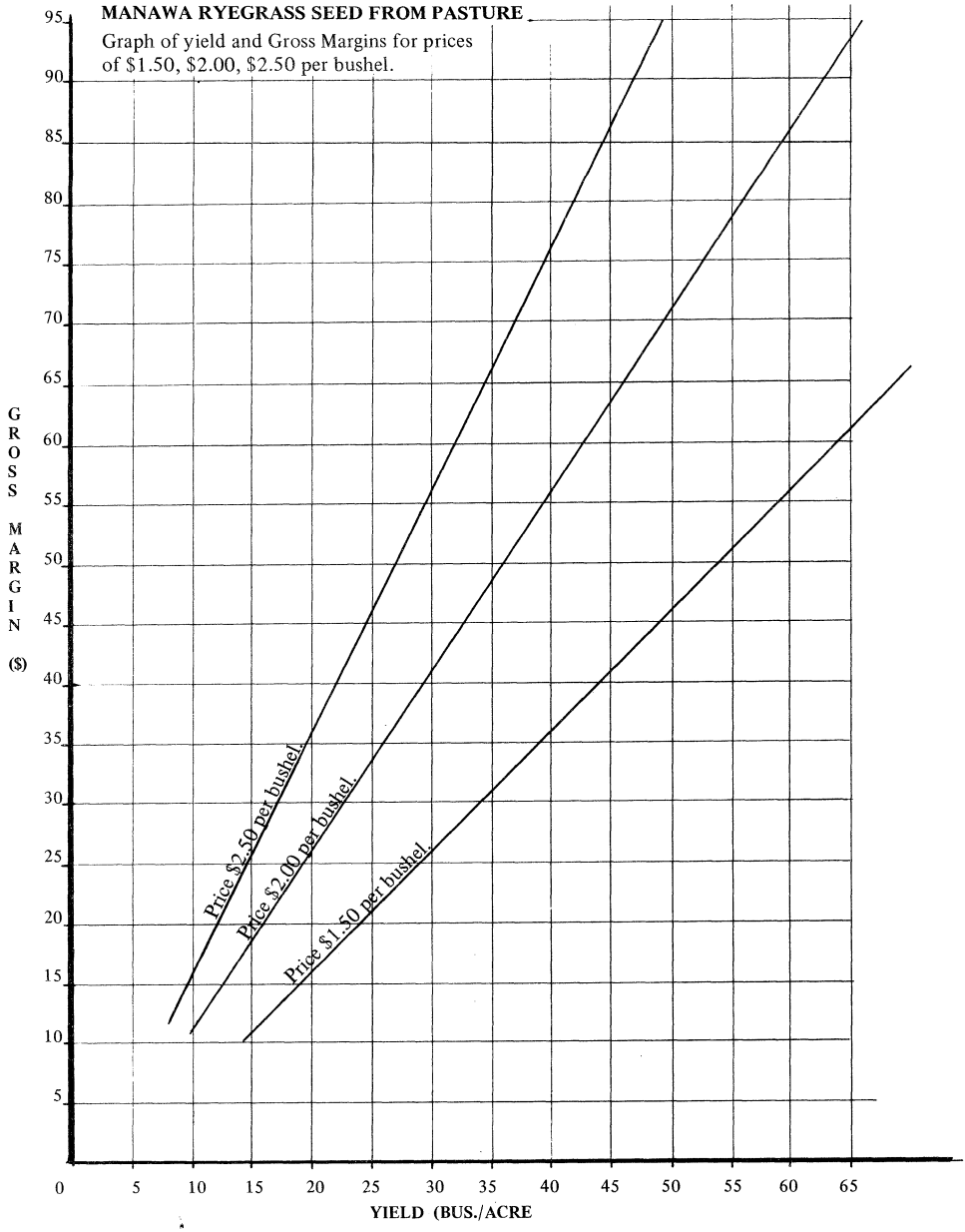
Certification charge – 40 bus. MD @ $0.03 per bus.	1.20	1.20	1.20
Total Direct Costs	*$23.92*	*$23.92*	*$23.92*
GROSS MARGINS	**$36.08**	**$56.08**	**$76.08**
c **Price – 67 bus FD yields 50 bus. MD @**	*$ 1.50*	*$ 2.00*	*$ 2.50*
Gross Revenue	**$75.00**	**$100.00**	**$125.00**
Direct Costs	$	$	$
Nitrogen – 2 cwt S/A @ $2.23	4.46	4.46	4.46
Harvesting – Mowing ½ hour @ $0.35	0.18	0.18	0.18
– Heading ½ hour @ $0.45	0.23	0.23	0.23
Sacks – 17 @ $0.12	2.04	2.04	2.04
Cartage – 17 sacks @ $0.185	3.15	3.15	3.15
– Fertilizer, covered by subsidy			
Spreading Nitrogen (¼ hr @ $0.35) x 2 (split dressing)	0.18	0.18	0.18
Consolidated Handling Charge – 67 bus. @ $1.30 per 100 lb	17.42	17.42	17.42
Certification Charge – 50 bus. @ $0.03 per bus.	1.50	1.50	1.50
Total Direct Costs	*$29.16*	*$29.16*	*$29.16*
GROSS MARGINS	**$45.84**	**$70.84**	**$95.84**

Summary of Manawa Ryegrass Seed Gross Margins

	YIELD		
Price	30 bus.	40 bus.	50 bus.
$1.50	25.68	36.08	45.84
$2.00	40.68	56.08	70.84
$2.50	55.68	76.08	95.84

MANAWA RYEGRASS SEED FROM PASTURE

Graph of yield and Gross Margins for prices of $1.50, $2.00, $2.50 per bushel.



3 Ryegrass Straw

30 bales @ $0.20

Gross Revenue = $ 6.00

Direct Costs	$
Baling – 1/3rd hour @ $0.35	0.12
Carting – 1/3rd hour @ $0.45	0.15
Baler engine – 1/3rd hour @ $0.35	0.12
Twine – 30 @ $0.019	0.57
Total Direct Costs	*$0.96*
GROSS MARGIN	**$ 5.04**

This figure should be added to the figure for Gross Margin for ryegrass seed to obtain the effective Gross Margin per acre.

4 Cocksfoot (ex Summer fallow, 5 year life)

Establishment	$
Summer fallow — 6½ hour @ $0.35	2.28
4 lbs Cocksfoot @ $0.60	2.40
3 lbs White clover @ $0.45	1.35
2 cwt super @ $1.14	2.28
Total Establishment Cost	8.31

Therefore average annual establishment cost:

$$\frac{\$8.31}{5}$$

$$= \$1.66$$

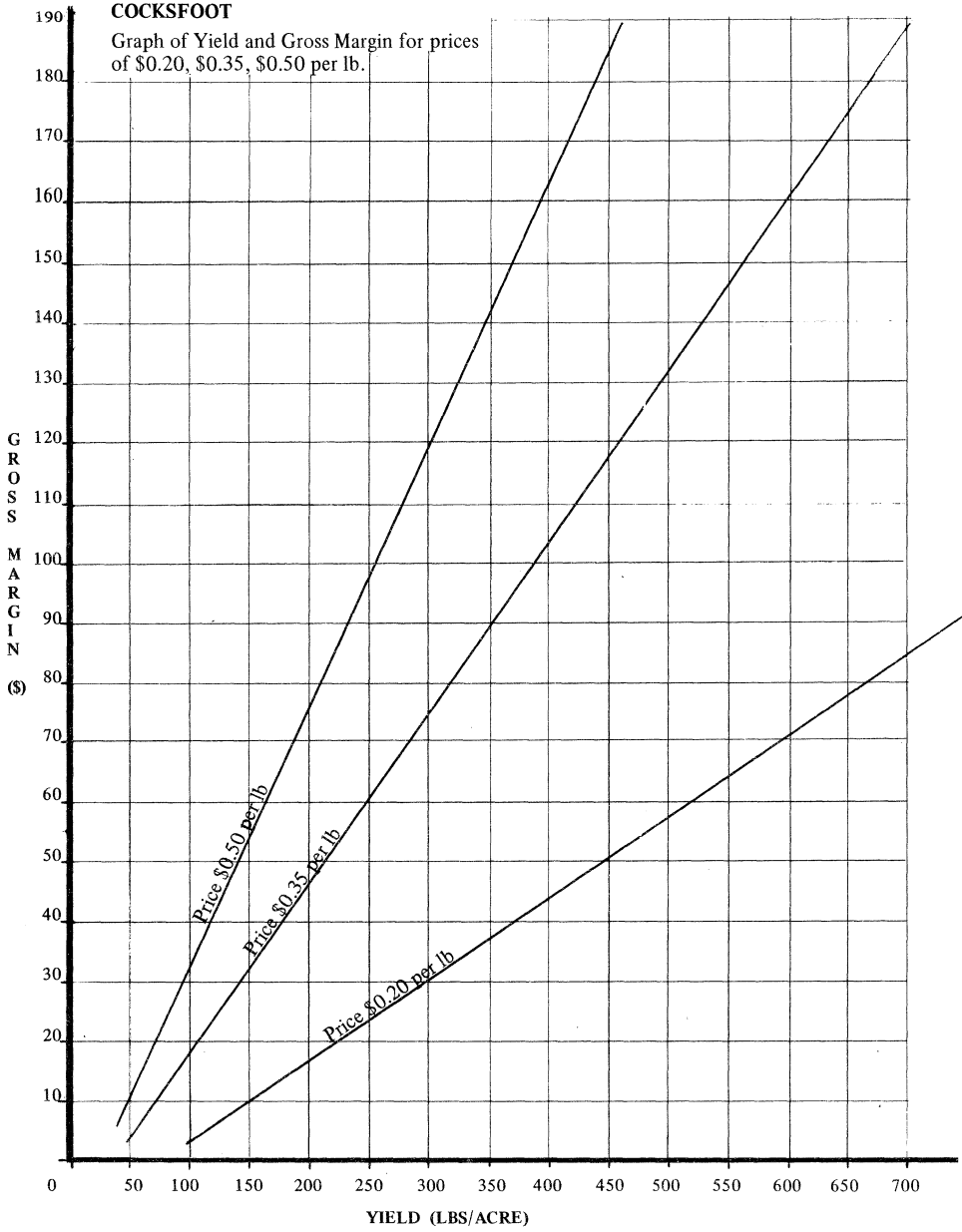
a	**Price – 133 lbs FD yields 100 lbs MD @**	*$ 0.20*	*$ 0.35*	*$ 0.50*
	Gross Revenue	**$20.00**	**$35.00**	**$50.00**
	Direct Costs	$	$	$
	Average Renewal	1.66	1.66	1.66
	Nitrogen – 3 cwt S/A @ $2.23	6.69	6.69	6.69
	Windrowing @ $2.00 per acre	2.00	2.00	2.00
	Heading – ½ hour @ $0.45	0.23	0.23	0.23
	Sacks – 2 @ $0.12	0.24	0.24	0.24
	Cartage – 2 sacks @ $0.185	0.37	0.37	0.37
	– Fertilizer, covered by subsidy			
	Spreading Nitrogen (¼ hour @ $0.35) x 2 (split dressing)	0.18	0.18	0.18
	Consolidated handling charge – 133 lbs @ $4.05 per 100 lbs FD	5.39	5.39	5.39
	Certification Charge – $0.025 per 10 lb MD	0.25	0.25	0.25
	Total Direct Costs	*$17.01*	*$17.01*	*$17.01*
	GROSS MARGINS	**$ 2.99**	**$17.99**	**$32.99**

b	**Price – 400 lbs FD yields 300 lb MD @**	*$ 0.20*	*$ 0.35*	*$ 0.50*
	Gross Revenue	**$60.00**	**$105.00**	**$150.00**
	Direct Costs	$	$	$
	Average Renewal	1.66	1.66	1.66
	Nitrogen 3 cwt S/A @ $2.23	6.69	6.69	6.69
	Windrowing @ $2.00 per acre	2.00	2.00	2.00
	Heading – ½ hour @ $0.45	0.23	0.23	0.23
	Sacks 7 @ $0.12	0.84	0.84	0.84
	Cartage – 7 sacks @ $0.185	1.30	1.30	1.30
	– Fertilizer, covered by subsidy			
	Spreading Nitrogen – (¼ hour @ $0.35) x 2 (split dressing)	0.18	0.18	0.18
	Consolidated handling charge – 400 lbs @ $4.05 per 100 lbs	16.20	16.20	16.20
	Certification charges – $0.025 per 10 lb MD	0.75	0.75	0.75

Total Direct Costs	*$29.85*	*$29.85*	*$29.85*
GROSS MARGINS	**$30.15**	**$75.15**	**$120.15**
c **Price – 667 lbs FD yields 500 lbs MD @**	*$ 0.20*	*$ 0.35*	*$ 0.50*
Gross Revenue	**$100.00**	**$175.00**	**$250.00**
Direct Costs	$	$	$
Average Renewal	1.66	1.66	1.66
Nitrogen – 3 cwt S/A @ $2.23	6.69	6.69	6.69
Windrowing	2.00	2.00	2.00
Heading – 1 hour @ $0.45	0.45	0.45	0.45
Sacks – 11 @ $0.12	1.32	1.32	1.32
Cartage – 11 sacks @ $0.185	2.04	2.04	2.04
– Fertilizer, covered by subsidy			
Spreading nitrogen (¼ hour @ $0.35) x 2 (split dressing)	0.18	0.18	0.18
Consolidated handling charge – 667 lbs @ $4.05 per 100 lbs	27.01	27.01	27.01
Certification charges – 500 lbs @ $0.025 per 10 lb MD	1.25	1.25	1.25
Total Direct Costs	*$ 42.60*	*$ 42.60*	*$ 42.60*
GROSS MARGINS	**$ 57.40**	**$132.40**	**$207.40**

Summary of Cocksfoot Gross Margins

	YIELD		
Price	100 lbs.	300 lbs.	500 lbs.
$0.20	2.99	30.15	57.40
$0.35	17.99	75.15	132.40
$0.50	32.99	120.15	207.40


COCKSFOOT
Graph of Yield and Gross Margin for prices of $0.20, $0.35, $0.50 per lb.
GROSS MARGIN ($)
190
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
50
100
150
200
250
300
350
400
450
500
550
600
650
700
YIELD (LBS/ACRE)
Price $0.50 per lb
Price $0.35 per lb
Price $0.20 per lb

D Sheep

The Gross Margins for:

1. Ewe flock (breeding own replacements)
2. Buying in 2T replacements
3. 2 year Fat lamb ewe flock

have been calculated using these different sets of prices. The wool prices refer to a crossbred flock.

	Lamb	Wool
Low Prices	$4.50	$0.18 /lb
Average Prices	$5.20	$0.22
High Prices	$6.00	$0.26

1. Ewe Flock (breeding own replacements)
   Feed requirements – 1.154 SU
   (5 lambs/Ewe, 110% lambing)

Prices	Low	Average	High
Gross Revenue			
Lamb – 0.89 – 1.1 lambs/ewe less 0.21 (0.20 hogget replacements + 5% of 0.2 = 0.01, hogget death rate)	4.00	4.63	5.34
Wool: 0.2 hoggets (6 lbs) and Ewe (10.5 lbs) = = 11.7 lbs	2.11	2.57	3.04
Culled ewe – 0.15 (0.20 less 0.05 death rate) @ $2.50	0.38	0.38	0.38
Gross Revenue	**$6.49**	**$7.58**	**$8.76**
Direct Costs (including replacements)	$	$	$
Shearing 1.2 @ $18.00 per 100	0.22	0.22	0.22
Crutching 1.2 @ $5.00 per 100	0.06	0.06	0.06
Vaccination – Triple, ewes only	0.06	0.06	0.06
Drench + Selenium, hoggets (0.2), 5 drenches @ $0.056 per head	0.06	0.06	0.06
Docking	0.01	0.01	0.01

	$	$	$
Footrot ($2.00 per 100)	0.02	0.02	0.02
Dipping – 1.2 @ $0.05	0.06	0.06	0.06
Ram cost net ($50 per 100 ewes, 4 year life)	0.13	0.13	0.13
Cartage of CFA ewe (1/5th of $0.216)	0.04	0.04	0.04
Total Direct Costs	*$0.66*	*$0.66*	*$0.66*
GROSS MARGINS	**$5.33**	**$6.92**	**$8.10**

2. Buying in 2T Replacements
Feed requirement – 1.014 SU
(5 lambs per Ewe, 110% lambing)

Prices	Low	Average	High
Lambs – 1.1	4.95	5.72	6.60
Wool – 10.5 lbs	1.89	2.31	2.73
Culled Ewe – 0.20 @ $2.50	0.50	0.50	0.50
Gross Revenue	**$7.34**	**$8.53**	**$9.83**
Direct Costs	$	$	$
Replacement – 0.25 (deaths 5%) @ $8.00	2.00	2.00	2.00
Shearing – $18.00 per 100	0.18	0.18	0.18
Crutching – $5.00 per 100	0.05	0.05	0.05
Vaccination – Triple vaccine	0.06	0.06	0.06
Drenching + Selenium	0.06	0.06	0.06
Docking	0.01	0.01	0.01
Footrotting ($2.00 per 100)	0.02	0.02	0.02
Dipping –	0.05	0.05	0.05
Ram cost ($50 per 100 ewes, 4 year life)	0.13	0.13	0.13
Cartage – 0.2 Culled ewes @ $0.216	0.04	0.04	0.04
– 0.25 2T replacements @ $0.181	0.05	0.05	0.05
Total Direct Costs	*$2.65*	*$2.65*	*$2.65*
GROSS MARGINS	**$4.69**	**$5.88**	**$7.18**

3 2 Year Fat Lamb Ewe Flock
Feed Requirement – 1.014 SU
(115% lambing)

Prices	Low	Average	High
Lambs – 1.15	5.18	5.98	6.90
Wool – 10 lbs	1.80	2.20	2.60
Culled Ewe – 0.5 @ $2.50	1.25	1.25	1.25
Gross Revenue	**$8.23**	**$9.43**	**$10.75**
Direct Costs:	$	$	$
Ewe replacement – 0.5 + 0.05 (deaths) @ $5.00	2.75	2.75	2.75
Shearing @ $18.00 per 100	0.18	0.18	0.18
Crutching @ $5.00 per 100	0.05	0.05	0.05
Vaccination	0.06	0.06	0.06
Drenching + Selenium	0.06	0.06	0.06
Dipping	0.05	0.05	0.05
Docking	0.01	0.01	0.01
Footrotting @ $2.00 per 100	0.02	0.02	0.02
Ram Costs	0.13	0.13	0.13
Cartage – 0.5 CFA ewes @ $0.216 (fat)	0.11	0.11	0.11
– 0.55 2 yr ewes @ $0.181 (store)	0.10	0.10	0.10
Total Direct Costs	*$3.52*	*$3.52*	*$3.52*
GROSS MARGINS	**$4.71**	**$5.91**	**$7.23**

4 Hoggets (winter fattening)

Gross Revenue:	$
1 hogget @ $7.50	7.50
Wool – 6.5 lbs @ $0.22 (average price)	1.43
Gross Revenue	**$8.93**

Direct Costs	$	
Replacement of Hogget & 5% deaths = 1.05 @ $6.00	6.30	
Shearing @ $18.00 per 100	0.18	
Crutching @ $5.00 per 100	0.05	
Drenching + Selenium	0.06	
Footrotting ($1.00 per 100)	0.01	
Dipping	0.06	
Cartage – 1 hogget @ $0.216	0.21	
– 1.05 hoggets @ $0.181	0.19	
Total Direct Costs	*$7.06*	
GROSS MARGIN		**$1.87**

5 Selling Ewes and Lambs all Counted
Feed requirement 0.014 SU for complete year
1.00 SU for winter period
110% lambing

Prices	Low	Average	High
1 ewe @	4.00	4.30	4.60
1.1 lambs @	4.00	4.30	4.60
Gross Revenue	**$8.40**	**$9.03**	**$9.66**
Direct Costs	$	$	$
Replacement – 1.05 @ $4.50	4.72	4.72	4.72
Crutching @ $5.00 per 100	0.05	0.05	0.05
Docking	0.01	0.01	0.01
Footrot (2.00 per 100 ewes)	0.02	0.02	0.02
Ram Cost	0.13	0.13	0.13
Cartage – 1.0 ewes and 1.1 lambs	0.32	0.32	0.32
– 1.05 ewes @ $0.181	0.19	0.19	0.19
Total Direct Costs	*$5.44*	*$5.44*	*$5.44*
GROSS MARGINS	**$2.96**	**$3.59**	**$4.22**

E Meal Based Pig Production Gross Margins

In analysing pig production it is best to separate the breeding and fattening herds. Some criteria must be used for sow performance:

Sow Performance	
Number per litter (born)	11.0
Number per litter (weaned)	9.0
Litters per year	1.8
Number of pigs per sow per year	16.2

The profitability of this sow herd can be established from the direct cost per weaner

Direct Costs

Sow feed cost –	
1200 lb per litter @ $0.03 per lb	
i.e. $36.00 x 1.8 litters per year	$64.80
Boar feed costs – 4,500 lb @ $0.03 per lb	
= $135 per 50 sows	2.70
Boar replacement – 1 boar @ $200 per 50 sows	4.00
Sow replacement – 20% replacement rate,	
1 gilt costing $40	8.00
Creep feed 16.2 piglets @ 4 lb per pig ($0.05 per lb)	3.24
Animal Health	4.00
Sundry charges – 16.2 @ $0.20	3.25
Direct Costs	$89.99
Less Revenue from Chopper	
15% as choppers @ 200 lb LW ($0.10 per lb)	3.00
Total Direct Costs	*$86.99*
Direct costs per weaner	**$5.37**

For assessing the profitability of the fattening enterprise, feed costs in relation to output give the best guide.

Conversions should be in the order of 3.0 : 1 to pork weight and 3.5 : 1 to bacon weight. Liveweight gain per day should be 1.2 lb at pork weights and 1.5 lb at bacon weights.

The Fattening Herd

1. Pork

Gross Revenue	
81 lb @ $0.23 per lb	$18.63
Direct Costs	
Cost of breeding weaner	$ 5.37
To feed weaner – Total liveweight – 45 lb	
Liveweight gain – 20 lb	
Conversion 2.5 : 1	
Feed eaten – 50 lb @ $0.33 per lb	$ 1.65
To Pork Weight – Total Liveweight – 110 lb	
Dressed weight – 81 lb	
Liveweight gain – 65 lb	
Conversion – 3.0 : 1	
Feed eaten – 195 lb @ $0.03 per lb	$ 5.85
Total Direct Costs	$12.87
Gross Margin Per Porker	$ 5.76

2. Bacon

Gross Revenue		
130 lb @ $0.22 per lb		$28.60
Direct Costs		
Cost of Breeding Weaner		$ 5.37
To feed weaner		$ 1.65
Feeding to Pork weight		$ 5.85
Feeding from Porker to Baconer Weight:		
Total Liveweight – 176 lb		
Dressed weight – 130 lb		
Liveweight gain– 66 lb		
Conversion – 3.5 : 1		
Feed eaten	231 lb @ $0.03 per lb	$ 6.93
Total Direct Cost		$19.80
Gross Margin Per Baconer		$ 8.80

F. Beef Cattle

NOTES ON THE MARKETING OF BEEF CATTLE

A.R. McIvor 1.1.71

The livestock market in New Zealand is divided into three main sections. These are the store sales between farmers of breeding or fattening stock, schedule sales of prime stock to freezing companies for export to world markets, and 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 in some instances to be influenced by demand from the other sections of the market.

Factors Influencing Store Sales

Though sales 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 –

1. 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, schedule values will virtually underwrite the sale setting minimum price levels.
2. Trend of schedule or local trade prices.
3. Availability of feed and climatic conditions.
4. Availability of credit.
5. Level of confidence for the enterprise by the farming community and stock companies. At present (1971) farmer confidence in beef is at a very high, almost irrational, level. There is a definite trend developing to replace sheep with cattle on some units and some lending institutions are lending to farmers to finance the changeover. The 1970/71 season has seen good returns to cattle breeders and fatteners and with this level of confidence, finance, and profitability, but an only slightly increased supply of cattle, trends for 1971 must be for high store prices.

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 Pacific Basin area, and assess the level at which they can set their prices to attract fat stock from farmers, meet all costs and attain a profit. Factors which influence price levels are –

1. World market conditions – supply and demand and price trends.
2. Tariffs or quotas.
3. Shipping and killing charges
4. Time and place of sale.
5. To a limited extent competition between local trade and exporters for fat stock may, for short periods, inflate schedule values. In general during the winter and early spring periods little or no fat cattle are sold for export.

Factors Influencing Local Trade Values

Approximately 60% of all prime beef killed is consumed in New Zealand. Most of this stock is bought by buyers for butchers either on the farm or in the fat pens at sale yards. In some instances, exporting companies buy stock for wholesale to butchers. In periods of shortage of fat cattle practically all prime 'quality' beef is bought for local consumption at values above export schedule. Thus the supply demand schedule works independent of the export schedule with practically all fat stock in winter and early spring being bought for local trade with peak prices usually in October. Once feed supply eases and most farmers are able to produce fat 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 season conditions. In general, local trade begins to have an effect 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 2 cents/lb above schedule for winter months to 2–4 cents/lb above schedule in October. Usually stock are bought by eye assessment of weight and it is an advantage to know actual liveweight when selling in the paddock.

Factors –

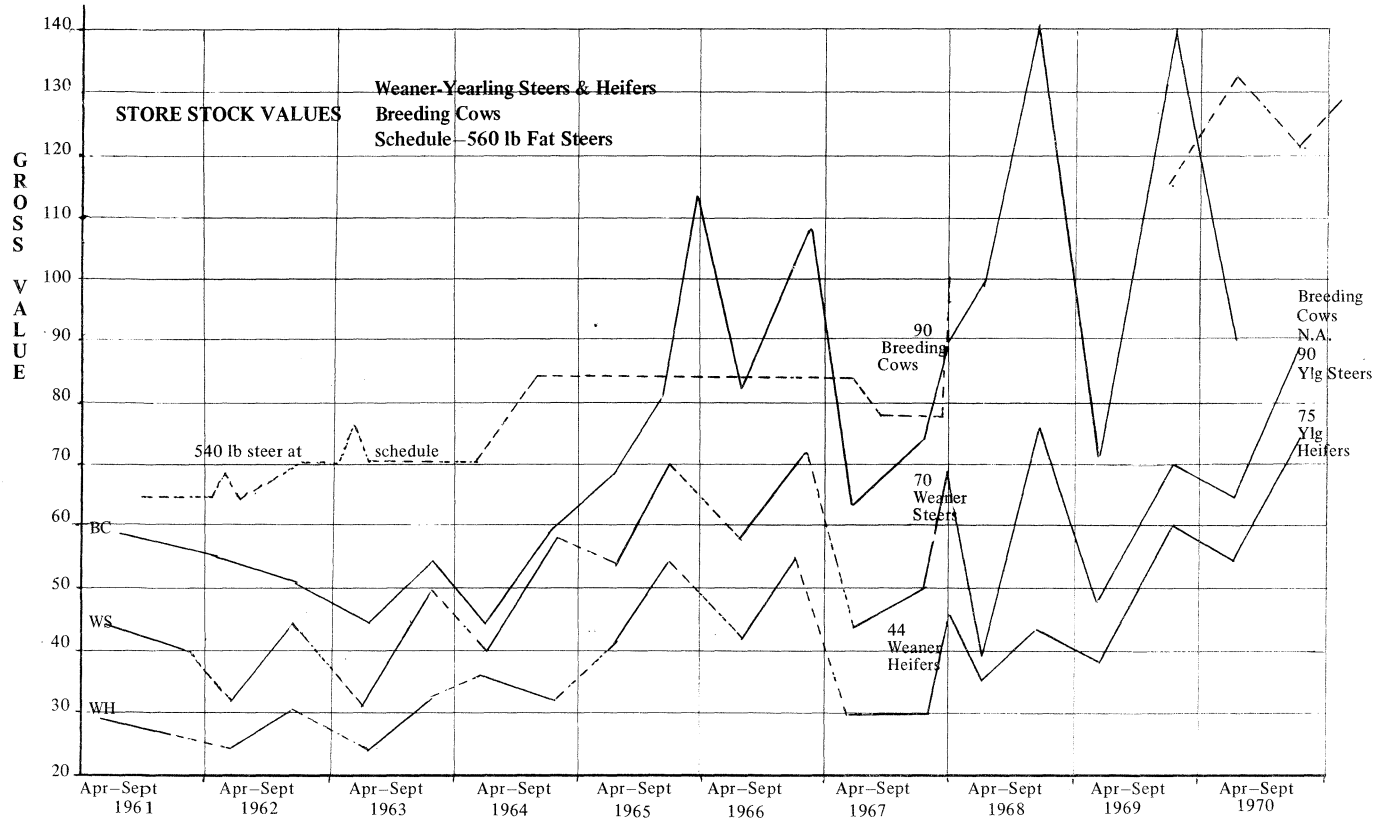
1. Supply of fat cattle which is closely related to availability of feed.
2. Demand and price acceptance by housewives.

Market Values

Store Cattle, Masterton Sale Yards (See Graph.)

Store Cattle Values – Addington, for April and October Sales

		Weaner Steers		Weaner Heifers		Breeding Cows		Schedule GAQ.Ox $/100 lb.	
		$	$	$	$	$	$	$	$
1963	April	21.10 –	45.50	16.80 –	41.35	37.80 –	44.85	9.50 –	12.00
	October	54.55 –	59.35	39.85 –	58.85	23.35 –	49.85	9.50 –	12.00
1964	April	15.80 –	45.30	14.85 –	38.35	20.35 –	56.85	11.00 –	13.50
	October	35.35 –	44.10	– –	34.35	– –	38.85	12.00 –	14.50
1965	April	26.35 –	51.35	27.85 –	36.85	45.85 –	61.85	12.00 –	14.50
	October	62.00 –	66.00	– –	52.00	– –	61.00	12.00 –	14.50
1966	April	49.35 –	60.85	38.85 –	54.85	70.85 –	78.85	14.25 –	
	October	48.35 –	67.85	50.85 –	61.35	– –	61.35	13.25 –	
1967	April	48.00 –	58.00	35.00 –	43.00	60.00 –	77.50	12.50 –	14.50
	October	50.00 –	65.00	47.00 –	55.00	75.00 –	80.00	(Deval'n)	11.75–
1968	April	50.00 –	64.00	46.00 –	57.00	78.00 –	92.00	15.00 –	17.00
	October	65.00 –	70.00	52.00 –	64.00	– –	82.00	17.25 –	18.25
1969	April	44.00 –	58.00	33.00 –	45.00	58.00 –	70.00	15.60 –	19.00
	October	60.00 –	82.00	53.00 –	66.00	– –	71.00	18.25 –	21.75
1970	April	57.00 –	80.00	55.00 –	85.00	84.00 –	117.00	21.25 –	24.75
	October	80.00 –	123.00	65.00 –	90.00	– –	110.00	19.75 –	22.25


STORE STOCK VALUES
Weaner-Yearling Steers & Heifers
Breeding Cows
Schedule–560 lb Fat Steers
GROSS VALUE
140
130
120
110
100
90
80
70
60
50
40
30
20
540 lb steer at
schedule
BC
WS
WH
90
Breeding
Cows
70
Weaner
Steers
44
Weaner
Heifers
Breeding
Cows
N.A.
90
Ylg Steers
75
Ylg
Heifers
Apr–Sept
1961
Apr–Sept
1962
Apr–Sept
1963
Apr–Sept
1964
Apr–Sept
1965
Apr–Sept
1966
Apr–Sept
1967
Apr–Sept
1968
Apr–Sept
1969
Apr–Sept
1970

Analysis of Sales using Assessed Carcase Weight

Kaikoura Sale, second week April 1970

Weaners:

Steers		at 50%	Sale Price	lb	Heifers	at 50%	Sale Price	lb
Small	400 lb	200	50	25c	350 lb	175	30	17c
Medium	460	230	62	26c	400	200	50	25c
Good	500	250	70	28c	460	230	56	24c
V. Good	550	275	74	27c	500	250	60	24c
Exceptional	600	300	80	27c				

20-Month:

Steers		at 52%	Sale Price	lb	Heifers	at 52%	Sale Price	lb
Small	700 lb	360	77	21.4c	700 lb	360	77	18.7c
Medium	900	470	90	19c	860	450	86	21.4c

Addington Sales, October 1970

Yearling Steers		at 50%	Sale Price	lb
Small	550	275	80	29c
Medium	650	325	95	29.2c
Good	750	375	120	32c

Note: Prices of up to 33 cents/lb were received on some lines of weighed cattle.

Analysis of Addington Sales of Fat Cattle

		1968		1969		1970	
		Range	cents per lb	Range	cents per lb	Range	cents per lb
Jan.	Heavy	120 – 141	21	136 – 160	22.9	160 – 185	26.4
	Medium	100 – 118	21.5	120 – 132	24	140 – 160	29.1
	Light	89 – 99	22	100 – 115	25.6	120 – 138	30.7
Feb.	Heavy	125 – 155	22.2	135 – 170	24.3	160 – 220	31.4
	Medium	112 – 122	22.2	115 – 132	24	140 – 157	28.6
	Light	92 – 108	24	100 – 115	25.6	110 – 135	30
March	Heavy	120 – 137	19.6	135 – 160	22.9	160 – 199	28.4
	Medium	106 – 116	21.1	114 – 132	24	144 – 158	28.6
	Light	94 – 104	23.1	90 – 110	24.5	120 – 144	32
April	Heavy	124 – 140	20	135 – 152	21.7	160 – 232	33.2
	Medium	110 – 120	21.8	115 – 130	23.6	145 – 160	29.1
	Light	92 – 107	23.8	90 – 110	24.5	110 – 140	31.2
May	Heavy	126 – 160	22.9	140 – 150	21.4	165 – 198	28.3
	Medium	112 – 122	22.2	128 – 138	25.1	140 – 160	29.1
	Light	95 – 108	23.9	105 – 125	27.8	115 – 140	31.2
June	Heavy	136 – 168	24	140 – 163	23.3	160 – 180	25.7
	Medium	120 – 134	24.4	128 – 138	25.1	140 – 155	28.2
	Light	100 – 116	25.8	94 – 125	27.8	–	–
July	Heavy	162 – 180	25.7	160 – 202	28.9	164 – 180	25.7
	Medium	120 – 140	25.5	130 – 144	26.2	145 – 160	29.1
	Light	102 – 120	26.7	100 – 125	27.8	120 – 140	31.1
August	Heavy	167 – 200	28.6	180 – 239	34.1	160 – 185	26.4
	Medium	125 – 150	27.3	140 – 175	31.8	145 – 158	28.7
	Light	100 – 120	26.7	100 – 130	28.9	–	–
Sept.	Heavy	140 – 202	28.9	165 – 225	32.2	165 – 180	25.7
	Medium	125 – 138	25.1	150 – 160	29.1	145 – 160	29.1
	Light	88 – 118	26.2	120 – 145	32.2	120 – 140	31.1

		1968 Range	cents per lb	1969 Range	cents per lb	1970 Range	cents per lb
October	Heavy	185 – 212	30.3	170 – 240	34.3		
	Medium	120 – 140	25.5	135 – 160	29.1		
	Light	94 – 118	26.2	115 – 130	29.9		
Nov.	Heavy	140 – 201	28.7	155 – 180	25.7	160 – 172	24.6
	Medium	120 – 136	24.8	135 – 150	27.3	147 – 157	28.7
	Light	104 – 118	26.2	95 – 120	26.7	–	–
Dec.	Heavy	166 – 188	26.9	140 – 165	23.6	164 – 184	26.3
	Medium	130 – 160	29.1	120 – 135	24.5	145 – 160	29.1
	Light	96 – 120	26.8	100 – 115	25.6	–	–

Weight per lb taken as Heavy 1300 = 700 lbs: Medium 1000 = 550 lbs: Light 850 = 450 lbs (84%).

Calculation on highest of range

Gross Margin for Breeding and Fattening Policies

Policy 1:

Breeding with sale of store yearlings. 100 cow herd. All weaners wintered with steers sold on the spring store markets. Half of heifers retained to two year old for final culling and mating.

95% Calving 2% Deaths

Capital Stock

100	cows	at 6 E.E.	600	at $100	=	10,000	
25	20-mth heifers	at 4 E.E.	100	at $ 90	=	2,250	
95	weaners	at 3.5 E.E.	332	at $ 60	=	5,700	
2	bulls	at 6 E.E.	12	at $200	=	400	
222			1,044			$18,350	= $17.6 E.E.

Valuations supplied by courtesy of State Advances Corporation, Christchurch.

Income:

47	yearling steers	at $ 90	=	4,230	
22	yearling heifers	at $ 70	=	1,540	
11	cull 2 year heifers	at $100	=	1,100	
12	cull cows	at $ 70	=	840	
					$7,710

Less:

Interest $18,350 at 7%		1,280	
Animal Health			
Drench Weaners 2 x 60c	106		
Spraying 222 at 40c	89		
Preg. test 110 at 35c	39		
		234	
Bull Depreciation		130	
Hay – weaners only			
95 at 6 bales = 600 at 60c		360	
			$2,004

Gross Margin	$5,706
Per E.E.	$ 5.46
Per Acre at 175 acres	$ 33.6
Return on Capital in Stock	31%

Effect of Changes in Parameters:

Calving %. Sale Price

A. Calving Percentage

Sale Stock	95%		85%		75%	
Yearling steers	47	4,230	42	3,780	37	3,330
Yearling heifers	22	1,540	19	1,330	17	1,190
Cull 2 year heifers	11	1,100	9	900	6	600
Cull cows	12	840	12	840	12	840
		7,710		6,850		5,960
Less Expenses		2,004		2,004		2,004
Gross Margin		5,706		4,846		3,956
% Change		Base		- 15%		- 30.5%
Return/E.E.		$5.46		$4.46		$3.8
/Acre		$33.6		$27.6		$22.6
/Capital		31%		26.4%		21.6%

B. Sale Price

	+10		Base		-$10		-$20	
Yearling Steers	100	4,700	90	4,230	80	3,760	70	3,290
Yearling heifers	80	1,760	70	1,540	60	1,320	50	1,100
Cull 2 year heifers	110	1,210	100	1,100	90	990	80	880
Cull Cows	80	960	70	840	60	720	60*	720
		8,630		7,710		6,790		5,990
Less Expenses		2,004		2,004		2,004		2,004
Gross Margin		6,626		5,706		4,786		3,986
% Change		+16		Base		-26%		-30%
Return / E.E.		$6.34		$5.46		$4.56		$3.81
/ Acre		$37.90		$33.6		$27.40		$22.80
/ Capital		36%		31%		26%		21.7%

* Note No Change.

Policy 2:

Breeding from cows and 14-month heifers. All weaners except replacements sold in April as store.

128 cows 25 in-calf heifers

95% calving from cows, 80% from heifers

2% deaths.

Capital Stock

128	cows	at 6	E.E.	768	at $100	12,800		
25	in-calf heifers	at 5	E.E.	125	at $100	2,500		
25	weaner heifers	at 3.5	E.E.	88	at $ 60	1,500		
4	bulls	at 6	E.E.	24	at $200	800		
182				1,005		$17,600	=	$17.5 E.E.

Income

71	weaner steers	at	70	=	4,970
46	weaner heifers	at	45	=	2,070
5	2-year heifers	at	100	=	500
16	cull cows	at	70	=	1,120
1	bull	at	140	=	140
					$8,800

Less:

Interest $17,475 at 7%		1,220
Animal Health		
Drench 25 weaners at 2 x 60c	30	
Spray 182 at 40c	73	
Preg. test 128 at 35c	45	
		148
Bull purchase – 1 at $400		400
Hay–weaners only at 6 bales each–150 at 60c		90

	$1,858
Gross Margin	6,942
Per E.E.	6.93
Per Acre at 168 acs	41.3
Return on Capital in Stock	39.4%

Effect of Changes in Parameters: Growth Rate

Average birth date 1 September – 28 April = 240 days

**** Growth Rate over 240 Days**

Steers	2½= 660	2¼= 600	2 = 540	1¾= 480	1½= 420
Heifers	2 = 540	1¾= 480	1½= 420	1¼= 360	*1¼= 360
71 w steers	$80 = 5680	$75 = 5325	$70 = 4970	$65 = 4615	$55 = 3905
46 w heifers	$55 = 2530	$50 = 2300	$45 = 2070	$40 = 1840	$40 = 1840
Other cattle	– = 1760	– = 1760	– = 1760	– = 1760	– = 1760
	9970	9385	8800	8215	7505
Less Expenses	1858	1858	1858	1858	1858
Gross Margin	8112	7527	6942	6357	5647
% Change	+17%	+8%	Base	-8%	-19%
Return Per E.E.	$8.07	$7.5	$6.93	$6.33	$5.63
Acre	$48.3	$44.9	$41.3	$37.8	$33.6
Capital	46$	42.8%	39.4%	36.2%	32%

* Note No Change.

**Growth Rate

2½ = 660 denotes 2½ lbs gain per day for 240 days
= 600 lbs plus 60 lbs birth weight = 660 lbs.

Policy 3:

Breeding herd 100 cows. 20 in-calf 20-month heifers. All steers wintered and sold fat at 20 months at 500 lbs. Surplus heifers vealed 9-10 months, June/July sales.

Calving 95% from cows, 80% heifers.
Deaths 2%.

Capital Stock

100	cows	at 6 E.E.	600	at 100	=	10,000	
20	20-month in-calf heifers	at 5 E.E.	100	at 100	=	2,000	
90	m.s. weaners	at 3.5 E.E.	315	at 60	=	5,400	
3	bulls	at 6 E.E.	18	at 200	=	600	
213			1,033		=	$18,000	= $17.7 E.E.

Income:

55	fat steers 500 lb at $22	=	$110	6,050	
35	veal heifers 250 lb at $24	=	$ 60	2,100	
4	cull 2-year heifers	at	$100	400	
13	cull cows	at	$ 70	910	
					$ 9,460

Less:

Interest $18,000 at 7%		1,260	
Animal Health			
Drench 90 weaners 2 x 60c	108		
Spray 213 at 40c	85		
Preg. test 100 at 35c	35		
		228	
Bull Depreciation		195	
Hay for 90 weaners at 6 bales each = 540 at 60c		325	
			$ 2,008

Gross Margin	$ 7,452
Per E.E.	$7.22
Per Acre on 173 acs	43
Return on Capital on Stock	41.3%

Effect of Retaining Weaner Bulls at 10% increased weight.

North Island Schedule	$24	South Island Schedule	$21
Gross Margin	$8,652		$7,702
Per E.E.	8.36		7.45
Acre	50.1		44.6
Return on Capital	48.2%		42.8%

Policy 4:

Purchase of medium weaner steers in April, wintered on grass and hay, sold at 20 months at 500 lbs. 1½% loss.

Capital Stock

325 weaner steers at 3.5 1137 EE at $70 = $22,750 = $20 E.E.

Income:

321 steers at 500 lb at $22	=	$110	$35,310

Less:

Interest $22,750 at 7%		1,590	
Animal Health			
Drench 2 x 60c	390		
Spray 325 x 40c	140		
		530	
Hay at 6 bales each 2000 at 60c		1,200	
Purchase of replacement weaners			
325 at $70		22,750	
			$26,070

Gross Margin	$ 9,240
Per E.E.	8.1
Per Acre on 189 acs	49
Return on Capital in Stock	40.6%

Effect of Parameters: Schedule Price per 100 lb

	$28	$26	$24	$22	$20	$18
500 lb per head	140	130	120	110	100	90
321 steers	44,900	41,600	38,500	35,310	32,100	28,800
Less Expenses	26,070	26,070	26,070	26,070	26,070	26,070
Gross Margin	18,830	15,530	12,430	9,240	6,030	2,730
% Change	+ 104%	+ 68%	+ 34%	Base	- 35%	- 71%
Per E.E.	$ 16.6	$ 13.6	$ 10.9	$ 8.1	$ 5.3	$ 2.4
Acre	$ 100	$ 82.3	$ 66	$ 49	$ 31.9	$ 14.5
Capital	82.8%	68.4%	54.7%	40.6%	26.5%	12%

Effect of Purchase of Bull Beef at 10% increase in weight, same purchase price.

North Island Schedule	$24	South Island Schedule	$21
Gross Margin	$16,230		$11,030
Per E.E.	$14.3		$9.7
Acre	$86		$58.5
Capital	71.5%		48.6%

Policy 5:

Purchase of weaner heifers, mated at 14 months, 90% sold in-calf in April, 10% sold fat April. 1½% loss.

Capital Stock

325	weaner heifers	at 3.5	E.E.	1,137	E.E.	at $ 60	=	19,500
7	bulls A.A.	at 6	E.E.	42	E.E.	at $200	=	1,400
332				1,179				$20,900 = $17.7E.E.

Income:

290 in-calf 20-month heifers	at $120	34,800	
31 empty heifers 450 lb at $20	$ 90	2,790	
2 bulls	$140	280	
			$37,870

Less:

Interest $20,900 at 7%		1,463	
Animal Health			
Drench 325 x 2 at 60c	390		
Spray 332 at 40c	140		
		530	
Hay 2000 bales at 60c		1,200	
Purchase Heifers 325 at $60		19,500	
Bulls 2 at $400		800	
			$23,493
Gross Margin			$14,377
Per E.E.			12.2
Acre at 190 acs			75.6
Return on Capital			68.7%

Summary

Policy –		Capital	Capital per E.E.	Gross Margin	Per E.E.	Per Acre	Return on Capital
1	Breeding Store Yearlings	18,350	17.6	5,706	5.46	33.6	31%
2	Breeding Store Weaners	17,600	17.5	6,942	6.93	41.3	39.4%
3	Breeding & Fattening	18,000	17.7	7,452	7.2	43.0	41.3%
4	Fattening to 20 months	22,750	20.0	9,240	8.1	49.0	40.6%
	N.I. Bull Schedule	22,750	20.0	16,230	14.3	86.0	71.5%
	S.I. Bull Schedule	22,750	20.0	11,030	9.7	58.5	48.6%
5	Mated Heifers	20.900	17.7	14,377	12.2	75.6	68.7%

Winter Feeding Costs

North Island:

Grass wintering 2 weaners per acre of A.S.P. + 1 bale hay to 10 weaners per day for 60 days = 6 bales per head.

Chou moellier 6–7 weaners per acre plus some hay – up to 1 bale to 10 weaners per day.

Cows–pad feeding beef cows 1 bale to 4 or 5 cows meadow hay per day as a complete ration.

Grazing charges vary from season to season depending on availability of surplus roughage.

Surplus years – 35 cents per head per week.
Good grazing – 65 cents per head per week.
Winters following drought – 65 cents to $1.00 depending on quality and availability.

South Island:

Hay and grain feeding 100 days.

Weaner steers – full hay ration 1 bale to 7 weaners (10 lb hay).
– hay plus grain 1 bale to 9 plus 4 lb grain (8 lb hay).
– turnips, hay and grain 1 bale to 10 weaners plus 3–4 lb grain while wintering at 7–8 beasts per acre of turnips.

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	– ¾ – 1 lb per day
	Chou moellier	– ½ – ¾lb per day
South Island:	10 lb medium meadow hay plus some grass	– ½ – ¾lb per day
	8 lb medium meadow hay plus 4 lbs grain	– 1 – 1½lb per day
	Ad lib turnips plus 8 lb hay, 3 lb grain	– 1 – 1½lb per day

Feed Costs per day for Weaners

		Break even Gain Per day at Schedule of			
	Cost/Day	26c	24c	22c	20c
10 lb hay at 1c lb	10c	.77 lb	.83	.92	1 lb
8 lb hay + 4 lb grain at 2c	16c	1.23 lb	1.33	1.46	1.6
8 lb hay + 3 lb grain + ad lib turnips at 1c day	15c	1.15	1.25	1.36	1.5
Grazing at 65c week	9.3c	.71	.78	.85	.93
Grazing at $1.00 week	14.3c	1.1	1.19	1.3	1.43

Source of Income in Fattening Systems

1. Market appreciation or depreciation between purchase and sale values per lb of carcase.
2. Increase in carcase weight.

1. Examples Price grading between store and fat markets.

Purchase		Sale Schedule
Line A 440 lb L.Wt. $44	= 20c lb	24c lb = + $8.8
Line B 400 lb L.Wt. $52	= 26c lb	24c lb = - $4

(50% killing out percentage)

2 Examples of Growth

	Original Wgt	20-month Wgt	Growth in Wgt	Value of Growth
Line A	440 = 220 lb	950 lb at 51% 485 =	+ 265 at 24c	= 63.6
Line B	400 = 200	900 lb at 51% 460 =	+ 260 at 24c	= 62.4

Effect of 1 + 2:

	Value of Growth	Price Change in Market		Gross Effect
Line A	63.6	+ 8.8	=	$72.4
Line B	62.4	- 4.0	=	$58.4

Importance of Cost Day/Income Day in Intensive Fattening Systems

In intensive fattening units which are moving to semi-feedlot systems both market change and growth rate require examination. In some cases total costs per day will be found to exceed growth income per day with final net profit attained only by a market appreciation in price.

Example

Line A Intensive fattening, buying large weaner steers in April to sell on local trade market in mid-October.

Line B Less intensive, unable to fatten by October, sells April on schedule.

Line A	Price at 26c lb	Apr-Aug 120 days	Sep-Oct 40 days	Final L.Wt.	Ave. Gain	Carcase at 51%	Sale at 30c
Purchase		1½ lb	2½ lb				
550 L.Wt. (275)	$71.5	+180	+100 = 280	830	1.75	430	129
Income day		22.5c	37.5c		26.2c		
Cost day feed		16 c	–				
other		10 c	10 c				
Total		26 c	10 c		22 c		
Growth Profit day		3.5c	+27.5c =		+4.2c =		$6.7
Market Increment 26c - 30c = +4c + 275 lb			=				11.0

Profit in 160 days – $17.7

Line B		Price at 28c	Apr-Aug at 1 lb	Sep-Dec 120 at 2½	Jan-Apr 100 at 1	Final L.Wt.	Ave. Gain.	Carcase at 51%	Sale 22c
Purchase									
420 L.Wt. (210)		$57	+120	+300	+100 = 520	940	1.53	480	103
Income day			11c	27½	11c		16.5c		
Cost day	Feed		10c	–					
	Other		10c	10	10				
	Total		20c	10	10		13.5		
Growth Profit			- 9c	+17½	+1	=	+3.0c	=	$10.2
Market Depreciation			28c – 22c = 6c x 210			=		-	$12.6
			Loss in 340 days			=		-	$ 2.4

Summary

A CROPS (per acre)

	Yield	Price	Gross Revenue	Direct Costs	Gross Margin	
		$	$	$	$	$
1.	Garden Peas (ex old grass)					
	25 bus.	1.45/bus.	36.25	21.82	14.43	
		1.60	40.00	21.82	18.18	
		2.00	50.00	21.82	28.18	
	35 bus.	1.45	50.75	24.38	26.37	
		1.60	56.00	24.38	31.62	
		2.00	70.00	24.38	45.62	
	45 bus.	1.45	65.25	25.63	39.62	
		1.60	72.00	25.63	46.37	
		2.00	90.00	25.63	64.37	
2.	Partridge Peas (ex old grass)					
	25 bus.	1.20	30.00	17.49	12.51	
		1.60	40.00	17.49	22.51	
		2.00	50.00	17.49	32.51	
	35 bus.	1.20	42.00	19.87	22.13	
		1.60	56.00	19.87	36.13	
		2.00	70.00	19.87	50.13	
	45 bus.	1.20	54.00	21.86	32.14	
		1.60	72.00	21.86	50.14	
		2.00	90.00	21.86	68.14	
3.	Vining Peas (ex Old Grass or Chou)					
	2,500 lbs	65/ton	72.54	23.16	49.38	
	3,500 lbs	57/ton	89.06	23.84	65.22	
	4,500 lbs	57/ton	114.51	23.84	90.67	

	Yield	Price	Gross Revenue	Direct Costs	Gross Margin	
		$	$	$	$	$
4.	Wheat (ex Peas) Aotea					
	30 bus.	1.45	43.50	8.71	34.79	
	50 bus.	1.45	72.50	11.67	60.83	
	70 bus.	1.45	101.50	14.24	87.26	
	Hilgendorf					
	30 bus.	1.65	49.50	9.11	40.39	
	50 bus.	1.65	82.50	12.07	70.43	
	70 bus.	1.65	115.50	14.64	100.86	
	Arawa					
	30 bus.	1.40	42.00	8.69	33.31	
	50 bus.	1.40	70.00	11.65	58.35	
	70 bus.	1.40	98.00	14.22	83.78	
	Wheat (Ex wheat)					
	45 bus.	1.45	65.25	12.02	53.23	
	Bulk Wheat (ex peas) – includes storage increment					
	50 bus.	1.61	80.50	9.07	71.43	
7.	Malting Barley					
	50 bus.	0.90	45.00	16.04	28.96	
		0.95	47.50	16.04	31.46	
		1.00	50.00	16.04	33.96	
	60 bus.	0.90	54.00	18.01	35.99	
		0.95	57.00	18.01	38.99	
		1.00	60.00	18.01	41.99	
	70 bus.	0.90	63.00	19.89	43.11	
		0.95	66.50	19.89	46.61	
		1.00	70.00	19.89	50.11	

Yield	Price	Gross Revenue	Direct Costs	Gross Margin	
	$	$	$	$	$
Feed Barley					
55 bus.	0.75	41.25	16.80	24.45	
	0.80	44.00	16.80	27.20	
	0.85	46.75	16.80	29.95	
65 bus.	0.75	48.75	18.77	29.98	
	0.80	52.00	18.77	33.23	
	0.85	55.25	18.77	36.48	
75 bus.	0.75	56.25	20.65	35.60	
	0.80	60.00	20.65	39.35	
	0.85	63.75	20.65	43.10	
8. Potatoes (75% seed potato yield)					
8 tons	40.00 & 20.00	280	265.06	14.94	
8 tons	60.00 & 30.00	420	265.06	154.94	
12 tons	40.00 & 20.00	420	331.42	88.58	
12 tons	60.00 & 30.00	630	331.42	298.58	
16 tons	40.00 & 20.00	560	398.32	161.68	
16 tons	60.00 & 30.00	840	398.32	441.68	
Potatoes (Bulk harvested)					
12 tons	40.00 & 20.00	420	202.90	217.10	
12 tons	60.00 & 30.00	630	202.90	427.10	

	Yield	Price	Gross Revenue	Direct Costs	Gross Margin	
		$	$	$	$	$
9	Wheat U/S White Clover:					
	50 bus.	1.45	72.50	11.67	60.83)	52.07
	160 lbs	0.35	56.00	12.70	43.30)	
	50 bus.	1.45	72.50	11.67	60.83)	75.33
	320 lbs	0.35	112.00	22.18	89.82)	
	70 bus.	1.45	101.50	14.24	87.26)	65.28
	160 lbs	0.35	56.00	12.70	43.30)	
	70 bus.	1.45	101.50	14.24	87.26)	88.54
	320 lbs	0.35	112.00	22.18	89.82)	
10	Greenfeed					
				5.24		
11.	Rape (ex old grass)					
	700 lbs	0.075	52.00	27.40	25.10	
		0.15	105.00	27.40	77.60	
	1000 lbs	0.075	75.00	41.32	33.68	
		0.15	150.00	41.32	108.68	
	1400 lbs	0.075	105.00	54.71	50.29	
		0.15	210.00	54.71	155.29	
12	Chou Seed					
	300 lbs	0.30	90.00	32.50	57.50	
		0.50	150.00	32.50	117.50	
		1.00	300.00	32.50	267.50	
	500 lbs	0.30	150.00	41.63	108.37	
		0.50	250.00	41.63	208.37	
		1.00	500.00	41.63	458.37	
	700 lbs	0.30	210.00	50.99	159.01	
		0.50	350.00	50.99	299.01	
		1.00	700.00	50.99	649.01	

B	**PASTURE (5 year life)**	Gross Revenue
1	Establishment (ex fallow)	$14.11
	Maintenance	15.82
	Total Costs	29.93
	∴ per acre per annum	5.99
2.	Lucerne (7 year life)	
	Establishment (ex fallow)	$19.12
	∴ average establishment cost	2.74
	Annual maintenance	4.04
	∴ Annual Direct Costs	6.78
	Haymaking (120 bales/acre yield)	
(a)	Own Baling & Carting	
	Direct Costs	5.77
	Annual average cost of lucerne stand	6.78
	Total Costs	12.55
	∴ Cost per bale = $0.105	
(b)	Contract Baling & Carting	
	Direct Costs	32.70
	Annual average cost	16.78
	Total Costs	39.48
	∴ Cost per bale = $0.329	

	Yield	Price	Gross Revenue	Direct Costs	Gross Margin
		$	$	$	$
3	Lucerne Hay for Sale				
	(a) Own Baling & Carting				
	120	0.50	60	12.60	47.40
		0.60	72	12.60	59.40
		0.70	84	12.60	71.40

	Yield	Price	Gross Revenue	Direct Costs	Gross Margin
		$	$	$	$
	(b) Contract Baling & Carting				
	120	0.50	60	39.48	20.52
		0.60	72	39.48	32.52
		0.70	84	39.48	44.52
4	Lucerne Production for Dehydration				
	Non Irrigated Lucerne				
	10,000 lbs	10.00/ton	50.00	17.35	32.65
		11.00/ton	55.00	17.35	37.65
		12.00/ton	60.00	17.35	42.65
	12,000 lbs	10.00	60.00	17.35	42.65
		11.00	66.00	17.35	48.65
		12.00	72.00	17.35	54.65
	14,000 lbs	10.00	70.00	17.35	52.65
		11.00	77.00	17.35	59.65
		12.00	84.00	17.35	66.65
	Irrigated Lucerne				
	16,000 lbs	10.00	80.00	24.35	54.65
		11.00	88.00	24.35	62.65
		12.00	96.00	24.35	70.65
	18,000 lbs	10.00	90.00	24.35	64.65
		11.00	99.00	24.35	73.65
		12.00	108.00	24.35	82.65
	20,000 lbs	10.00	100.00	24.35	74.65
		11.00	110.00	24.35	84.65
		12.00	120.00	24.35	94.65
C	**SMALL SEEDS**				
1	White Clover Seed from Pasture				
	80 lbs	0.25/lb	20.00	5.20	14.80
		0.35	28.00	5.20	22.80
		0.40	32.00	5.20	26.80

	Yield	Price $	Gross Revenue $	Direct Costs $	Gross Margin $
	160 lbs	0.25/lb	40.00	10.01	29.99
		0.35	56.00	10.01	45.99
		0.40	64.00	10.01	53.99
	320 lbs	0.25	80.00	19.64	60.36
		0.35	112.00	19.64	92.36
		0.40	128.00	19.64	108.36
2	Manawa Ryegrass seed from Pasture				
	30 bus.	1.50/bus.	45.00	19.34	25.68
		2.00	60.00	19.34	40.68
		2.50	75.00	19.34	55.68
	40 bus.	1.50/bus.	60.00	23.92	36.08
		2.00	80.00	23.92	56.08
		2.50	100.00	23.92	76.08
	50 bus.	1.50/bus.	75.00	29.16	45.84
		2.00	100.00	29.16	70.84
		2.50	125.00	29.16	95.84
3	Ryegrass Straw				
	30 bales	0.20/bale	6.00	0.96	5.04
4	Cocksfoot (ex summer fallow, 5 year life)				
	100 lbs	0.20	20.00	17.01	2.99
		0.35	35.00	17.01	17.99
		0.50	50.00	17.01	32.99
	300 lbs	0.20	60.00	29.85	30.15
		0.35	105.00	29.85	75.15
		0.50	150.00	29.85	120.15
	500 lbs	0.20	100.00	42.60	57.40
		0.35	175.00	42.60	132.40
		0.50	250.00	42.60	207.40

D SHEEP

Unit	Stock Units	Prices	Gross Revenue	Direct Costs	Gross Margin per Ewe	Gross Margin perE.E.
1 Ewe Flock (Breeding own replacements)						
1 E		Low	6.49	0.66	5.83	5.05
+ repl.	1.154	Average	7.58	0.66	6.92	6.00
+ rams		High	8.76	0.66	8.10	7.02
2 Buying 2T replacements						
1 E		Low	7.34	2.65	4.69	4.63
+ rams	1.014	Average	8.53	2.65	5.88	5.80
		High	9.83	2.65	7.18	7.08
3 Ewe Flock (2 year ewes)						
1 E		Low	8.23	3.52	4.71	4.65
+ rams	1.014	Average	9.43	3.52	5.91	5.83
		High	10.75	3.52	7.23	7.13
4 Hoggets (Wintering)						
1 Hgt	0.66 (winter only)	Average	8.93	7.06	1.87	2.83
5 Ewes & Lambs All counted						
		Low	8.40	5.44	2.96	2.96
1 E	1.0	Average	9.03	5.44	3.59	3.59
	(winter only)	High	9.66	5.44	4.22	4.22

E MEAL BASED PIG PRODUCTION

	Yield	Price $	Gross Revenue $	Direct Costs $	Gross Margin $
1	Porker Production				
	81 lb	0.23/lb	18.63	12.87	5.76
2	Baconer Production				
	130 lb	0.22/lb	28.60	19.80	8.80

F BEEF CATTLE

	Calving %	Sale Price	Gross Revenue Per E.E.	Direct Costs Per E.E.	Gross Margin Per E.E.
Policy 1.	Breeding Store Yearlings				
	95%	Base	7.39	1.93	5.46
	85%	Base	6.56	1.93	4.63
	75%	Base	5.71	1.93	3.78
	95%	+$10	8.27	1.93	6.34
	95%	Base	7.39	1.93	5.46
	95%	–$10	6.50	1.93	4.57
	95%	–$20	5.74	1.93	3.81

Policy 2 Breeding Store Weaners

	Growth Rate		Gross Revenue Per E.E.	Direct Costs Per E.E.	Gross Margin Per E.E.
Steers	2½ = 660)		9.92	1.84	8.07
Heifers	2 = 540)				
Steers	2¼ = 600)		9.34	1.84	7.50
Heifers	1¾ = 480)				
Steers	2 = 540)		8.76	1.84	6.93
Heifers	1½ = 420)				
Steers	1¾ = 480)		8.17	1.84	6.33
Heifers	1¼ = 360)				
Steers	1½ = 420)		7.47	1.84	5.63
Heifers	1¼ = 360)				

Policy 3 Breeding & Fattening:

		9.16	1.94	7.22
Effect of Retaining weaner	North Island Schedule – $24.00			8.36
Bulls at 10% increased weight	South Island Schedule – $21.00			7.45

Policy 4 Fattening to 20 months

		Price $/100 lb	Gross Revenue Per E.E.	Direct Costs Per E.E.	Gross Margin Per E.E.
		28	39.49	22.93	16.60
		26	36.59	22.93	13.60
		24	33.86	22.93	10.90
		22	31.06	22.93	8.10
		20	28.23	22.93	5.30
		18	25.33	22.93	2.40
Effect of Purchase of Bull Beef @ 10% increase in weight, Same Purchase price	N.I.	24			14.30
	S.I.	21			9.70

Policy 5 Mated Heifers

			32.12	19.93	12.19

CONSOLIDATED INDEX

Purchase orders to: Accounts Office,
Lincoln College,
Canterbury,
New Zealand.