

ONTARIO TENDER FRUIT ESTABLISHMENT & PRODUCTION COSTS



Ontario
Tender Fruit
Growers



2023



Establishment and Production Costs for Tender Fruit in Ontario 2023 Economic Report

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Contact the Agricultural Information Contact Centre at 1-877-424-1300 or
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1. Introduction

The results presented in this Ontario publication serve as a general guide for evaluating the cost of establishing and producing tender fruit commodities in the province of Ontario in 2023 (peach, nectarine, plum, apricot and pear). This publication is not intended to be a definitive guide to production practices, but it is helpful in estimating the physical and financial requirements of comparable plantings. Specific production-related methods and procedures were adopted for this study, and these may not fit every situation. Production costs and returns for individual growers may differ; therefore, the results cannot be generalized to represent the population of tender fruit operations in Ontario. Production inputs, costs and returns are highly variable for any particular orchard operation due to case-specific:

- Capital, labour, and natural resources
- Crop yields
- Type and size of machinery
- Input prices
- Cultural practices
- Commodity prices (based on market price and quality)
- Operation size
- Management skills

Cost estimation also varies with the intended use of the enterprise budget itself. To avoid drawing unwarranted conclusions for any particular orchard, readers must closely examine the assumptions utilized in this report, and then adjust costs and/or returns as appropriate for their own orchard operation.

Growers that are interested in developing their own cost of production may find the following spreadsheets useful: www.ontario.ca/page/crops-and-livestock-budgeting-ontario.

Objectives

The tender fruit industry uses the cost of establishment and cost of production models extensively to determine the profitability of the industry in order to make business decisions and future planting plans. Growers can use the input costs as general guidelines to identify strengths and weaknesses in their own business.

Methods and procedures

The information used in this report was derived from previous economic reports, the Ontario Tender Fruit Growers, surveys with growers, and a collaboration of data from researchers, extension specialists and agribusiness.

Input costs were organized into variable and measurable fixed costs. Variable costs, for example include fertilizers, pesticides, hired labour, tractor and machine costs, and interest on operating capital.

Measurable fixed costs include interest on investment, depreciation and other overhead cost items such as a portion of utilities, equipment storage, insurance, accounting, farm vehicles and general maintenance.

Assumptions

Yield data was given as an attainable average obtained from commercial orchards, using best management practices.

The establishment period of the Peach orchard covers a 4 ½ year period: a half of a year for soil preparation, one year for planting and three years to grow the tree to full cropping potential. For High Density Pears, the establishment period was 7 years (Table 1).

The establishment costs will need to be recovered over the productive life of the orchard. An estimate of the annual cost to recover establishment costs is included in the Total Establishment Costs section of fresh market peach and high density pear. Fresh market peach was amortized over the remaining 15 years of orchard life and high density pear over the remaining 40 years of orchard life at a rate of interest of 4.0%.

In the pre-plant year of establishment, tile drainage and a small amount for laser leveling is included as a land improvement, and also included in the breakeven and profitability worksheet.

Table 1—Establishment period

Crop	Trees per Acre	Establishment Period	Training system
Peach - Fresh Market	242	4 ½ years	Open vase
Nectarines	242	4 ½ years	Open vase
Plum - European	201	6 ½ years	Central leader
Plum - Japanese	201	8 ½ years	Central leader
Apricot	201	8 ½ years	Open vase
Pear – High Density Fresh	908	7 ½ years	Central leader
Pear—Standard	201	8 ½ years	Central leader

High-Density Orchard Specifications—Pear

Architecture	Two-dimensional system (planar canopy)
Tree spacing	4 feet
Row spacing	12 feet
Trees per acre	908
Orchard size	80 acres
Trellis system	Four-wire vertical system. Trellis is 9 feet high, with 12-foot trees. The bottom wire is 12 inches from the ground with 32 inches between each wire
Irrigation system	Drip irrigation
Tree guards	Included
Permanent sod	Established between rows
Frost protection	Wind machine included (1 per 15 acres)

Hand Labour was charged at \$20.25 per hour which is comprised of the 2023 Seasonal Agricultural Worker Program (SAWP) rate plus benefits (Worker's Compensation, Employment Insurance, Canada Pension Plan and an allowance for additional costs of air flight, housing, and local transportation). Employer Health Tax is not included based on a 80-acre orchard payroll model.

Harvest (Picking) Labour was charged at \$22.30 per hour which is comprised of the 2023 SAWP wage rate plus benefits as above and includes vacation pay. Harvesting costs can be significantly affected by many variables from year to year such as fruit size, crop load and crop distribution.

Hired machine operator labour was charged at \$24.20 per hour including benefits.

Estimates on labour hours were based on grower surveys.

Machinery costs were calculated based on the purchase price for 2023, useful life, annual use and trade in value. Machinery and equipment costs were based on a commercial farm size of 80 acres. The 'Machine costs' column in each Operation Costs table includes fuel, maintenance and repair.

Cover Crops – Most growers cultivate their orchards and use an annual cover crop instead of using a permanent grass when the trees are mature.

Fuel costs were based on the size of each tractor, truck or self-propelled machine used in the production operation. The following farm-gate fuel prices were used: gasoline 1.35 cents/litre and diesel 1.35 cents/litre. Fuel costs are net of all 2023 Provincial and Federal rebates.

The interest rate applied to the operating capital of 7.7% was based on the prime lending rate plus one percent. Interest on operating capital is compounded annually until the orchard generates revenue to first pay down the accumulated interest and then the outstanding principal. Operating capital includes cost of materials, fuel, repairs, labour and other cash items but does not include farm overhead expenses.

Interest on investment was calculated at 4.0 %, which was the average interest rate paid by chartered banks on Guaranteed Investment Certificates.

Consulting fees were included but rates varied depending upon crop and whether it was full service or partial service. Consulting fees might include soil and /or leaf sampling as well as a full or partial pest monitoring service.

Irrigation costs were included as a variable cost for some of the tender fruit crops. Irrigation included both the variable and fixed costs associated with owning and operating overhead irrigation equipment. Information on the costs associated with drip irrigation is available and can be provided by OMAFRA.

Miscellaneous items used for some crops included foliar sprays, soil or leaf lab diagnostic costs, mulch, bees for pollination and bird control.

Food safety costs were included based on the following:

- Average audit price for a 1-day audit, including auditor travel expenses
- Annual audit certification program fee (option C: production, packing & storage—GFSI benchmarked)
- CanadaGap—Annual program fee
- CanadaGap— Fruit and Vegetable Growers of Canada annual fee

Note: Costs do not include any additional retail specific addendum requirements, costs of corrective actions, time grower spent preparing for audits and food safety procedures.

Cold storage costs for fresh market crops have been included under the fixed costs in the annual estimated costs of production. The fixed costs start in the first year of harvest to reflect the first year that cold storage would be built and used.

Packing costs were based on custom packing from MB16FV macro bins.

Gross Revenue Prices – are derived from marketing data collected by the Ontario Tender Fruit Growers for the 2023 crop year. Fresh market Ontario grown tender fruit prices are calculated net of shipper commission, service charges and containers.

Production Insurance was included for all commodities, with the exception of Apricots, based on Agricorn's 2023 Claim Prices/Premium Rates and at the 85% Enhanced Basic coverage level.

The contribution margin was obtained by subtracting the total variable costs from the gross revenue. Contribution Margin is the amount of funds that the crop contributes to cover fixed costs and provide returns for owner management and investment.

Due to rounding, figures may not add to total shown.

Items not included in the 2023 Economic Report

Land costs and carrying charges were not included as part of the establishment or production costs because of the extreme variance in land prices.

Land ownership and rental prices vary considerably from farm to farm depending upon road location, services, soil types, access to water and the potential for urban development or establishing a fruit market. For this reason, a space was provided for the user to insert land rental cost in the variable cost section and land ownership in the fixed cost section.

Existing trees may need to be removed prior to planting a new orchard. The cost to remove an existing orchard is estimated to be \$750 per acre, this cost is not included in the cost of production.

A management allowance was not included as a cost.

Other income stabilization programs were not calculated in the cost of production. It can be included in the individual grower's cost of production if applicable .

Tart cherry was not included due to lack of enough data to provide an industry average. Future COP updates will revisit whether tart cherry will be re-added.

Changes from the 2018 Economic Report

Yields improved for Fresh peach from 8 to 10 tons per acre, nectarines from 7.5 to 9.0 tons per acre and plums from 6 to 7 tons per acre.

Food safety costs were added.

The number of trees per acre for pear orchards were modified from 1,117 trees per acre to 908 trees per acre.

Summary

The assumptions reflect the current practices in the industry and do not necessarily represent recommendations from the contributors. Newer plantings of tender fruits may involve higher tree densities, dwarf rootstocks, alternative training systems, new cultivars and other innovative cultural practices.

For more information and resources, please visit:

Ontario Tender Fruit Growers – www.ontariotenderfruit.ca

Ontario Ministry of Agriculture, Food and Rural Affairs – ontario.ca/agriculture

The authors assume no liability or responsibility as a result of the reader relying or acting upon the information contained herein. Any use or misuse of the information is the sole responsibility of the reader.

2. Fresh Market Peach

Preplant Year

	Cost per Acre
	\$
VARIABLE COSTS	
Labour: machine operator, 4 hrs	97
Custom ploughing	38
Fertilizer 15-15-15, 50 kg	51
Cover crop seed	14
Machine repair, maintenance	37
Fuel	93
Consulting fees	100
Tile drainage	2682
Land Leveling	
Miscellaneous (soil test)	8
Interest on operating capital	120
Land rental	
Total Variable Costs	3240
FIXED COSTS	
Machine: depreciation	63
Machine: interest on investment	28
Other overhead	708
Land ownership	
Measurable Fixed Costs	799
TOTAL MEASURABLE COSTS	4039

Operation Costs

Operation costs	Labour Hours	Labour \$	Machine* \$	Fixed \$	Total \$
Machine Labour and Machine Costs					
Subsoiling (1x)	0.7	17	22	14	52
Discing (2x)	1.4	34	49	44	126
Cultivating (1x)	0.7	17	22	14	53
Fertilizing (1x)	0.7	17	22	17	56
Seeding Cover Crop (1x)	0.5	12	16	14	42
Total Machine Operator	4.0	97	130	102	329
* includes maintenance, fuel and repair					

Planting Year

	Cost per Acre
	\$
VARIABLE COSTS	
Labour: hand, 16 hrs	324
Labour: machine operator, 13.6 hrs	329
Trees (242 trees per acre)	3509
Custom Planting	484
Fertilizer 15-15-15, 50 kg	51
Insecticides	70
Fungicides	5
Herbicides	146
Cover crop seed	14
Machine repair, maintenance	153
Fuel	340
Interest on operating capital	708
Consulting fees	100
Irrigation	367
Miscellaneous (tree paint)	65
Land rental	
Total Variable Costs	6666
FIXED COSTS	
Machine: depreciation	219
Machine: interest on investment	98
Other overhead	1416
Land ownership	
Measurable Fixed Costs	1733
TOTAL MEASURABLE COSTS	8399

Operation Costs

Operation costs	Labour Hours	Labour \$	Machine* \$	Fixed \$	Total \$
Hand Labour					
Pruning	7	142			142
Weed Control - hoeing	3	61			61
Painting trees	6	122			122
Total Hand Labour	16	324			324
Machine Labour and Machine Costs					
Pick up trees	0.5	12	15	8	35
Discing (2x)	2.0	48	70	62	180
Cultivating (3x)	2.1	51	65	43	158
Fertilizing (1x)	0.7	17	22	17	56
Seeding cover crop (1x)	0.5	12	16	14	42
Mowing (3x)	2.1	51	78	59	187
Weed spraying (2x)	1.4	34	73	43	150
Pesticide spraying (4x)	1.6	39	69	59	167
Subsoiling/aerating (1x)	0.7	17	22	14	52
Orchard maintenance	2.0	48	65	36	149
Total Machine Operator	13.6	329	494	354	1177
* includes maintenance, fuel and repair					

Second Year

	Cost per Acre
No yield	\$
VARIABLE COSTS	
Labour: hand, 10 hrs	203
Labour: machine operator, 13.9 hrs	336
Trees (1% replacement)	82
Fertilizer 27-0-0, 50 kg	62
Fertilizer 0-0-60, 40 kg	40
Insecticides	106
Fungicides	23
Herbicides	146
Cover crop seed	14
Machine repair, maintenance	158
Fuel	351
Interest on operating capital	916
Consulting fees	100
Irrigation	367
Miscellaneous (leaf analysis)	5
Land rental	
Total Variable Costs	2910
FIXED COSTS	
Machine: depreciation	222
Machine: interest on investment	101
Other overhead	1416
Land ownership	
Measurable Fixed Costs	1739
TOTAL MEASURABLE COSTS	4649

Operation Costs

Operation costs	Labour Hours	Labour \$	Machine* \$	Fixed \$	Total \$
Hand Labour					
Pruning	10	203	203		
Total Hand Labour	10	203	203		
Machine Labour and Machine Costs					
Re-planting trees	1.0	24	33	18	75
Discing (1x)	0.7	17	24	22	63
Cultivating (3x)	1.4	34	43	28	106
Fertilizing (2x)	1.4	34	43	34	111
Seeding cover crop (1x)	0.5	12	16	14	42
Mowing (4x)	2.8	68	104	78	250
Weed spraying (2x)	1.4	34	73	43	150
Pesticide spraying (5x)	2.0	48	86	74	209
Subsoiling/aerating (1x)	0.7	17	22	14	52
Orchard maintenance	2.0	48	65	36	149
Total Machine Operator	13.9	336	510	362	1208
* includes maintenance, fuel and repair					

Third Year

	Cost per Acre
3.3 Ton Yield (33%)	\$
VARIABLE COSTS	
Labour: hand, 59.5 hrs	1261
Labour: machine operator, 23.45 hrs	567
Fertilizer 27-0-0, 75 kg	92
Fertilizer 0-0-60, 60 kg	60
Insecticides	284
Fungicides	194
Herbicides	146
Cover crop seed	14
Machine repair, maintenance	242
Fuel	559
Interest on operating capital	1402
Production insurance	258
Consulting fees	100
Irrigation	367
Packing	1056
Bins	185
Miscellaneous (leaf analysis)	5
Food safety	26
Land rental	
Total Variable Costs	6819
FIXED COSTS	
Machine: depreciation	328
Machine: interest on investment	150
Cold storage	331
Other overhead	1416
Land ownership	
Measurable Fixed Costs	2225
TOTAL MEASURABLE COSTS	9044
CONTRIBUTION MARGIN (No land costs included)	
Gross revenue (3.3 Ton x \$2033 per ton)	6709
Total variable costs	6819
Contribution margin	-110

Operation Costs

Operation costs	Labour Hours	Labour \$	Machine* \$	Fixed \$	Total \$
Hand Labour					
Pruning	15	304			304
Thinning	17	344			344
Harvest (picking)	28	613			613
Total Hand Labour	60	1261			1261
Machine Labour and Machine Costs					
Re-planting trees	1.0	24	33	18	75
Discing (1x)	0.5	12	17	16	45
Cultivating (3x)	2.1	51	65	43	158
Fertilizing (2x)	1.4	34	43	34	111
Seeding cover crop (1x)	0.7	17	23	19	59
Mowing (6x)	4.2	102	156	118	375
Weed spraying (2x)	1.4	34	73	43	150
Pesticide spraying (8x)	3.2	77	138	119	334
Distribute & collect containers	5.0	121	118	55	294
Delivery	1.3	30	49	22	101
Subsoiling/aerating (1x)	0.7	17	22	14	52
Orchard maintenance	2.0	48	65	36	149
Total Machine Operator	23.5	567	801	536	1904
* includes maintenance, fuel and repair					

Fourth Year

	Cost per Acre
6.6 Ton Yield (66%)	\$
VARIABLE COSTS	
Labour: hand, 119 hrs	2523
Labour: machine operator, 29.65 hrs	718
Fertilizer 27-0-0, 100 kg	123
Fertilizer 0-0-60, 80 kg	81
Insecticides	284
Fungicides	194
Herbicides	146
Cover crop seed	14
Machine repair, maintenance	278
Fuel	672
Interest on operating capital	1649
Production insurance	516
Consulting fees	100
Irrigation	367
Packing	2112
Bins	356
Miscellaneous (leaf analysis)	5
Food safety	26
Land rental	
Total Variable Costs	10163
FIXED COSTS	
Machine: depreciation	370
Machine: interest on investment	170
Cold storage	331
Other overhead	1416
Land ownership	
Measurable Fixed Costs	2287
TOTAL MEASURABLE COSTS	12450
Contribution margin (No land costs included)	
Gross revenue (6.6 Ton x \$2033 per ton)	13418
Total variable costs	10163
Contribution margin	3255

Operation Costs

Operation costs	Labour Hours	Labour \$	Machine* \$	Fixed \$	Total \$
Hand Labour					
Pruning	30	608			608
Thinning	34	689			689
Harvest (picking)	55	1227			1227
Total Hand Labour	119	2523			2523
Machine Labour and Machine Costs					
Re-planting trees	1.0	24	33	18	75
Discing (1x)	0.7	17	24	22	63
Cultivating (3x)	2.1	51	65	43	158
Fertilizing (2x)	1.4	34	43	34	111
Seeding cover crop (1x)	0.5	12	16	14	42
Mowing (6x)	4.2	102	156	118	375
Weed spraying (3x)	2.1	51	73	43	167
Pesticide spraying (8x)	3.2	77	138	119	334
Distribute & collect containers	9.3	224	218	102	544
Delivery	2.5	61	97	44	201
Subsoiling/aerating (1x)	0.7	17	22	14	52
Orchard maintenance	2.0	48	65	36	149
Total Machine Operator	29.7	718	950	605	2273
* includes maintenance, fuel and repair					

Total Establishment Cost

	Cost per Acre \$
Pre-plant	4039
Planting	8399
Second Year	4649
Third Year	6980
Fourth Year	8366
Total	32434

Excludes Board fees, harvest costs and does not include revenues for years 3 and 4.
Does not include land costs.

	Cost per Acre \$
Annual cost to recover establishment costs	1,702

(amortized over remaining 15 years of Orchard life)

Mature Orchard: Annual cost

	Cost per Acre
10 Ton Yield	\$
VARIABLE COSTS	
Labour: hand, 183 hrs	3819
Labour: machine operator, 34.7 hrs	840
Fertilizer 27-0-0, 125 kg	154
Muriate of potash, 100 kg	101
Insecticides	284
Fungicides	194
Herbicides	146
Cover crop seed	14
Machine repair, maintenance	314
Fuel	779
Interest on operating capital	895
Production insurance	782
Consulting fees	100
Irrigation	367
Packing	3200
Bins	528
Miscellaneous (leaf analysis)	5
Food safety	26
Land rental	
Total Variable Costs	12548
FIXED COSTS	
Machine: depreciation	414
Machine: interest on investment	190
Cold storage	331
Other overhead	1416
Land ownership	
Measurable Fixed Costs	2352
TOTAL MEASURABLE COSTS	14900
Contribution margin (No land costs included)	
Gross revenue (10 Ton x \$2033 per ton)	20330
Total variable costs	12548
Contribution margin	7782

Mature Orchard: Annual Operation Costs

Operation costs	Labour Hours	Labour \$	Machine* \$	Fixed \$	Total \$
Hand Labour					
Pruning	45	911			911
Thinning	50	1013			1013
Harvest (picking)	85	1896			1896
Raking Brush	3	61			61
Total Hand Labour	183	3819			3819
Machine Labour and Machine Costs					
Brush chopping	1.5	36	51	34	121
Discing (1x)	0.7	17	24	22	63
Cultivating (3x)	2.1	51	65	43	158
Fertilizing (2x)	1.4	34	43	34	111
Seeding cover crop (1x)	0.5	12	16	14	42
Mowing (6x)	4.2	102	156	118	375
Weed spraying (3x)	2.1	51	73	43	167
Pesticide spraying (8x)	3.2	77	138	119	334
Distribute & collect containers	12.5	303	294	138	734
Delivery	3.8	92	146	66	303
Subsoiling/aerating (1x)	0.7	17	22	14	52
Orchard maintenance	2.0	48	65	36	149
Total Machine Operator	34.7	840	1093	678	2611
* includes maintenance, fuel and repair					

Table 1. Break Even and Profitability Worksheet

10.0 ton/acre yield

Year	Yield %	Revenue	Variable Costs	Fixed Costs	Total Costs	Net Cash Flow	Accumulated Profit/Acre
Pre-plant	0%	0	3240	799	4039	-4039	-4039
Planting	0%	0	6666	1733	8399	-8399	-12438
2	0%	0	2910	1739	4649	-4649	-17087
3	33%	6709	6821	2225	9046	-2337	-19424
4	66%	13418	10165	2287	12452	966	-18459
5	100%	20330	13296	2352	15647	4683	-13776
6	100%	20330	12754	2352	15105	5225	-8551
7	100%	20330	12171	2352	14522	5808	-2743
8	100%	20330	11542	2352	13894	6436	3693
9	100%	20330	10866	2352	13217	7113	10806
10	100%	20330	10137	2352	12488	7842	18647
11	100%	20330	9352	2352	11704	8626	27274
12	100%	20330	8507	2352	10858	9472	36746

Breakeven in Year 8 (Does not include land costs)

3. Fresh Market High Density Pear

Preplant Year

	Cost per Acre
	\$
VARIABLE COSTS	
Labour: machine operator, 4.2 hrs	102
Custom ploughing	38
Fertilizer 15-15-15, 50 kg	51
Cover crop seed	14
Machine repair, maintenance	39
Fuel	98
Interest on operating capital	171
Consulting fees	100
Tile drainage	3,996
Land Leveling	
Miscellaneous (soil test)	8
Land rental	
Total Variable Costs	4,617
FIXED COSTS	
Machine: depreciation	66
Machine: interest on investment	30
Other overhead	708
Land ownership	
Measurable Fixed Costs	804
TOTAL MEASURABLE COSTS	5,421

Operation Costs

Operation Costs	Labour Hours	Labour \$	Machine* \$	Fixed \$	Total \$
Machine Labour and Machine Costs					
Subsoiling (1x)	0.7	17	22	14	52
Discing (2x)	1.4	34	49	44	126
Cultivating (1x)	0.7	17	22	14	53
Fertilizing (1x)	0.7	17	22	17	56
Seeding Cover Crop (1x)	0.7	17	23	19	59
Total Machine Operator	4.2	102	137	108	346
* includes maintenance, fuel and repair					

Pear - Preplant Year

Planting Year

	Cost per Acre
	\$
VARIABLE COSTS	
Labour: hand, 83.5 hrs	1,691
Labour: machine operator, 13.6 hrs	329
Trees (908 trees per acre)	10,896
Custom Planting	908
Fertilizer 15-15-15, 50 kg	51
Insecticides	158
Fungicides	99
Herbicides	146
Permanent Cover crop	24
Machine repair, maintenance	154
Fuel	334
Interest on operating capital	2,261
Consulting fees	100
Irrigation (initial setup)	1,515
Miscellaneous (leaf analysis, tree paint)	70
Land rental	
Trellis material and Installation	8,272
Total Variable Costs	27,007
FIXED COSTS	
Machine: depreciation	222
Machine: interest on investment	99
Other overhead	1,416
Land ownership	
Measurable Fixed Costs	1,737
TOTAL MEASURABLE COSTS	28,744

Operation Costs

Operation Costs	Labour Hours	Labour \$	Machine* \$	Fixed \$	Total \$
Hand Labour					
Pruning	3	51			51
Weed Control	2	41			41
Tree Painting	27	547			547
Tree Training	52	1,053			1,053
Total Hand Labour	83.5	1,691			1,691
Machine Labour and Machine Costs					
Pick up trees	1.0	24	30	15	70
Discing (2x)	1.4	34	49	44	126
Cultivating (3x)	2.1	51	65	43	158
Fertilizing (1x)	0.7	17	22	17	56
Seeding cover crop (1x)	0.5	12	16	14	42
Mowing (3x)	2.1	51	78	59	187
Weed spraying (2x)	1.4	34	71	43	148
Pesticide spraying (6x)	2.4	58	98	89	245
Orchard maintenance	2.0	48	65	36	149
Total Machine Operator	13.6	329	494	359	1,182
* includes maintenance, fuel and repair					

Second Year

	Cost per Acre
1 Ton Yield (2.5%)	\$
VARIABLE COSTS	
Labour: hand, 441 hrs	8,936
Labour: machine operator, 15.9 hrs	385
Trees (2% replacement)	303
Fertilizer 27-0-0, 30 kg	37
Fertilizer 0-0-60, 30 kg	30
Insecticides	158
Fungicides	99
Herbicides	146
Machine repair, maintenance	174
Fuel	398
Interest on operating capital	3,321
Production insurance	53
Consulting fees	100
Irrigation	345
Packing	260
Bins	53
Miscellaneous (leaf analysis)	5
Food safety	26
Land rental	
Total Variable Costs	14,830
FIXED COSTS	
Machine: depreciation	241
Machine: interest on investment	111
Other overhead	1,416
Land ownership	
Measurable Fixed Costs	1,768
TOTAL MEASURABLE COSTS	16,598
CONTRIBUTION MARGIN (no land costs included)	
Gross revenue (1 Ton x \$1821 per ton)	1,821
Total variable costs	14,830
Contribution margin	(13,009)

Operation Costs

Operation Costs	Labour Hours	Labour \$	Machine* \$	Fixed \$	Total \$
Hand Labour					
Pruning	8	162			162
Tree Training	430	8,708			8,708
Harvest (picking)	3	67			67
Total Hand Labour	441	8,936			8,936
Machine Labour and Machine Costs					
Re-planting trees	2.0	48	66	37	151
Cultivating (2x)	1.4	34	43	28	106
Fertilizing (2x)	1.4	34	43	34	111
Seeding permanent cover (1x)	0.5	12	16	14	42
Mowing (4x)	2.8	68	104	78	250
Weed spraying (2x)	1.4	34	65	43	142
Pesticide spraying (6x)	2.4	58	92	89	239
Distribute & collect containers	1.0	24	29	14	67
Delivery	1.0	24	49	22	95
Orchard maintenance	2.0	48	65	36	149
Total Machine Operator	15.9	385	572	395	1,352
* includes maintenance, fuel and repair					

Third Year

	Cost per Acre
5.5 Ton Yield (22%)	\$
VARIABLE COSTS	
Labour: hand, 83 hrs	1,744
Labour: machine operator, 16.4 hrs	397
Trees (1% replacement)	151
Fertilizer 27-0-0, 40 kg	49
Fertilizer 0-0-60, 40 kg	40
Insecticides	253
Fungicides	158
Herbicides	146
Machine repair, maintenance	179
Fuel	421
Interest on operating capital	2,925
Production insurance	470
Consulting fees	100
Irrigation	345
Packing	1,430
Bins	251
Miscellaneous (leaf analysis, 2 hives)	205
Food safety	26
Land rental	
Total Variable Costs	9,289
FIXED COSTS	
Machine: depreciation	237
Machine: interest on investment	110
Cold storage	331
Other overhead	1,416
Land ownership	
Measurable Fixed Costs	2,094
TOTAL MEASURABLE COSTS	11,383
CONTRIBUTION MARGIN (no land costs included)	
Gross revenue (5.5 Ton x \$1821 per ton)	10,016
Total variable costs	9,289
Contribution margin	726

Operation Costs

Operation Costs	Labour Hours	Labour \$	Machine* \$	Fixed \$	Total \$
Hand Labour					
Pruning	12	243			243
Tree Training	30	608			608
Thinning	10	203			203
Harvest (picking)	31	691			691
Total Hand Labour	83	1,744			1,744
Machine Labour and Machine Costs					
Re-planting trees	1.0	24	33	18	75
Fertilizing (2x)	1.4	34	43	34	111
Mowing (4x)	2.8	68	104	78	250
Weed spraying (2x)	1.4	34	65	43	142
Pesticide spraying (6x)	2.4	58	92	89	239
Distribute & collect containers	3.4	82	100	47	229
Delivery	2.0	48	97	44	189
Orchard maintenance	2.0	48	65	36	149
Total Machine Operator	16.4	397	599	389	1,386
* includes maintenance, fuel and repair					

Fourth Year

	Cost per Acre
9 Ton Yield (36%)	\$
VARIABLE COSTS	
Labour: hand, 204.5 hrs	4,246
Labour: machine operator, 20.9 hrs	506
Trees (1% replacement)	151
Fertilizer 27-0-0, 50 kg	62
Fertilizer 0-0-60, 50 kg	50
Insecticides	533
Fungicides	339
Chemical thinning	254
Herbicides	146
Machine repair, maintenance	221
Fuel	520
Interest on operating capital	4,013
Production insurance	769
Consulting fees	100
Irrigation	345
Packing	2,340
Bins	396
Miscellaneous (leaf analysis, 2 hives)	205
Food safety	26
Land rental	
Total Variable Costs	15,222
FIXED COSTS	
Machine: depreciation	292
Machine: interest on investment	137
Cold storage	331
Other overhead	1,416
Land ownership	
Measurable Fixed Costs	2,176
TOTAL MEASURABLE COSTS	17,398
CONTRIBUTION MARGIN (no land costs included)	
Gross revenue (9 Ton x \$1821 per ton)	16,389
Total variable costs	15,222
Contribution margin	1,167

Operation Costs

Operation Costs	Labour Hours	Labour \$	Machine* \$	Fixed \$	Total \$
Hand Labour					
Pruning	16	314			314
Tree training	122	2,471			2,471
Thinning	16	324			324
Harvest (picking)	51	1,137			1,137
Total Hand Labour	204.5	4,246			4,246
Machine Labour and Machine Costs					
Fertilizing (2x)	1.4	34	43	34	111
Mowing (4x)	2.8	68	104	78	250
Weed spraying (3x)	2.1	51	65	43	159
Pesticide spraying (10x)	4.0	97	153	148	398
Distribute & collect containers	5.6	136	165	77	377
Delivery	3.0	73	146	66	284
Orchard maintenance	2.0	48	65	36	149
Total Machine Operator	20.9	506	741	483	1,729
* includes maintenance, fuel and repair					

Fifth Year

	Cost per Acre
14.25 Ton Yield (57%)	\$
VARIABLE COSTS	
Labour: hand, 475 hrs	9,779
Labour: machine operator, 26.8 hrs	649
Fertilizer 27-0-0, 75 kg	92
Fertilizer 0-0-60, 60 kg	60
Insecticides	533
Fungicides	339
Chemical thinning	254
Herbicides	146
Machine repair, maintenance	279
Fuel	679
Interest on operating capital	5,789
Production insurance	1,218
Consulting fees	100
Irrigation	345
Packing	3,705
Bins	634
Miscellaneous (leaf analysis, 2 hives)	205
Food safety	26
Land rental	
Total Variable Costs	24,831
FIXED COSTS	
Machine: depreciation	356
Machine: interest on investment	168
Cold storage	331
Other overhead	1,416
Land ownership	
Measurable Fixed Costs	2,271
TOTAL MEASURABLE COSTS	27,102
CONTRIBUTION MARGIN (no land costs included)	
Gross revenue (14.25 Ton x \$1821 per ton)	25,949
Total variable costs	24,831
Contribution margin	1,118

Operation Costs

Operation Costs	Labour Hours	Labour \$	Machine* \$	Fixed \$	Total \$
Hand Labour					
Pruning	16	324			324
Tree training	358	7,250			7,250
Thinning	22	446			446
Harvest (picking)	78	1,739			1,739
Raking brush	1	20			20
Total Hand Labour	475	9,779			9,779
Machine Labour and Machine Costs					
Fertilizing (2x)	1.4	34	43	34	111
Mowing (5x)	3.5	85	130	98	312
Weed spraying (3x)	2.1	51	65	43	159
Pesticide spraying (10x)	4.0	97	153	148	398
Distribute & collect containers	8.8	213	259	121	593
Delivery	5.0	121	243	109	473
Orchard maintenance	2.0	48	65	36	149
Total Machine Operator	26.8	649	958	590	2,197
* includes maintenance, fuel and repair					

Sixth Year

	Cost per Acre
18.75 Ton Yield (75%)	\$
VARIABLE COSTS	
Labour: hand, 255 hrs	5,445
Labour: machine operator, 32.3 hrs	782
Fertilizer 27-0-0, 85 kg	105
Fertilizer 0-0-60, 70 kg	71
Insecticides	533
Fungicides	339
Chemical thinning	254
Herbicides	146
Machine repair, maintenance	348
Fuel	819
Interest on operating capital	5,532
Production insurance	1,603
Consulting fees	100
Irrigation	345
Packing	4,875
Bins	832
Miscellaneous (leaf analysis, 2 hives)	205
Food safety	26
Land rental	
Total Variable Costs	22,359
FIXED COSTS	
Machine: depreciation	434
Machine: interest on investment	203
Cold storage	331
Other overhead	1,416
Land ownership	
Measurable Fixed Costs	2,384
TOTAL MEASURABLE COSTS	24,743
CONTRIBUTION MARGIN (no land costs included)	
Gross revenue (18.75 Ton x \$1821 per ton)	34,144
Total variable costs	22,359
Contribution margin	11,785

Operation Costs

Operation Costs	Labour Hours	Labour \$	Machine* \$	Fixed \$	Total \$
Hand Labour					
Pruning	22	446			446
Tree training	53	1,073			1,073
Thinning	41	830			830
Harvest (picking)	137	3,055			3,055
Raking brush	2	41			41
Total Hand Labour	255	5,445			5,445
Machine Labour and Machine Costs					
Summer hedging	1.0	24	52	46	122
Fertilizing (2x)	1.4	34	43	34	111
Mowing/brush chopping (6x)	4.2	102	156	118	375
Weed spraying (3x)	2.1	51	65	43	159
Pesticide spraying (10x)	4.0	97	153	148	398
Distribute & collect containers	11.6	281	341	160	782
Delivery	6.0	145	292	131	568
Orchard maintenance	2.0	48	65	36	149
Total Machine Operator	32.3	782	1,167	716	2,665
* includes maintenance, fuel and repair					

Seventh Year

	Cost per Acre
23.125 Ton Yield (93%)	\$
VARIABLE COSTS	
Labour: hand, 203 hrs	4,392
Labour: machine operator, 37 hrs	895
Fertilizer 27-0-0, 100 kg	123
Fertilizer 0-0-60, 80 kg	81
Insecticides	533
Fungicides	339
Chemical thinning	254
Herbicides	146
Machine repair, maintenance	394
Fuel	950
Interest on operating capital	4,700
Production insurance	1,988
Consulting fees	100
Irrigation	345
Packing	6,013
Bins	1,030
Miscellaneous (leaf analysis, 2 hives)	205
Food safety	26
Land rental	
Total Variable Costs	22,513
FIXED COSTS	
Machine: depreciation	482
Machine: interest on investment	226
Cold storage	331
Other overhead	1,416
Land ownership	
Measurable Fixed Costs	2,455
TOTAL MEASURABLE COSTS	24,968
CONTRIBUTION MARGIN (no land costs included)	
Gross revenue (23.125 Ton x \$1821 per ton)	42,111
Total variable costs	22,513
Contribution margin	19,598

Operation Costs

Operation Costs	Labour Hours	Labour \$	Machine* \$	Fixed \$	Total \$
Hand Labour					
Pruning	22	446			446
Tree Training	0	-			-
Thinning	41	830			830
Harvest (picking)	137	3,055			3,055
Raking Brush	3	61			61
Total Hand Labour	203	4,392			4,392
Machine Labour and Machine Costs					
Summer hedging	1.0	24	52	46	122
Fertilizing (2x)	1.4	34	43	34	111
Mowing/brush chopping (6x)	4.2	102	156	118	375
Weed spraying (3x)	2.1	51	65	43	159
Pesticide spraying (10x)	4.0	97	153	148	398
Distribute & collect containers	14.3	346	421	197	964
Delivery	8.0	194	389	175	758
Orchard maintenance	2.0	48	65	36	149
Total Machine Operator	37.0	895	1,344	797	3,036
* includes maintenance, fuel and repair					

Total Establishment Cost

	Cost per Acre
	\$
TOTAL ESTABLISHMENT COST	
Pre-plant	5,421
Planting	28,744
Year 2	16,109
Year 3	8,843
Year 4	13,259
Year 5	20,591
Year 6	15,462
Year 7	14,179
Total Establishment Cost	122,609

Excludes Board fees, harvest costs and does not include revenues for years 2 to 7.
Does not include land costs.

	Cost per Acre \$
Annual cost to recover establishment costs	1,538

(amortized over remaining 40 years of Orchard life)

Mature Orchard: Annual Costs

	Cost per Acre
25 Ton Yield (100%)	\$
VARIABLE COSTS	
Labour: hand, 203 hrs	4,392
Labour: machine operator, 38.2 hrs	924
Fertilizer 27-0-0, 115 kg	141
Fertilizer 0-0-60, 90 kg	91
Insecticides	533
Fungicides	339
Chemical thinning	254
Herbicides	146
Machine repair, maintenance	401
Fuel	978
Interest on operating capital	1,434
Production insurance	2,137
Consulting fees	100
Irrigation	345
Packing	6,500
Bins	1,109
Miscellaneous (leaf analysis, 2 hives)	205
Food safety	26
Land rental	
Total Variable Costs	20,055
FIXED COSTS	
Machine: depreciation	492
Machine: interest on investment	231
Cold storage	331
Other overhead	1,416
Land ownership	
Measurable Fixed Costs	2,470
TOTAL MEASURABLE COSTS	22,525
CONTRIBUTION MARGIN (no land costs included)	
Gross revenue (25 Ton x \$1821 per ton)	45,525
Total variable costs	20,055
Contribution margin	25,470

Mature Orchard: Annual Operation Costs

Operation Costs	Labour Hours	Labour \$	Machine* \$	Fixed \$	Total \$
Hand Labour					
Pruning	22	446			446
Tree training	0	-			-
Thinning	41	830			830
Harvest (picking)	137	3,055			3,055
Raking brush	3	61			61
Total Hand Labour	203	4,392			4,392
Machine Labour and Machine Costs					
Summer hedging	1.0	24	52	46	122
Fertilizing (2x)	1.4	34	43	34	111
Mowing/brush chopping (6x)	4.2	102	156	118	375
Weed spraying (3x)	2.1	51	65	43	159
Pesticide spraying (10x)	4.0	97	153	148	398
Distribute & collect containers	15.5	375	456	214	1,045
Delivery	8.0	194	389	175	758
Orchard maintenance	2.0	48	65	36	149
Total Machine Operator	38.2	924	1,379	814	3,117
* includes maintenance, fuel and repair					

Table 2. Break Even and Profitability Worksheet

Year	Yield %	Revenue	Variable Costs	Fixed Costs	Total Costs	Net Cash Flow	Accumulated Profit/Acre
Pre-plant	0%	-	4,617	804	5,421	(5,421)	(5,421)
Planting	0%	-	27,007	1,737	28,744	(28,744)	(34,165)
2	3%	1,821	14,830	1,768	16,598	(14,777)	(48,942)
3	22%	10,016	10,291	2,094	12,385	(2,369)	(51,311)
4	36%	16,389	15,529	2,176	17,706	(1,317)	(52,628)
5	57%	25,949	23,900	2,271	26,172	(222)	(52,850)
6	75%	34,144	21,357	2,384	23,740	10,403	(42,447)
7	93%	42,111	21,433	2,455	23,888	18,222	(24,225)
8	100%	45,525	20,712	2,470	23,182	22,343	(1,882)
9	100%	45,525	18,801	2,470	21,271	24,254	22,372
10	100%	45,525	16,744	2,470	19,214	26,311	48,684
11	100%	45,525	14,528	2,470	16,997	28,528	77,211
12	100%	45,525	12,141	2,470	14,611	30,914	108,126
Breakeven in Year 9 (Does not include land costs)							

4. Other Tender Fruit—Annual Costs

Nectarine

	Cost per Acre
9.0 Ton Yield	\$
VARIABLE COSTS	
Labour: hand, 163 hrs	3444
Labour: machine operator, 34 hrs	823
Fertilizer 27-0-0, 125 kg	154
Muriate of potash, 100 kg	101
Insecticides	284
Fungicides	194
Herbicides	146
Cover crop seed	24
Machine repair, maintenance	314
Fuel	779
Interest on operating capital	847
Production insurance	1002
Consulting fees	100
Irrigation	367
Packing	3240
Miscellaneous (leaf analysis)	5
Food safety	26
Land rental	
Total Variable Costs	11851
FIXED COSTS	
Machine: depreciation	414
Machine: interest on investment	190
Cold storage	331
Other overhead	1416
Land ownership	
Measurable Fixed Costs	2352
TOTAL MEASURABLE COSTS	14203
Contribution margin (No land costs included)	
Gross revenue (9.0 Ton x \$2537/ton)	22833
Total variable costs	11851
Contribution margin	10982

4. Other Tender Fruit—Annual Costs

Nectarine

Operation Costs

Operation costs	Labour Hours	Labour \$	Machine* \$	Fixed \$	Total \$
Hand Labour					
Pruning	45	911			911
Thinning	45	911			911
Harvest (picking)	70	1561			1561
Raking Brush	3	61			61
Total Hand Labour	163	3444			3444
Machine Labour and Machine Costs					
Brush chopping	1.5	36	51	34	121
Discing (1x)	0.7	17	24	22	63
Cultivating (3x)	2.1	51	65	43	158
Fertilizing (2x)	1.4	34	43	34	111
Seeding cover crop (1x)	0.5	12	16	14	42
Mowing (6x)	4.2	102	156	118	375
Weed spraying (3x)	2.1	51	73	43	167
Pesticide spraying (8x)	3.2	77	138	119	334
Distribute & collect containers	12.0	290	294	138	722
Delivery	3.6	87	146	66	299
Subsoiling/aerating (1x)	0.7	17	22	14	52
Orchard maintenance	2.0	48	65	36	149
Total Machine Operator	34.0	823	1093	678	2594
* includes maintenance, fuel and repair					

Japanese Plum

	Cost per Acre
7 Ton Yield	\$
VARIABLE COSTS	
Labour: hand, 210 hrs	4492
Labour: machine operator, 30.2 hrs	731
Fertilizer 27-0-0, 125 kg	154
Muriate of potash, 100 kg	101
Insecticides	200
Fungicides	102
Herbicides	146
Cover crop seed	24
Machine repair, maintenance	272
Fuel	697
Interest on operating capital	841
Production insurance	1240
Consulting fees	50
Irrigation	345
Packing	2240
Miscellaneous (leaf analysis, 1 hive)	105
Food safety	26
Land rental	
Total Variable Costs	11768
FIXED COSTS	
Machine: depreciation	358
Machine: interest on investment	165
Cold storage	331
Other overhead	1416
Land ownership	
Measurable Fixed Costs	2269
TOTAL MEASURABLE COSTS	14037
CONTRIBUTION MARGIN (No land costs included)	
Gross revenue (7 Ton x \$3297 per ton)	23079
Total variable costs	11768
Contribution margin	11311

Operation Costs

Operation costs	Labour Hours	Labour \$	Machine* \$	Fixed \$	Total \$
Hand Labour					
Pruning	60	1215			1215
Thinning	30	608			608
Harvest (picking)	117	2609			2609
Raking Brush	3	61			61
Total Hand Labour	210	4492			4492
Machine Labour and Machine Costs					
Brush chopping	1.7	41	58	38	137
Discing (1x)	0.7	17	24	22	63
Cultivating (2x)	1.4	34	43	28	106
Fertilizing (2x)	1.4	34	43	34	111
Seeding cover crop (1x)	0.5	12	16	14	42
Mowing (4x)	2.8	68	104	78	250
Weed spraying (3x)	2.1	51	73	43	167
Pesticide spraying (6x)	2.4	58	104	89	251
Distribute & collect containers	11.7	283	294	138	715
Delivery	3.5	85	146	66	296
Subsoiling/aerating (1x)	0.0	0	0	0	0
Orchard maintenance	2.0	48	65	36	149
Total Machine Operator	30.2	731	970	586	2287
* includes maintenance, fuel and repair					

European Plum

	Cost per Acre
7 Ton Yield	\$
VARIABLE COSTS	
Labour: hand, 156 hrs	3350
Labour: machine operator, 31.7 hrs	767
Fertilizer 27-0-0, 125 kg	154
Muriate of potash, 100 kg	101
Insecticides	263
Fungicides	134
Herbicides	146
Cover crop seed	24
Machine repair, maintenance	296
Fuel	736
Interest on operating capital	765
Production insurance	1204
Consulting fees	50
Irrigation	345
Packing	2240
Miscellaneous (leaf analysis, 1 hive)	105
Food safety	26
Land rental	
Total Variable Costs	10707
FIXED COSTS	
Machine: depreciation	389
Machine: interest on investment	178
Cold storage	331
Other overhead	1416
Land ownership	
Measurable Fixed Costs	2314
TOTAL MEASURABLE COSTS	13020
CONTRIBUTION MARGIN (No land costs included)	
Gross revenue (7 Ton x \$3075 per ton)	21525
Total variable costs	10707
Contribution margin	10818

Operation Costs

Operation costs	Labour Hours	Labour \$	Machine* \$	Fixed \$	Total \$
Hand Labour					
Pruning	48	972			972
Thinning	12	243			243
Harvest (picking)	93	2074			2074
Raking Brush	3	61			61
Total Hand Labour	156	3350			3350
Machine Labour and Machine Costs					
Brush chopping	1.5	36	51	34	121
Discing (1x)	0.7	17	24	22	63
Cultivating (2x)	1.4	34	43	28	106
Fertilizing (2x)	1.4	34	43	34	111
Seeding cover crop (1x)	0.5	12	16	14	42
Mowing (6x)	4.2	102	156	118	375
Weed spraying (3x)	2.1	51	73	43	167
Pesticide spraying (7x)	2.8	68	121	104	293
Distribute & collect containers	11.6	281	294	138	713
Delivery	3.5	85	146	66	296
Subsoiling/aerating (1x)	0.0	0	0	0	0
Orchard maintenance	2.0	48	65	36	149
Total Machine Operator	31.7	767	1032	636	2435
* includes maintenance, fuel and repair					

Apricot

	Cost per Acre
6 Ton Yield	\$
VARIABLE COSTS	
Labour: hand, 141 hrs	2999
Labour: machine operator, 27.8 hrs	673
Fertilizer 27-0-0, 125 kg	154
Muriate of potash, 100 kg	101
Insecticides	200
Fungicides	102
Herbicides	146
Cover crop seed	24
Machine repair, maintenance	270
Fuel	693
Interest on operating capital	594
Consulting fees	50
Irrigation	345
Packing	1920
Miscellaneous (leaf analysis)	5
Food safety	26
Land rental	
Total Variable Costs	8302
FIXED COSTS	
Machine: depreciation	355
Machine: interest on investment	163
Cold storage	331
Other overhead	1416
Land ownership	
Measurable Fixed Costs	2265
TOTAL MEASURABLE COSTS	10567
CONTRIBUTION MARGIN (No land costs included)	
Gross revenue (6 ton x \$5447 per ton)	32682
Total variable costs	8302
Contribution margin	24380

Operation Costs

Operation costs	Labour Hours	Labour \$	Machine* \$	Fixed \$	Total \$
Hand Labour					
Pruning	48	972			972
Thinning	20	405			405
Harvest (picking)	70	1561			1561
Raking Brush	3	61			61
Total Hand Labour	141	2999			2999
Machine Labour and Machine Costs					
Brush chopping	1.5	36	51	34	121
Discing (1x)	0.7	17	24	22	63
Cultivating (2x)	1.4	34	43	28	106
Fertilizing (2x)	1.4	34	43	34	111
Seeding cover crop (1x)	0.5	12	16	14	42
Mowing (4x)	2.8	68	104	78	250
Weed spraying (3x)	2.1	51	73	43	167
Pesticide spraying (6x)	2.4	58	104	89	251
Distribute & collect containers	10.0	242	294	138	674
Delivery	3.0	73	146	66	284
Subsoiling/aerating (0x)	0.0	0	0	0	0
Orchard maintenance	2.0	48	65	36	149
Total Machine Operator	27.8	673	963	582	2218
* includes maintenance, fuel and repair					

Fresh Market Standard Pear

	Cost per Acre
8 Ton Yield	\$
VARIABLE COSTS	
Labour: hand, 133 hrs	2806
Labour: machine operator, 19.8 hrs	479
Fertilizer 27-0-0, 125 kg	154
Muriate of potash, 100 kg	101
Insecticides	533
Fungicides	339
Herbicides	146
Cover crop seed	0
Machine repair, maintenance	245
Fuel	520
Interest on operating capital	673
Production insurance	684
Consulting fees	100
Irrigation	345
Packing	2080
Miscellaneous (leaf analysis, 2 hives)	205
Food safety	26
Land rental	
Total Variable Costs	9435
FIXED COSTS	
Machine: depreciation	307
Machine: interest on investment	143
Cold storage	331
Other overhead	1416
Land ownership	
Measurable Fixed Costs	2197
TOTAL MEASURABLE COSTS	11632
CONTRIBUTION MARGIN (No land costs included)	
Gross revenue (8 Ton x \$1821 per ton)	14568
Total variable costs	9435
Contribution margin	5133

Operation Costs

Operation costs	Labour Hours	Labour \$	Machine* \$	Fixed \$	Total \$
Hand Labour					
Pruning	50	1013			1013
Thinning	25	506			506
Harvest (picking)	55	1227			1227
Raking Brush	3	61			61
Total Hand Labour	133	2806			2806
Machine Labour and Machine Costs					
Brush chopping	1.5	36	51	34	121
Fertilizing (2x)	1.4	34	43	34	111
Mowing (6x)	4.2	102	156	118	375
Weed spraying (3x)	2.1	51	73	43	167
Pesticide spraying (9x)	3.6	87	173	148	408
Distribute bins	2.0	48	59	28	135
Delivery	3.0	73	146	66	284
Orchard maintenance	2.0	48	65	36	149
Total Machine Operator	19.8	479	765	506	1750
* includes maintenance, fuel and repair					