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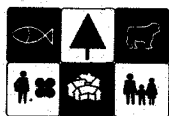
# Analyzing the Orchard Enterprise



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## ANALYZING THE ORCHARD ENTERPRISE

Samuel M. Doran and A. Gene Nelson

No two orchard enterprises are alike. They differ in topography, location, and climatic conditions. Horticulturally, they differ because of the nature of the crop, the varieties involved, tree age and spacing, and problems with soil, water, and pests. They also differ because of the availability of labor and the market for which the crop is being produced. Each of these many factors has an effect on the operation and management of an orchard, its costs, and the annual income.

Orchards are also changed from time to time. Old trees are replaced with different types of fruit or newer varieties. Many orchards are being enlarged. New machinery and different production practices are developed and adopted. As a result, orchardists periodically need to determine the effect of such changes.

Analyzing an orchard operation is more difficult than analyzing an annual cropping operation, but it may also be more important. Many years are required to bring an orchard into profitable production. Practices carried out during the establishment of an orchard may affect that orchard for the next 20 years or more. Therefore, the manager needs to determine the effect of current and previous operational practices on each block, or enterprise, that makes up the total orchard.

The purpose of this handbook is to provide a step-by-step procedure for analyzing orchard operations using a computerized analysis program.<sup>1/</sup> This program can be used to analyze the entire orchard, or the orchard can be divided into various fruit and nut enterprises for separate analysis. Also, each orchard block can be analyzed as a separate enterprise.

Normally a group leader, such as a Cooperative Extension Service county agent, assembles several growers with similar orchards to study the costs and returns of their orchard enterprises. The participants indicate the physical and

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The authors acknowledge the leadership of Manning Becker, Extension Farm Management Specialist, Oregon State University, in the development of this program, and also the helpful comments of several orchard growers and county extension agents.

<sup>1/</sup> The services of this program are available through Extension Farm Management, Department of Agricultural Economics, Oregon State University, Corvallis, 97331.

financial information for each enterprise they want to analyze. The information is recorded on the Orchard Analysis Input Form (see pages 3-4). Data from similar operations are forwarded for simultaneous processing. As a result, each grower gets a report (see pages 12-13) that has an analysis of his operation and average data for the participating orchardists in his group.

The two-page analysis report for each enterprise summarizes the capital invested, annual production costs, annual income, and net returns. It allows the grower to compare the figures for his operation with average figures for similar operations. Comparisons of the physical and financial factors are possible on a per acre basis and on a per unit of production basis.

The comparisons help the grower diagnose his production and management problems by revealing the strong points of the enterprise and those weak points needing attention. By analyzing his variation from the average, the grower has a better basis for deciding about changes needed in his operation. The grower can also compare the various orchard enterprises which comprise his business and make year-to-year comparisons.

Individual data from the cooperating orchardists are identified only by an orchard number and appear only on the report received by that grower. This procedure maintains the confidential aspects of data from individual orchards.

The first section of this handbook provides detailed instructions for completing the input forms. Suggestions about interpreting and using the resultant analysis report are provided in the second section of the handbook.

ORCHARD ANALYSIS INPUT FORM

Orchard number 208

Crop year 1971

Name JOHN GROWER

Enterprise APPLE ORCHARD

Address ROUTE 5

Variety RED DELICIOUS

TREETOWN, OR 97000

County FRUIT COUNTY

(Enter whole numbers)

Land in orchard 1-1  acres  
 Number of trees 1-2  trees  
 Percent of maximum bearing capacity\* 1-3  %

Total Labor Costs by Activity

	Operator Labor				Hired Labor			
Pruning and planting	1-4	\$	<input type="text" value="1700"/>		1-5	\$	<input type="text" value="2100"/>	
Frost control	1-6	\$	<input type="text"/>	<input type="text"/>	1-7	\$	<input type="text"/>	<input type="text"/>
Spraying	1-8	\$	<input type="text" value="800"/>		2-1	\$	<input type="text"/>	<input type="text"/>
Tillage and mowing	2-2	\$	<input type="text" value="350"/>		2-3	\$	<input type="text"/>	<input type="text"/>
Thinning	2-4	\$	<input type="text"/>	<input type="text"/>	2-5	\$	<input type="text" value="3870"/>	
Propping and trellising	2-6	\$	<input type="text" value="300"/>		2-7	\$	<input type="text" value="800"/>	
Irrigation	2-8	\$	<input type="text" value="1500"/>		3-1	\$	<input type="text"/>	<input type="text"/>
Picking	3-2	\$	<input type="text"/>	<input type="text"/>	3-3	\$	<input type="text" value="8850"/>	
Other harvest	3-4	\$	<input type="text" value="500"/>		3-5	\$	<input type="text" value="1100"/>	
Miscellaneous	3-6	\$	<input type="text" value="2600"/>		3-7	\$	<input type="text"/>	<input type="text"/>
Additional labor costs (not allocated above)	3-8	\$	<input type="text"/>	<input type="text"/>	3-8	\$	<input type="text"/>	<input type="text"/>

Costs of Chemicals and Spray Materials

Insect and disease control materials	4-1	\$	<input type="text" value="2675"/>
Weed control materials	4-2	\$	<input type="text" value="300"/>
Hormone chemicals (thinning, stop-drop, etc.)	4-3	\$	<input type="text" value="175"/>
Other chemicals (nutrition, pest control, etc.)	4-4	\$	<input type="text"/>

\* If all the trees in the orchard are at the age of maximum production, this would be 100 percent. This index is used to describe the present productive capacity of the orchard.

Rental Charges

Bee rental	4-5 \$	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Land and building rental	4-6 \$	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Machine rental	4-7 \$	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

Other Purchases

Fertilizer	4-8 \$	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Frost control fuels	5-1 \$	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Fuel, oil, and grease	5-2 \$	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Irrigation water	5-3 \$	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Field supplies	5-4 \$	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Operating overhead	5-5 \$	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

Repair Costs

Building repairs	5-6 \$	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Machinery and equipment repairs	5-7 \$	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

Taxes

Land taxes	5-8 \$	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Building taxes	6-1 \$	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Personal property taxes	6-2 \$	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

Depreciation

Tree depreciation	6-3 \$	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Building depreciation	6-4 \$	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Machinery and equipment depreciation	6-5 \$	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

Investment

Land investment	6-6 \$	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Tree investment	6-7 \$	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Building investment	6-8 \$	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Machinery, equipment, and supplies investment	7-1 \$	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

Production and Receipts

Hundredweight of crop produced (field weight)	7-2	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Total value of crop produced (as delivered)	7-3 \$	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

cwt.

## INSTRUCTIONS FOR COMPLETING THE INPUT FORM

The orchard number will be filled in by the group leader. The enterprise and variety will be determined by the growers participating in the analysis.

An enterprise might be apples, pears, cherries, walnuts, etc., or the combination of crops that make up the entire orchard. The group may want to separate their orchards by variety or rootstock size to provide more meaningful comparisons. For example, Full-Dwarf Red Delicious apples, Italian prunes, Lambert cherries, etc., might be designated. The county indicates the location of growers participating in a particular study, or some other differentiating factor.

An enterprise for the purposes of the analysis should be defined consistently by all the participants in the group. An enterprise is a segment of the business, such as an orchard crop or block of trees, for which the costs and returns can be isolated and allocated. The appropriate costs and returns to be considered for this analysis are those attributable to one year's production up to the point where it is delivered for packing or processing. Time cards kept for the operator and employees are helpful in making accurate allocations of labor costs. Machinery costs can be allocated according to hours of use in each enterprise, or according to the acres in each enterprise.

### Land in orchard (1-1)

Each orchardist reports the acreage of the orchard enterprise to be analyzed, as defined above. Designate to the nearest acre, omitting sizeable non-orchard areas. In most cases it is better to separate bearing orchard blocks from those which are non-bearing and handle each as separate enterprises. This provides for more meaningful analyses and comparisons.

### Number of trees (1-2)

Enter the total number of trees (bearing and non-bearing) for the particular enterprise being studied. Include non-bearing replacements, but do not count non-bearing interplants (i.e., trees not planted according to the original spacing) in the block.

### Percent of maximum bearing capacity (1-3)

Enter the estimated current production potential of the orchard block as determined by the number of bearing trees and their age. If all the trees in the orchard are at the age of maximum production, this index would be 100 percent. This estimate is used to describe the present productive capability of the enterprise, but does not affect the calculation of returns or costs.

### Total Labor Costs by Activity

Note: All the remaining cost and return items represent total amounts for the enterprise defined above, rather than per acre costs and returns. All entries

are rounded to the nearest dollar. Interest charges for operating capital and investment are calculated automatically by the computer, so they are not listed on the input form.

Labor costs are separated according to activity and whether the labor is paid (hired) or unpaid (operator and family). Family labor that was paid a wage should be reported as hired labor. Operator and family labor should be charged at the cost that would have been paid to obtain equivalent quality of labor (not management). If possible, the labor costs should include the value of perquisites (housing, boarding, recruiting, transporting, training, Workmen's Compensation, Social Security, etc., less any rental income from labor housing) by labor activities. Charges for hired supervision of labor should also be allocated to the individual activities. The labor costs for each activity may be determined from time card records, or estimated. Those perquisites that cannot be separated according to activities are entered as Additional labor costs (3-8).

Some growers prefer to hire custom operators to perform certain activities, such as spraying, pruning, and harvesting. Where the custom operation includes some labor input, the custom charge (excluding materials cost) should be separated into hired labor and machine rental and entered under the appropriate categories.

#### Pruning and planting (1-4, 1-5)

Enter the total labor charges for the enterprise due to routine planting of replacement trees, annual pruning and training, and for brush disposal as appropriate. The costs of trees for replacement are to be entered under Field supplies (5-4).

#### Frost control (1-6, 1-7)

Enter the labor charges for setting orchard heaters in the spring, igniting, extinguishing, refueling, patrolling, and removing heaters after the frost season. Labor costs associated with other methods of frost protection, such as use of wind machines, misting or fogging operations should also be included.

#### Spraying (1-8, 2-1)

Enter the labor charges associated with all spraying operations. If spraying is custom hired, include the labor as a hired labor expense. Spray materials and machine rental are entered below.

#### Tillage and mowing (2-2, 2-3)

Enter all labor charges for mechanical weed control and care of orchard floor, such as discing, mowing sod, leveling, hand weeding, etc.

#### Thinning (2-4, 2-5)

Enter all charges for labor involved in mechanical or hand thinning, including recruiting, transporting, housing, and boarding the thinners, etc. Chemical thinning labor should be charged to Spraying (1-8, 2-1).



#### Propping and trellising (2-6, 2-7)

Enter labor charges associated with acquiring, repairing, distributing, installing and removing props. Also include labor for maintaining orchard trellises and tying branches.

#### Irrigation (2-8, 3-1)

Enter labor charges for utilizing the irrigation system, corrugating or ditching, and normal irrigating activities.

#### Picking (3-2, 3-3)

Enter only those labor charges for people actually involved in picking.

#### Other harvest (3-4, 3-5)

Enter all charges for labor involved in supervising and checking during picking. Also include that used in spreading field boxes or bins and ladders; swamping, loading, and hauling to packing shed or processing plant; and fall cleanup of boxes, ladders, and other harvest equipment.

#### Miscellaneous (3-6, 3-7)

Enter all labor charges for field and office activities not listed above. Examples include labor costs for applying non-spray forms of fertilizer, orchard maintenance, record keeping, and other general labor activities.

#### Additional labor costs (3-8)

Enter the value of those perquisites that cannot be allocated to specific labor activities. Include only those items not previously allocated.

### Costs of Chemicals and Spray Materials

#### Insect and disease control materials (4-1)

Enter only the cost of materials for controlling insects and diseases. Custom application costs (excluding materials) should be entered under hired labor for Spraying (2-1) and under Machine rental (4-7); only the material costs are entered here.

#### Weed control materials (4-2)

Enter only the cost of materials used for controlling weeds.

#### Hormone chemicals (4-3)

Enter the cost of chemicals used to regulate fruit set, size, color, or maturity. Custom application costs should be entered under Spraying (2-1) and under Machine rental (4-7).

Other chemicals (4-4)

Enter the costs of other chemical materials, such as nutrient sprays, materials for rodent and bird control, etc.

Rental Charges

Bee rental (4-5)

Enter the enterprise's share of costs for renting and moving hives and their maintenance while in the orchard. If the grower owns the hives, all bee costs incurred during the year should be entered.

Land rental (4-6)

Enter all the annual costs (either cash or share) due to renting orchard land and buildings not owned by the grower.

Machine rental (4-7)

Enter the charges for machinery and equipment rented or custom hired for producing and harvesting the crop, such as aerial spraying, bin or box rental, tree topping or shaking, vehicles for hauling laborers, supplies and produce, etc.

Other Purchases

Fertilizer (4-8)

Enter the enterprise's share of costs for fertilizer materials which are applied through a fertilizer spreader or the irrigation system. Nutrient sprays should be entered as Other chemicals (4-5).

Frost control fuels (5-1)

Enter charges for all fuels associated with the frost protection operations. Where irrigation sprinklers are used for frost protection, include charges for pumping and operating the system during the frost season.

Fuel, oil, and grease (5-2)

Enter the fuel, oil, and grease costs of operating machinery for this enterprise, including the hauling of crop to packing shed or processing plant.

Irrigation water (5-3)

Enter all the annual irrigation water charges except drainage assessments. The drainage assessments are entered under Land taxes (5-8). Include the irrigation district charges for repayment of construction. Also include electrical charges

for pumping and for operating a sprinkler system, except when used for frost protection purposes. Costs for owning and repairing irrigation equipment are entered below.

Field supplies (5-4)

Enter such costs as seed for cover crops, props, trees for routine replacement, hand tools, and other supplies normally charged as current expenses.

Operating overhead (5-5)

Enter overhead charges for office supplies; bookkeeping; utilities; business travel; crop, fire (include buildings and equipment), liability, accident, and health insurance; professional fees, vehicle licenses; etc. Exclude family share of utilities, travel, insurance, and license fees.

Repair Costs

Building repairs (5-6)

Enter the enterprise's share of labor and material costs for repairing and maintaining the buildings associated with this business enterprise.

Machinery and equipment repairs (5-7)

Enter the materials and service costs for repairing field machinery and equipment, vehicles, irrigation equipment, trellises, bins, boxes, ladders, heaters, etc.

Taxes

Land taxes (5-8)

Enter the annual land taxes for this enterprise plus fire, weed, and drainage district assessments. Also include taxes on trees where applicable.

Building taxes (6-1)

Enter that share of the annual taxes on buildings chargeable to the enterprise; exclude the owner's residence.

Personal property taxes (6-2)

Enter the annual taxes on machinery and equipment for this enterprise, including taxes on irrigation equipment. Exclude taxes on family and non-orchard items.

Table 1. Normal Tree Life Guidelines.

Fruit or nut	Years of life	Fruit or nut	Years of life
Apples.....	20-40	Peaches.....	10-20
Apricots.....	15-35	Pears.....	15-40
Cherries.....	15-30	Prunes.....	15-30
Filberts.....	15-30	Walnuts.....	20-40

### Annual Depreciation Costs

#### Tree depreciation (6-3)

Enter the annual depreciation charge for the investment in trees. Table 1 provides some guidelines for establishing the normal life of trees. The depreciation can be determined by dividing the present Tree investment (6-7) by the expected remaining years of life.

#### Building depreciation (6-4)

Enter the enterprise's share of the annual depreciation on buildings, based on current value and remaining life; exclude owner's residence.

#### Machinery and equipment depreciation (6-5)

Enter the enterprise's share of the annual depreciation on such machinery and equipment as sprayers, boxes, ladders, trailers, tractors, trucks, orchard trellises, irrigation equipment, frost control devices, etc. The enterprise's share can be based on the hours of use or the acres in the enterprise.

### The Orchard Investment

#### Land investment (6-6)

Enter the net market value (for agricultural use) of owned land in the enterprise without trees, but including irrigation mainlines and lined ditches. The value of sprinkler system pumps and lateral lines is to be entered below under Machinery, equipment, and supplies investment (7-1).

#### Tree investment (6-7)

Enter only the estimated market value of the trees according to their age, variety, type of rootstock, density, etc.<sup>1/</sup>

<sup>1/</sup> One procedure for determining tree investment is to take the total value of land and trees and subtract the value of comparable land without trees. For example, if land and trees are valued at \$2,000 per acre and comparable land is worth \$500 per acre, the value of the planting would be \$1,500 per acre.

Building investment (6-8)

Enter the orchard enterprise's share of the average net market value of buildings used; exclude owner's residence.

Machinery, equipment, and supplies investment (7-1)

Enter the enterprise's share of the average net market value of machinery, equipment, and field supplies on inventory.

Production and Receipts

Hundredweight of crop produced (7-2)

Enter the total hundredweight (field weight) of fruits and nuts produced by this enterprise. Average box weights can be used to convert production measured in boxes to hundredweight of production. To convert tons to hundredweights, multiply by 20.

Total value of crop produced (7-3)

Enter the estimated value of the crop as delivered to the packing shed or processing plant. This value is used to maintain consistency between enterprises and between farms.

ORCHARD ENTERPRISE ANALYSIS

FARM NUMBER 208

PAGE 1

APPLE ORCHARDS      RED DELICIOUS      EXAMPLE DATA

		TOTAL		PER ACRE		PER 1000 LBS.	
		AVERAGE	YOURS	AVERAGE	YOURS	AVERAGE	YOURS
TOTAL PRODUCTION	(1000 LBS.)	1112	1277	27.6	25.5		
LAND IN ORCHARD	(AC.)	41	50				
ORCHARD TREES	(NO.)	3739	5400	86.5	108.0		
BEARING CAPACITY	(PCT.)	81	75				
TOTAL CAPITAL INVESTMENT	(DOL.)	100280	143500	2326.56	2870.00	86.29	112.37
LAND	(DOL.)	30600	50000	675.00	1000.00	25.49	39.15
TREES	(DOL.)	47890	75000	1074.69	1500.00	40.33	58.73
BUILDINGS	(DOL.)	9590	5500	268.75	110.00	9.37	4.31
MACHINES + EQUIPMENT	(DOL.)	12200	13000	308.13	260.00	11.10	10.18
TOTAL ENTERPRISE RECEIPTS	(DOL.)	47677	54911	1181.03	1098.22	42.84	43.00
TOTAL CASH EXPENSES	(DOL.)	30879	32295	783.32	645.91	28.19	25.29
HIRED LABOR	(DOL.)	17755	16720	460.79	334.40	16.46	13.09
CHEMICALS + SPRAYS	(DOL.)	3047	3150	77.48	63.00	2.79	2.47
OTHER PRODUCTION	(DOL.)	8055	10630	191.93	212.60	7.05	8.32
INTEREST ON OPER. CAPITAL	(DOL.)	613	595	15.80	11.91	.57	.47
TAXES	(DOL.)	1410	1200	37.31	24.00	1.32	.94
NET CASH INCOME	(DOL.)	16798	22616	397.72	452.31	14.65	17.71
TOTAL NON-CASH EXPENSES	(DOL.)	16073	23095	372.37	461.90	13.82	18.09
OPERATOR LABOR	(DOL.)	5275	7750	121.25	155.00	4.51	6.07
INTEREST ON INVESTMENT	(DOL.)	7020	10045	162.86	200.90	6.04	7.87
DEPRECIATION	(DOL.)	3779	5300	88.27	106.00	3.27	4.15
TOTAL ENTERPRISE COST	(DOL.)	46952	55390	1155.69	1107.81	42.01	43.38
RETURN TO MANAGEMENT	(DOL.)	725	-479	25.34	-9.59	.83	-0.38
RETURN TO LABOR + MGT.	(DOL.)	6000	7271	146.59	145.41	5.34	5.69
RETURN TO CAPITAL + MGT.	(PCT.)	8	7				

ORCHARD COST ANALYSIS

FARM NUMBER 208

PAGE 2

APPLE ORCHARDS

RED DELICIOUS

EXAMPLE DATA

		TOTAL		PER ACRE		PER 1000 LBS.	
		AVERAGE	YOURS	AVERAGE	YOURS	AVERAGE	YOURS
		=====					
TOTAL ENTERPRISE COST	(DOL.)	46952	55390	1155.69	1107.81	42.01	43.38
LAND + TREES	(DOL.)	8023	12650	179.57	253.00	6.74	9.91
MACHINES + EQUIPMENT	(DOL.)	5503	5935	138.58	118.70	5.00	4.65
TOTAL LABOR	(DOL.)	23030	24470	582.04	489.40	20.97	19.16
PRUNING + PLANTING	(DOL.)	3723	3800	94.95	76.00	3.41	2.98
FROST CONTROL	(DOL.)	0	0	0	0	0	0
SPRAYING	(DOL.)	560	800	12.98	16.00	.48	.63
TILLAGE + MOWING	(DOL.)	275	350	6.63	7.00	.24	.27
THINNING	(DOL.)	3470	3870	86.65	77.40	3.13	3.03
PROPPING + TRELLIS	(DOL.)	1023	1100	25.77	22.00	.93	.66
IRRIGATION	(DOL.)	1179	1500	28.41	30.00	1.04	1.17
PICKING	(DOL.)	8369	8850	211.75	177.00	7.63	6.93
OTHER HARVEST	(DOL.)	1938	1600	51.55	32.00	1.83	1.25
MISCELLANEOUS	(DOL.)	2496	2600	63.36	52.00	2.28	2.04
CHEMICALS + SPRAYS	(DOL.)	3047	3150	77.48	63.00	2.79	2.47
INSECT + DISEASE	(DOL.)	2723	2675	70.05	53.50	2.51	2.09
WEED CONTROL	(DOL.)	150	300	3.00	6.00	.12	.23
HORMONE	(DOL.)	174	175	4.44	3.50	.16	.14
OTHER	(DOL.)	0	0	0	0	0	0
OTHER MATERIALS	(DOL.)	2126	3530	46.58	70.60	1.76	2.76
FERTILIZER	(DOL.)	419	455	10.52	9.10	.38	.36
FROST CONTROL	(DOL.)	0	0	0	0	0	0
IRRIGATION	(DOL.)	671	1150	14.50	23.00	.55	.90
SUPPLIES	(DOL.)	1037	1925	21.56	38.50	.83	1.51
BUILDINGS	(DOL.)	2123	1810	56.16	36.20	1.99	1.42
MISCELLANEOUS	(DOL.)	3101	3845	75.27	76.91	2.75	3.01

NOTE -- THE AVERAGE REPRESENTS FIGURES FOR 12 ORCHARD ENTERPRISES

## INTERPRETING THE ANALYSIS REPORT

The analysis report is divided into two sections: the Orchard Enterprise Analysis (page 1) and the Orchard Cost Analysis (page 2). Each section provides individual data for the enterprise, and compares that data with the average for the group. The comparisons are on the basis of an acre and on the basis of a thousand pounds of production. The information at the top of each section identifies the orchard number, enterprise, variety, and location of the study. The number of orchard enterprises included in the group average is shown at the bottom of page 2.

### Orchard Enterprise Analysis

Page 1 of the analysis report summarizes the enterprise data by physical production, capital investment, annual receipts, cash and non-cash expenses, and the annual returns for managing the enterprise.

#### Total production

Production of the orchard enterprise is reported on 1000-pound units for the total enterprise, as well as on a per acre basis. The acres of land in the enterprise, the number of trees, and their bearing capacity measured as a percent of maximum, is also presented. This information provides an indication of the size and normal productivity of the enterprise. Variations from the group average might be due to age, tree density, variety, location, or management.

#### Total capital investment

The total capital investment is separated in the amounts due to land, trees, buildings, machinery and equipment. Investments in land will vary with location, climate, soil fertility, and topography. Comparative tree investments need to be evaluated on the basis of tree age, density, varietal obsolescence, tree vigor, and training. Investments in machines and equipment may reflect the manager's desire to mechanize his operation to reduce labor costs.

#### Total enterprise receipts

The crop value was based on field weights as delivered to the packing shed or processing plant. Therefore, the enterprise receipts obtained in this analysis may not compare with data commonly reported for the industry. Receipts per 1000 pounds of produce will depend on the market prices and the size and quality of the produce.

#### Total cash expenses

The cash expenses are the usual out-of-pocket operating costs. They include hired labor, chemicals and spray materials, interest on operating capital, taxes, and other production expenses. The other production expenses are rental charges, purchases, supplies, repairs, overhead, etc. Interest on operating



capital is automatically calculated by the computer for the average length of time the funds are normally committed, at an annual interest rate of eight percent. This interest charge would actually be a non-cash expense if the orchardist does not borrow money for this purpose.

#### Net cash income

The net cash income indicates the cash available to repay debts, replace capital assets, invest, pay income taxes, and use for family living or savings. Net cash income alone is not a good measure of the profitability of an orchard enterprise.

#### Total non-cash expenses

Non-cash charges include an estimate of the annual contribution to the business by unpaid labor and the total amount of capital invested in the enterprise. The interest on the total capital investment was charged at seven percent; it is calculated by the computer. These charges reflect income the owner could normally expect if he invested this capital in an alternative manner. A portion of the interest charge would actually be a cash outlay for those owners paying interest on land and equipment loans.

Depreciation represents a measure of the annual decrease in the value of the investments during the year. This decrease may be due to age, use, or obsolescence.

#### Total enterprise cost

The total orchard enterprise cost is the sum of the cash and non-cash expenses previously indicated. It does not, however, include a charge for the operator's management of the enterprise. Under normal conditions an enterprise should generate sufficient receipts to offset the total orchard cost and provide some compensation for management of the operation.

#### Return to management

The return to management is the difference between total orchard receipts and total orchard costs. It is a residual payment for management of the enterprise.

Two other measures of profitability of the enterprise are also given. The return to the operator's labor (and unpaid family labor) and management shows the sum available for the contribution of unpaid labor and management. The total return to the capital investment and the operator's management is expressed as a percentage of the total capital investment.

### Orchard Cost Analysis

The second page of the report summarizes and classifies the annual costs associated with the orchard enterprise. All the costs, cash and non-cash, operating and overhead, are included. The enterprise costs are presented for the group

average and the individual operation on a total basis. They are also reported on a per acre basis and by 1000 pounds of production.

#### Total enterprise cost

This is the summation of the annual cost estimates for the enterprise as submitted for analysis. No charge for management is included.

#### Land and trees

The annual cost for land and trees includes interest on the investment in land and trees, depreciation of trees, land taxes, and land rental charges. It does not, however, include the annual cost of buying and planting trees for replacement. The annual cost for land and trees should, under normal conditions, reflect the productive value of the orchard.

#### Machines and equipment

The annual machinery and equipment charges (including irrigation equipment) consists of depreciation, interest on investment, taxes, repairs, fuel, oil, grease, and machine rental. It does not include labor costs for operating the machinery. When comparing machinery and equipment costs with the group average, consideration should be given to the relationship between the labor costs and the machinery and equipment costs. High machinery and equipment costs may be offset by reduced labor costs, and vice versa.

#### Total labor

Labor costs are shown by major enterprise operations. Both hired and operator labor are included in each category. When evaluating labor costs, one should consider such factors as the productivity of the workers, wage rates, supervision, mechanization, etc. Pruning, spraying, and thinning labor costs should be analyzed in relation to the resultant production and prices.

#### Chemicals and sprays

This is the cost of chemicals and spray materials applied to control insects, diseases, and weeds; and for thinning, nutrition, and influencing fruit set, development, and maturity. Fertilizer materials spread by machinery or applied through the irrigation system are not included here. In evaluating pest control costs, such factors as type of material, time, and method of application may be as important as the cost of the materials.

#### Other materials

Fertilizer cost is for materials applied with a spreader or through the irrigation system. The cost of frost control includes all those fuels associated with frost protection operations. Irrigation costs include the water and power charges to the enterprise. Field supplies consist of cover crop seed, props, trees for replacement, small hand tools, etc. Fuel, oil, grease, and overhead costs are included in the charges for machinery and equipment.



### Buildings

Building costs include annual charges for depreciation, interest on investment, repairs, and taxes.

### Miscellaneous

The miscellaneous cost category includes bee rental, the annual interest charge on operating capital, and such annual operating overhead costs as utilities, office supplies, bookkeeping, business travel, insurance, etc.