

Farm Business Management Reports		EB1745E
	2001 Cost of Producing Native and Scotch Spearmint Under Rill and Side- Roll Irrigation Central Washington	
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	Online at: http://farm.mngt.wsu.edu/	

Note

Enterprise costs and returns vary from one farm to the next and over time for any particular farm. Variability stems from differences in the following:

- ④ Capital, labor, and management resources.
- ④ Type and size of machinery complement.
- ④ Cultural practices.
- ④ Size of farm enterprise.
- ④ Crop yields.
- ④ Input prices.
- ④ Commodity prices.

Costs can also be calculated differently depending on the intended use of the cost estimate. The information in this publication serves as a general guide for a modern, well-managed irrigated crop farm in Central Washington that produces spearmint as one of its enterprises. To avoid drawing unwarranted conclusions about any particular farm or group of farms, the reader must closely examine the assumptions used. If they are not appropriate for the situation at hand, adjustments in the costs and/or returns should be made.

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**2001 COST OF PRODUCING
NATIVE AND SCOTCH SPEARMINT
UNDER RILL AND SIDE-ROLL IRRIGATION
CENTRAL WASHINGTON**

Herbert R. Hinman*

INTRODUCTION

Washington State is the nation's leading producer of spearmint oil. In 2000, 11,074 acres of spearmint (3,312 acres of Scotch spearmint and 7,762 acres of native spearmint) were grown in central Washington. This acreage yielded 467,315 pounds of Scotch spearmint oil and 1,165,751 pounds of native spearmint oil according to the Far West Spearmint Oil Administrative Committee. This study was undertaken to estimate the 2001 costs of establishing and producing native and Scotch spearmint grown under side-roll irrigation and rill irrigation, and spearmint prices required for an economically viable enterprise.

The enterprise data do not represent a particular farm. Instead, they represent costs under the assumptions adopted for the study. Use the blank spaces provided on the right-hand side of various budget tables to estimate your own costs. Extension faculty and private consultants can provide information on field operations and operating inputs.

SOURCES OF INFORMATION

A committee of area producers identified the field operations and machinery complement commonly used. These producers represented well-managed farms. Quantities and types of materials (plants, fertilizer, herbicides, insecticides, etc.) used in the budgets were based on recommended practices. Local farm suppliers provided price information on materials and other services commonly used by farmers. Machinery costs were based on typical annual hours of use, as described by the committee, and what growers would currently pay to replace their machinery complement.

BUDGET ASSUMPTIONS

The following assumptions were made in developing the enterprise data:

1. The farm is 500 acres with 120 acres in spearmint and 380 acres in other row crops.
2. Cost of establishment and production are calculated for 40-acre units on a per-acre basis.
3. The value of bare land is assumed to be \$3,500 per acre with property taxes of \$20 per acre. Rent for this land is \$150 per acre for native spearmint and \$175 per acre for Scotch spearmint and is used in the budgets as a proxy for land ownership cost.

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4. Initial costs for a side-roll irrigation system with a 15-year life designed for 40 acres are:

2 wheel lines	\$20,000
1 main line	5,000
30 HP pump and panel	<u>6,500</u>
	\$31,500

In addition, electrical costs are \$55 per acre during the establishment year and \$66 per acre during full production years.

5. Initial costs for a rill irrigation system with a 3-year life designed for 40 acres are:

120 tubes	\$ 430
10 dams	<u>\$ 240</u>
	\$ 670

There is no electricity cost for the gravity flow rill irrigation system.

6. The annual irrigation water charge is \$62 per acre for both native spearmint and Scotch spearmint.
7. Native spearmint has a 6-year life including the establishment year. Scotch spearmint has a 4-year life including the establishment year.
8. Estimated production for native spearmint is 67 pounds of oil per acre during the establishment year. Annual production during each of the five production years is 154 pounds per acre (78 pounds during the July harvest and 76 pounds during the September harvest). Estimated production for Scotch spearmint is 69 pounds per acre during the establishment year and 136 pounds each year during the remaining three producing years (87 pounds during the July harvest and 49 pounds during the September harvest). These figures represent the past 5-year average production for both native and Scotch spearmint in central Washington.
9. Prices received for native spearmint oil are \$9 per pound and for Scotch spearmint oil, \$7 per pound.
10. Interest on operating loans is assumed to be 10%. Return on alternative investments is assumed to be 10% and represents the opportunity cost of investments in machinery and irrigation equipment.

DISCUSSION OF BUDGET INFORMATION

Based on the above assumptions, full production costs per acre (which include the opportunity costs foregone from investments in land, irrigation equipment, machinery, operator labor and management) and the breakeven selling prices for native and Scotch spearmint grown under side-roll and rill irrigation were estimated to be the following:

	Establishment Year <u>Yield/Acre</u>	Establishment Year <u>Cost/Acre</u>	Mature Year <u>Yield/Acre</u>	Mature Year <u>Cost/Acre</u> ¹	Breakeven <u>Price/Lb.</u> ²
	Lbs.	\$	Lbs.	\$	\$
Native Spearment (Side-Roll)	67	1,513.60	154	1,716.21	10.92
Native Spearment (Rill)	67	1,443.67	154	1,601.91	10.26
Scotch Spearment (Side-Roll)	69	1,996.33	136	2,200.08	14.62
Scotch Spearment (Rill)	69	1,926.42	136	2,076.08	13.87

These relative high breakeven prices, when compared with prices currently being received for both native and Scotch spearmint, have resulted in an all-time low in new spearmint plantings. However, due to the high cost of establishing spearmint fields, producers have been reluctant to pull out established plantings before natural productive life has expired.

The complete detailed budget information is presented in the Appendix in four sets of tables. The various tables represent the following establishment and production costs:

- NS Tables - Establishment and production costs for **native** spearmint grown under **side-roll** irrigation.
- NR Tables - Establishment and production costs for **native** spearmint grown under **rill** irrigation.
- SS Tables - Establishment and production costs for **Scotch** spearmint grown under **side-roll** irrigation.
- SR Tables - Establishment and production costs for **Scotch** spearmint grown under **rill** irrigation.

¹Cost based on receiving \$9 per pound for native spearmint and \$7 per pound for Scotch spearmint. These prices help determine the “net” establishment cost that must be amortized over the life of the “mature” crop.

²The price needed during the establishment year and the production years in order to cover all costs.

Each set contains six separate tables. A discussion of the information in each table is presented below.

Table 1. Schedule of Operations and Estimated Costs per Acre for Establishing a Spearmint Field.

Table 1 outlines the schedule of field operations by calendar month, the type of machinery and labor used, and the hours used per acre for the establishment year.

Field operation costs are divided into two categories. The first is the fixed cost of owning equipment and land. The second, variable costs, is associated with operating machinery, hiring labor, and purchasing services and materials. Total cost is the sum of fixed costs and variable costs.

Machinery and irrigation fixed costs include depreciation, interest on the average investment, property taxes, housing, and insurance. These costs are incurred whether or not a crop is grown and do not vary with acreage, given ownership of a specific equipment complement. Per-hour fixed costs for machinery are determined by dividing the total annual fixed cost per machine by the total annual hours of machinery use for the representative farm. Machinery fixed costs for a specific field operation are determined by multiplying the machine hours per acre times the machinery per-hour fixed costs (Table 8). Irrigation fixed costs per acre are determined by dividing the total annual irrigation fixed costs by the number of acres.

Land fixed costs includes taxes and net rent that are based on rental agreements typical for the area, minus expenditures typically covered by the landowner. While an owner-operator obviously will not have a land rental cost, the cost represents the minimum returns the owner-operator must have from the land component to justify growing this crop. This net rental return represents the income the owner-operator foregoes by producing a crop on the land rather than renting it to a tenant. As a result of investing capital in land, the farmer receives both current returns from crop production activities and any long-term land value appreciation (depreciation). However, the farmer would continue to receive land value appreciation (depreciation) even if the land was rented out. Consequently, the appropriate land charge for growing this crop is only the net rent lost. As used in this publication, land cost is termed an opportunity cost to indicate that it is not an out-of-pocket expense. Rather, it is a return foregone by the producer who chooses to grow this crop.

An opportunity cost for management is also listed in Table 1. For management, a cost of \$50 per acre is used. This represents what the producer committee felt was a fair return to his or her management. Management is regarded as a fixed rather than a variable cost because the grower either use management skills or loses them during the production year.

Variable costs depend on the number of acres produced. These costs include fuel, oil, repairs, fertilizer, chemicals, custom work, overhead (utilities, legal fees, accounting, services, etc.), and interest on operating capital. Custom application rates for fertilizer and other chemicals are included as variable costs and used as a proxy for both custom and operator applied chemical application costs. Hand labor and machinery operating labor are also included as variable costs.

Table 2. Materials or Services Applied per Acre by Operation for Establishing a Spearmint Field.

The "Service" and "Materials" columns in Table 1 are costs associated with services and materials used by different operations. Table 2 lists the specific type and quantity of services and/or materials used, by operations, as shown in Table 1.

Table 3. Itemized Costs per Acre for Establishing a Spearmint Field.

Table 3 itemizes costs in the schedule of operations (Table 1). Most items are self-explanatory. However, "Tractor Interest" and "Machinery Interest" warrant additional explanation. These figures represent opportunity costs. These are returns foregone by investing in the given equipment and irrigation complement rather than in alternative investments. Total interest cost on these capital purchases is calculated on the average annual value of the machinery and irrigation system over their respective years of use.

Table 4. Schedule of Operations and Estimated Costs per Acre for Producing Spearmint.

The schedule of field operations by calendar month, the type of machinery and labor used, and the hours used per acre for spearmint during the full production years are outlined in Table 4. This table does the same for the production years as Table 1 does for the establishment year. However, it includes an additional investment cost entitled "Prorated First Year Loss."

The "Prorated First Year Loss" represents establishment year costs, minus establishment year revenues, that must be recaptured during the remaining production years. For example, the costs during the establishment year for native spearmint grown under side-roll irrigation total \$1,513.60. Revenues during this year, estimated at 67 pounds selling at \$9.00 per pound (the assumed price), are \$603.00, which leaves \$910.60 to be recaptured over the remaining five producing years if all costs are to be covered. Amortizing this cost over a 5-year period, using a 10% interest rate, means that \$240.21 of the establishment year loss needs to be added to mature year production costs each year.

Table 5. Materials or Services Applied per Acre by Operation for Producing Spearmint.

The "Service" column and the "Materials" column in Table 4 list dollar figures for services and materials used in different operations. Table 5 lists the specific services and/or materials used, by operation, as shown in Table 4.

Table 6. Itemized Cost per Acre for Producing Spearmint.

Costs in the schedule of operations for spearmint during the full production years are summarized in Table 6 in the same way that costs during establishment year are summarized in Table 3.

Table 7. Average Annual Profit (or Loss) per Acre for Spearmint at Different Price and Yield Levels and the Breakeven Price for the Given Yield Levels.

Table 7 shows the average annual profit (or loss) per acre that a producer would receive at different price and yield levels and the breakeven price for the given yield levels under the given assumptions of this study. Profits are returns over and above all costs associated with the enterprise including the opportunity costs of investments in land, irrigation equipment, machinery, and management. Failure to receive a profit means the owner-operator will not realize a return on capital and management contributions equivalent to what could be earned in an alternative use. Realizing a profit means that, in addition to covering all cash and opportunity costs, the operator receives a return to the risk assumed in producing spearmint.

The remaining three tables, Tables 8, 9 and 10, contain information relevant to all budgets regardless of the variety of spearmint grown or the type of irrigation system.

Table 8. Equipment Complement.

Table 8 lists the type of machines used to produce spearmint plus, on a per-unit basis, their replacement value, years of life before trade-in, salvage value, hours of annual use, annual repair cost, fuel type (if applicable), and gallons of fuel used per hour. The same information is provided for the irrigation systems except the acreage supported by these assets is specified rather than annual hours of use.

Table 9. Hourly or per-Acre Equipment Costs.

Table 9 presents the estimated fixed and variable costs per hour of use for the machinery listed in Table 8. Costs are calculated on a per-acre basis for the irrigation systems.

Equipment fixed costs include depreciation, interest on investment, property taxes, and insurance. Equipment prices represent what growers would currently pay to replace their equipment. While this assumption may result in an overstatement of production costs currently experienced by producers, it provides an indication of the enterprise's ability to generate the earnings needed to replace depreciable assets. Continuing increases in prices paid for replacement machinery and equipment due to inflation and improved technology mean that depreciation claimed on assets purchased prior to price advances understates the amount of capital currently required for asset replacement. When an enterprise is evaluated to determine its long-run viability, it is important to consider its ability to replace depreciable assets on a replacement cost basis. Note that interest on investment represents a 10% opportunity cost to the enterprise. These are earnings foregone by investing in equipment rather than in the next best alternative investment. Equipment variable costs include repair, fuel, and lubrication costs--costs that vary with the crop grown or the number of acres produced.

Table 10. Prices for Selected Inputs.

Fuel, chemicals, and other input prices used to develop the budgets are listed in Table 10. An additional 10¢ per gallon has been added to the price of fuel to reflect fuel storage facility costs.

CONCLUDING NOTE

To use these budgets you should fully comprehend the procedures and assumptions used in this study and interpret the results accordingly. The author and producers who organized this data recognize that these budgets do not represent any one particular operation. They should be used as a general guide to help derive budgets for individual operations. Moreover, this publication does not recommend production practices. Rather, it presents current technology typically used to produce spearmint in central Washington.

APPENDIX

DETAILED BUDGET INFORMATION

TABLE 1NS. SCHEDULE OF OPERATIONS AND ESTIMATED COSTS PER ACRE FOR ESTABLISHING A NATIVE SPEARMINT FIELD, FOLLOWING WHEAT, IN CENTRAL WASHINGTON: SIDE-ROLL IRRIGATION

VARIABLE COST												

OPERATION	TOOLING	MTH YEAR	MACH HOURS	LABOR HOURS	TOTAL FIXED COST	FUEL, LUBE, & REPAIRS	LABOR	SERVICE	MATER.	INTER.	TOTAL VARIABLE COST	TOTAL COST

					\$	\$	\$	\$	\$	\$	\$	\$
DISK(2X)	180HP, 15' OFFSET DISK	FALL 2000	.33	.40	10.35	9.98	4.80	.00	.00	1.36	16.14	26.49
RIP (2X)	180HP, 7 SHANK RIPPER	FALL 2000	.67	.80	22.31	18.97	9.60	.00	.00	2.62	31.19	53.50
CHISEL PLOW	180HP, 17' CHISEL PLOW	FALL 2000	.33	.40	11.23	9.48	4.80	.00	.00	1.31	15.59	26.82
FERTILIZE (DRY)*	CUSTOM GROUND APPLICATION	MAR 2001	.00	.00	.00	.00	.00	7.00	98.65	6.16	111.81	111.81
ROLL-HARROW(2X)*	180HP, 15' ROLLER-HARROW	MAR 2001	.50	.60	14.23	14.23	7.20	.00	.00	1.25	22.68	36.91
PLANT*	CUSTOM PLANT	MAR 2001	.00	.00	.00	.00	.00	100.00	150.00	14.58	264.58	264.58
SPRAY*	CUSTOM GROUND APPLICATION	MAR 2001	.00	.00	.00	.00	.00	8.65	23.25	1.86	33.76	33.76
CULTIVATE	100HP, 5 ROW CULTIVATOR	MAR 2001	.20	.24	3.46	2.93	2.88	.00	.00	.34	6.15	9.60
IRRIGATE(10X)	SIDEROLL IRR., 25 ACRE IN.	APR-OCT 2001	.00	3.00	100.96	5.88	27.00	117.00	.00	3.75	153.62	254.59
APPLY HERBICIDE	CUSTOM GROUND APPLICATION	APR 2001	.00	.00	.00	.00	.00	8.65	43.65	2.62	54.92	54.92
SPRAY	FIELD BORDERS	MAY-OCT 2001	.00	.00	.00	.00	.00	7.00	.00	.18	7.18	7.18
SPOT SPRAY	4-WHEEL ATV W/SPRAYER	MAY 2001	.25	.30	.72	.39	2.70	.00	4.49	.32	7.90	8.62
FERTIGATION	THROUGH THE IRRIGATION SYSTEM	MAY 2001	.00	.00	.00	.00	.00	.00	21.00	.88	21.88	21.88
WEEDING	HAND WEEDING	JUL 2001	.00	.00	.00	.00	.00	30.00	.00	.75	30.75	30.75
HARVEST&PROCESS.	CUSTOM HARVEST & PROCESSING	AUG 2001	.00	.00	.00	.00	.00	201.00	.00	3.35	204.35	204.35
ASSESSMENT	MARKETING	SEP 2001	.00	.00	.00	.00	.00	9.38	.00	.08	9.46	9.46
RESIDUE DISPOSAL	CUSTOM DISPOSAL	SEP 2001	.00	.00	.00	.00	.00	10.00	.00	.08	10.08	10.08
MISC USE	MANAGER'S 3/4 TON PICKUP	ANN 2001	1.60	.00	11.03	10.88	.00	.00	.00	.54	11.43	22.46
MISC USE	LABOR'S PICKUP	ANN 2001	1.80	1.98	5.53	13.56	17.82	.00	.00	1.57	32.95	38.46
MISC USE	4-WHEEL ATV	ANN 2001	.25	.28	.47	.34	2.47	.00	.00	.14	2.96	3.43
OVERHEAD	UTILITIES, LEGAL, ACCTG., ETC.	ANN 2001	.00	.00	.00	.00	.00	83.95	.00	.00	83.95	83.95
TAXES	LAND	ANN 2001	.00	.00	20.00	.00	.00	.00	.00	.00	.00	20.00
LAND COST	NET RENT	ANN 2001	.00	.00	130.00	.00	.00	.00	.00	.00	.00	130.00
MANAGEMENT	MANAGEMENT CHARGE	ANN 2001	.00	.00	50.00	.00	.00	.00	.00	.00	.00	50.00

TOTAL PER ACRE			6.93	8.00	380.29	86.65	79.27	582.63	341.04	43.72	1133.31	1513.60

*SOME PRODUCERS FERTILIZE, SPRAY, ROLL-HARROW AND THEN PLANT.

TABLE 2NS. Materials or Services Applied per Acre by Operation for
Establishing a Native Spearmint Field, Following Wheat, in Central
Washington: Side-Roll Irrigation

Operation	Material or Services Applied
Fertilize-Dry (March)	Custom ground application (\$7.00 per acre) 150 lbs. nitrogen (\$.36 per lb.) 80 lbs. phosphate (\$.25 per lb.) 40 lbs. sulfur (\$.12 per lb.) 80 lbs. potash (\$.17 per lb.) 5 lbs. zinc (\$1.23 per lb.)
Plant (March)	Custom plant (\$100.00 per acre) Spearmint roots (\$150.00 per acre)
Spray (March)	Custom ground application (\$8.65 per acre) .75 lb. Sinbar (\$31.00 per lb.)
Irrigate (April-October)	Irrigation charge (\$62.00 per acre) Electrical charge (\$55.00 per acre)
Apply Herbicide (April)	Custom ground application (\$8.65 per acre) 10 oz. Assure II (\$1.04 per ounce) 1 lb. Sinbar (\$28.50 per lb.) 1 qt. crop oil (\$9.00 per gal.)
Spray (May-October)	Field border spray (\$7.00 per acre)
Spot Spray (May)	1 oz. Stinger (\$4.49 per oz.)
Fertigation (May)	50 lbs. nitrogen (\$.42 per lb.)
Weeding (July)	Hand weeding (\$30.00 per acre)
Harvest & Process (August)	Custom harvest & processing (67 lbs. per acre @ \$3.00 per lb.)
Assessment (September)	Market assessment (67 lbs. per acre @ \$0.14 per lb.)
Residue Disposal (September)	Custom disposal (\$10.00 per acre)
Overhead (Annual)	8% variable cost

TABLE 3NS. ITEMIZED COST PER ACRE FOR ESTABLISHING A NATIVE SPEAR-MINT FIELD, FOLLOWING WHEAT, IN CENTRAL WASHINGTON; SIDE-ROLL IRRIGATION.

		PRICE OR UNIT COST/UNIT	QUANTITY	VALUE OR COST	YOUR FARM

VARIABLE COSTS		\$		\$	
CUSTOM PLANTING	ACRE	100.00	1.00	100.00	_____
NATIVE PLANTS	ACRE	150.00	1.00	150.00	_____
NITROGEN (DRY)	LB.	.36	150.00	54.00	_____
PHOSPHATE	LB.	.25	80.00	20.00	_____
SULFUR	LB.	.12	40.00	4.80	_____
POTASH	LB.	.17	80.00	13.60	_____
ZINC	LB.	1.25	5.00	6.25	_____
NITROGEN (LIQ)	LB.	.42	50.00	21.00	_____
SINBAR	LB.	31.00	1.75	54.25	_____
ASSURE II	OZ.	1.04	10.00	10.40	_____
CROP OIL	GAL.	9.00	.25	2.25	_____
STINGER	OZ.	4.49	1.00	4.49	_____
BORDER SPRAY	ACRE	7.00	1.00	7.00	_____
DRY FERT APPLICATION	ACRE	7.00	1.00	7.00	_____
CUSTOM APPLICATION	ACRE	8.65	2.00	17.30	_____
IRRIGATION CHARGE	ACRE	62.00	1.00	62.00	_____
ELECTRICAL COST	ACRE	55.00	1.00	55.00	_____
HAND WEEDING	ACRE	30.00	1.00	30.00	_____
HAND LABOR	HOURL	9.00	5.56	50.00	_____
LABOR (TRAC/MACH)	HOURL	12.00	2.44	29.28	_____
HARVEST & PROCESS	LB.	3.00	67.00	201.00	_____
MARKET ASSESSMENT	LB.	.14	67.00	9.38	_____
RESIDUE DISPOSAL	ACRE	10.00	1.00	10.00	_____
TRACTOR REPAIR	ACRE	15.05	1.00	15.05	_____
TRACTOR FUEL/LUBE	ACRE	26.11	1.00	26.11	_____
MACHINERY REPAIRS*	ACRE	25.31	1.00	25.31	_____
MACHINE FUEL/LUBE	ACRE	20.19	1.00	20.19	_____
INTEREST ON OP. CAP.	ACRE	43.72	1.00	43.72	_____
OVERHEAD	ACRE	83.95	1.00	83.95	_____

TOTAL VARIABLE COST				1133.31	_____
FIXED COSTS		\$		\$	
TRACTOR DEPRECIATION	ACRE	17.70	1.00	17.70	_____
TRACTOR INTEREST	ACRE	25.63	1.00	25.63	_____
TRACTOR INSURANCE	ACRE	1.54	1.00	1.54	_____
TRACTOR TAXES	ACRE	4.61	1.00	4.61	_____
TRACTOR HOUSING	ACRE	2.56	1.00	2.56	_____
MACHINE DEPRECIATION*	ACRE	58.92	1.00	58.92	_____
MACHINE INTEREST*	ACRE	54.96	1.00	54.96	_____
MACHINE INSURANCE*	ACRE	3.29	1.00	3.29	_____
MACHINE TAXES*	ACRE	9.89	1.00	9.89	_____
MACHINE HOUSING	ACRE	1.17	1.00	1.17	_____
LAND TAXES	ACRE	20.00	1.00	20.00	_____
NET LAND RENT**	ACRE	130.00	1.00	130.00	_____
MANAGEMENT CHARGE	ACRE	50.00	1.00	50.00	_____

TOTAL FIXED COST				380.29	_____
TOTAL COST				1513.60	_____
LESS: GROSS REVENUE***				603.00	_____
NET FIRST YEAR LOSS				910.60	_____

* INCLUDES IRRIGATION EQUIPMENT.					
** \$150 RENT MINUS LAND TAXES.					
*** 67 LBS. AT \$9.00 PER LB.					

TABLE 4NS. SCHEDULE OF OPERATIONS AND ESTIMATED COSTS PER ACRE FOR PRODUCING NATIVE SPEARMINT IN CENTRAL WASHINGTON: SIDE-ROLL IRRIGATION.

VARIABLE COST												

OPERATION	TOOLING	MTH YEAR	MACH HOURS	LABOR HOURS	TOTAL FIXED COST	FUEL, LUBE, & REPAIRS	LABOR	SERVICE	MATER.	INTER.	TOTAL VARIABLE COST	TOTAL COST

APPLY HERBICIDE	CUSTOM GROUND APPLICATION	FALL 2000	.00	.00	\$.00	\$.00	\$.00	\$ 8.65	\$ 31.00	\$ 3.63	\$ 43.28	\$ 43.28
APPLY HERBICIDE	CUSTOM GROUND APPLICATION	FEB 2001	.00	.00	.00	.00	.00	8.65	39.14	3.19	50.98	50.98
FERTILIZE (DRY)	CUSTOM GROUND APPLICATION	MAR 2001	.00	.00	.00	.00	.00	7.00	89.65	5.63	102.18	102.28
IRRIGATE(12X)	SIDEROLL IRR.,30 ACRE IN.	APR-OCT 2001	.00	4.37	100.96	5.88	39.33	128.00	.00	4.33	177.54	278.50
SPRAY	FIELD BORDERS	MAY-OCT 2001	.00	.00	.00	.00	.00	7.00	.00	.18	7.18	7.18
FERTIGATION	THROUGH THE IRRIGATION SYSTEM	MAY 2001	.00	.00	.00	.00	.00	.00	21.00	.88	21.88	21.88
SPOT SPRAY	4-WHEEL ATV W/SPRAYER	MAY 2001	.25	.30	.72	.39	2.70	.00	4.49	.32	7.90	8.62
APPLY INSECT.*	AERIAL APPLICATION	MAY 2001	.00	.00	.00	.00	.00	2.83	8.10	.46	11.39	11.39
HARVEST&PROCESS	CUSTOM HARVEST AND PROCESSING	JUN 2001	.00	.00	.00	.00	.00	234.00	.00	7.80	241.80	241.80
FERTILIZE	CUSTOM GROUND APPLICATION	JUN 2001	.00	.00	.00	.00	.00	8.65	45.00	1.79	55.44	55.44
APPLY HERB.**	CUSTOM GROUND APPLICATION	JUL 2001	.00	.00	.00	.00	.00	4.32	7.75	.30	12.38	12.38
APPLY INSECT.**	AERIAL APPLICATION	AUG 2001	.00	.00	.00	.00	.00	4.25	6.13	.17	10.55	10.55
HARVEST&PROCESS.	CUSTOM HARVEST & PROCESSING	SEP 2001	.00	.00	.00	.00	.00	228.00	.00	1.90	229.90	229.90
ASSESSMENT	MARKETING	SEP 2001	.00	.00	.00	.00	.00	21.56	.00	.18	21.74	21.74
RESIDUE DISP.	CUSTOM DISPOSAL	OCT 2001	.00	.00	.00	.00	.00	30.00	.00	.00	30.00	30.00
MISC USE	LABOR'S PICKUP	ANN 2001	1.80	1.98	5.53	13.56	17.82	.00	.00	1.57	32.95	38.47
MISC USE	MANAGER'S 3/4 TON PICKUP	ANN 2001	1.60	.00	11.03	10.88	.00	.00	.00	.54	11.43	22.46
MISC USE	4-WHEEL ATV	ANN 2001	.25	.28	.47	.34	2.47	.00	.00	.14	2.96	3.43
OVERHEAD	UTILITIES, LEGAL, ACCTG., ETC.	ANN 2001	.00	.00	.00	.00	.00	85.73	.00	.00	85.73	85.73
TAXES	LAND	ANN 2001	.00	.00	20.00	.00	.00	.00	.00	.00	.00	20.00
LAND COST	NET RENT	ANN 2001	.00	.00	130.00	.00	.00	.00	.00	.00	.00	130.00
INVESTMENT	PRORATED FIRST YEAR LOSS***	ANN 2001	.00	.00	240.21	.00	.00	.00	.00	.00	.00	240.21
MANAGEMENT	MANAGEMENT CHARGE	ANN 2001	.00	.00	50.00	.00	.00	.00	.00	.00	.00	50.00

TOTAL PER ACRE			3.90	6.93	558.92	31.05	62.32	778.65	252.26	33.01	1157.29	1716.21

* APPLIED AN AVERAGE OF ONCE EVERY THREE YEARS.

** APPLIED AN AVERAGE OF ONCE EVERY OTHER YEAR.

*** \$910.60 AMORTIZED AT 10% OVER FIVE YEARS.

TABLE 5NS. Materials or Services Applied per Acre by Operation for Producing Native Spearmint in Central Washington: Side-Roll Irrigation

Operation	Material or Service Applied
Apply Herbicide (Fall)	Custom ground application (\$8.65 per acre) 1 lb. Sinbar (\$31.00 per lb.)
Apply Herbicide (February)	Custom ground application (\$8.65 per acre) 3 pts. Prowl (\$2.63 per pint) 2 pts. Gramoxone (\$4.01 per pint) .75 lb. Sinbar (\$28.50 per lb.)
Fertilize-Dry (March)	Custom ground application (\$7.00 per acre) 125 lbs. nitrogen (\$.36 per lb.) 80 lbs. phosphate (\$.25 per lb.) 40 lbs. sulfur (\$.12 per lb.) 80 lbs. potash (\$.17 per lb.) 5 lbs. zinc (\$1.25 per lb.)
Irrigate (April-October)	Irrigation charge (\$62.00 per acre) Electrical charge (\$66.00 per acre)
Spray (May-October)	Field border spray (\$7.00 per acre)
Fertigation (May)	50 lbs. nitrogen (\$0.42 per lb.)
Spot Spray (May)	1 oz. Stinger (\$4.49 per oz.)
Apply Insecticide (May)*	Aerial application (\$8.50 per acre) 1.25 qts. Comite (\$19.08 per qt.) 3.2 oz. of Nutra-Buffer (\$0.08 per oz.)
Harvest & Process (June)	Custom harvest and processing (78 lbs. per acre @ \$3.00 per lb.)
Fertilize (July)	Custom ground application (\$8.65 per acre) 125 lbs. of nitrogen (\$.30 per lb.)
Apply Herbicide (July)**	Custom ground application (\$8.65 per acre) .5 lbs. Sinbar (\$31.00 per lb.)
Apply Insecticide (August)**	Aerial application (\$8.50 per acre) 1 lb. Orthene (\$12.00 per lb.) 3.2 oz. of Nutra-Buffer (\$.08 per oz.)
Harvest & Process (September)	Custom harvest and processing (76 lbs. per acre @ \$3.00 per lb.)
Assessment (September)	Market assessment (154 lbs. per acre @ \$.14 per lb.)
Residue Disposal (October)	Custom disposal (\$30.00 per acre)
Overhead (Annual)	8% variable cost

* Applied an average of once every three years

** Applied an average of every other year.

Table 7NS. AVERAGE ANNUAL PROFIT (OR LOSS)¹ PER ACRE FOR NATIVE SPEARMINT GROWN UNDER SIDE-ROLL IRRIGATION AT DIFFERENT PRICE AND YIELD LEVELS AND THE BREAKEVEN PRICE FOR THE GIVEN YIELD LEVELS.

FIRST YEAR YIELD	MATURE YEAR YIELD ²	PRICE PER POUND					BREAKEVEN PRICE
		\$9.00	\$10.00	\$11.00	\$12.00	\$13.00	
LBS.	LBS.	\$	\$	\$	\$	\$	\$
-----ANNUAL PROFIT-----							
67	140	-411	-253	-96	62	219	11.61
67	145	-382	-220	-57	106	268	11.35
67	150	-353	-186	-18	150	317	11.11
67	155	-324	-152	21	194	366	10.88
67	160	-295	-118	60	238	415	10.66
67	165	-266	-84	99	282	464	10.46
67	170	-237	-50	138	326	513	10.26

¹RETURNS OVER ALL VARIABLE AND FIXED COSTS LISTED IN TABLE 6NS.

²FIVE YEARS OF MATURE YIELD.

TABLE 1NR. SCHEDULE OF OPERATIONS AND ESTIMATED COSTS PER ACRE FOR ESTABLISHING A NATIVE SPEARMINT FIELD, FOLLOWING WHEAT, IN CENTRAL WASHINGTON: RILL IRRIGATION

		VARIABLE COST										
OPERATION	TOOLING	MTH YEAR	MACH HOURS	LABOR HOURS	TOTAL FIXED COST	FUEL, LUBE, & REPAIRS	LABOR	SERVICE	MATER.	INTER.	TOTAL VARIABLE COST	TOTAL COST
					\$	\$	\$	\$	\$	\$	\$	\$
DISK(2X)	180HP, 15' OFFSET DISK	FALL 2000	.33	.40	10.35	9.98	4.80	.00	.00	1.36	16.14	26.49
RIP (2X)	180HP, 7 SHANK RIPPER	FALL 2000	.67	.80	22.31	18.97	9.60	.00	.00	2.62	31.19	53.50
CHISEL PLOW	180HP, 17' CHISEL PLOW	FALL 2000	.33	.40	11.23	9.48	4.80	.00	.00	1.31	15.59	26.82
FERTILIZE (DRY)*	CUSTOM GROUND APPLICATION	MAR 2001	.00	.00	.00	.00	.00	7.00	98.65	6.16	111.81	111.81
ROLL-HARROW(2X)*	180HP, 15' ROLLER-HARROW	MAR 2001	.50	.60	14.23	14.23	7.20	.00	.00	1.25	22.68	36.91
PLANT*	CUSTOM PLANT	MAR 2001	.00	.00	.00	.00	.00	100.00	150.00	14.58	264.58	264.58
SPRAY*	CUSTOM GROUND APPLICATION	MAR 2001	.00	.00	.00	.00	.00	8.65	23.25	1.86	33.76	33.76
CULTIVATE	100HP, 5 ROW CULTIVATOR	MAR 2001	.20	.24	3.46	2.93	2.88	.00	.00	.34	6.15	9.60
CULT. & DITCH	100HP, 5-ROW CULTIVATOR	APR 2001	.20	.24	3.46	2.93	2.88	.00	.00	.29	6.10	9.56
BUILD DRAIN	100HP, BLADE	APR 2001	.04	.04	.66	.46	.54	.00	.00	.05	1.05	1.72
IRRIGATE(12X)	RILL IRRIGATION, 36 AC. IN.	APR-OCT 2001	.00	7.50	6.42	2.50	67.50	62.00	.00	3.30	135.30	141.72
APPLY P.A.M.	EROSION CONTROL	APR-JUN 2001	.00	.00	2.08	.13	.00	.00	9.40	.40	9.92	12.00
APPLY HERBICIDE	CUSTOM GROUND APPLICATION	APR 2001	.00	.00	.00	.00	.00	8.65	43.65	2.62	54.92	54.92
SPRAY	FIELD BORDERS	MAY-OCT 2001	.00	.00	.00	.00	.00	7.00	.00	.18	7.18	7.18
SPOT SPRAY	4-WHEEL ATV W/SPRAYER	MAY 2001	.25	.30	.72	.39	2.70	.00	4.49	.32	7.90	8.62
CULT. & DITCH	100HP, 5-ROW CULTIVATOR	MAY 2001	.20	.24	3.46	2.93	2.88	.00	.00	.24	6.05	9.51
FERTIGATION	THROUGH THE IRRIGATION SYSTEM	MAY 2001	.00	.00	.00	.00	.00	.00	21.00	.88	21.88	21.88
WEEDING	HAND WEEDING	JUL 2001	.00	.00	.00	.00	.00	30.00	.00	.75	30.75	30.75
HARVEST&PROCESS.	CUSTOM HARVEST & PROCESSING	AUG 2001	.00	.00	.00	.00	.00	201.00	.00	3.35	204.35	204.35
ASSESSMENT	MARKETING	SEP 2001	.00	.00	.00	.00	.00	9.38	.00	.08	9.46	9.46
RESIDUE DISPOSAL	CUSTOM DISPOSAL	SEP 2001	.00	.00	.00	.00	.00	10.00	.00	.08	10.08	10.08
CULT. & DITCH	100HP, 5-ROW CULTIVATOR	SEP 2001	.20	.24	3.46	2.93	2.88	.00	.00	.05	5.86	9.31
MISC USE	LABOR'S PICKUP	ANN 2001	1.80	1.98	5.53	13.56	17.82	.00	.00	1.57	32.95	38.48
MISC USE	MANAGER'S 3/4 TON PICKUP	ANN 2001	1.60	.00	11.03	10.88	.00	.00	.00	.54	11.43	22.46
MISC USE	4-WHEEL ATV	ANN 2001	.25	.28	.47	.34	2.47	.00	.00	.14	2.96	3.43
OVERHEAD	UTILITIES, LEGAL, ACCTG., ETC.	ANN 2001	.00	.00	.00	.00	.00	84.80	.00	.00	84.80	84.80
TAXES	LAND	ANN 2001	.00	.00	20.00	.00	.00	.00	.00	.00	.00	20.00
LAND COST	NET RENT	ANN 2001	.00	.00	130.00	.00	.00	.00	.00	.00	.00	130.00
MANAGEMENT	MANAGEMENT CHARGE	ANN 2001	.00	.00	50.00	.00	.00	.00	.00	.00	.00	50.00
TOTAL PER ACRE			6.57	13.27	298.85	92.65	128.95	528.48	350.44	44.30	1144.82	1443.67

* SOME PRODUCERS FERTILIZE, SPRAY, ROLL-HARROW AND THEN PLANT.

TABLE 6NS. ITEMIZED COST PER ACRE FOR PRODUCING NATIVE SPEARMINT IN
CENTRAL WASHINGTON: SIDE-ROLL IRRIGATION

		PRICE OR UNIT COST/UNIT	QUANTITY	VALUE OR COST	YOUR FARM

VARIABLE COSTS		\$		\$	
SINBAR	LB.	31.00	2.00	62.00	_____
PROWL	PINT	2.63	3.00	7.89	_____
GRAMOXONE	PINT	4.01	2.00	8.02	_____
STINGER	OZ.	4.49	1.00	4.49	_____
COMITE	QT.	19.08	.42	8.01	_____
NUTRA-BUFFER	OZ.	.08	2.70	.22	_____
ORTHENE	LB.	12.00	.50	6.00	_____
BORDER SPRAY	ACRE	7.00	1.00	7.00	_____
NITROGEN (DRY)	LB.	.36	250.00	90.00	_____
PHOSPHATE	LB.	.25	80.00	20.00	_____
SULFUR	LB.	.12	40.00	4.80	_____
ZINC	LB.	1.25	5.00	6.25	_____
POTASH	LB.	.17	80.00	13.60	_____
NITROGEN (LIQ)	LB.	.42	.50	21.00	_____
DRY FERT APPLICATION	ACRE	7.00	1.00	7.00	_____
CUSTOM APPLICATION	ACRE	8.65	3.50	30.28	_____
AERIAL APPLICATION	ACRE	8.50	.83	7.08	_____
IRRIGATION CHARGE	ACRE	62.00	1.00	62.00	_____
ELECTRICAL COST	ACRE	66.00	1.00	66.00	_____
HAND LABOR	HOUR	9.00	6.93	62.33	_____
HARVEST & PROCESS	LB.	3.00	154.00	462.00	_____
MARKET ASSESSMENT	LB.	.14	154.00	21.56	_____
RESIDUE DISPOSAL	ACRE	30.00	1.00	30.00	_____
TRACTOR REPAIR	ACRE	.10	1.00	.10	_____
TRACTOR FUEL/LUBE	ACRE	.24	1.00	.24	_____
MACHINERY REPAIRS*	ACRE	10.52	1.00	10.52	_____
MACHINE FUEL/LUBE	ACRE	20.19	1.00	20.19	_____
INTEREST ON OP. CAP.	ACRE	33.01	1.00	33.01	_____
OVERHEAD	ACRE	85.73	1.00	85.73	_____

TOTAL VARIABLE COST				1157.29	_____
FIXED COSTS		\$		\$	
MACHINE DEPRECIATION*	ACRE	56.13	1.00	56.13	_____
MACHINE INTEREST*	ACRE	49.93	1.00	49.93	_____
MACHINE INSURANCE*	ACRE	2.99	1.00	2.99	_____
MACHINE TAXES*	ACRE	8.99	1.00	8.99	_____
MACHINE HOUSING	ACRE	.67	1.00	.67	_____
LAND TAXES	ACRE	20.00	1.00	20.00	_____
NET LAND RENT**	ACRE	130.00	1.00	130.00	_____
PRORATED 1 ST YR LOSS***	ACRE	240.21	1.00	240.21	_____
MANAGEMENT CHARGE	ACRE	50.00	1.00	50.00	_____

TOTAL FIXED COST				558.92	_____
TOTAL COST				1716.20	_____

* INCLUDES IRRIGATION EQUIPMENT.					
** \$150 RENT MINUS LAND TAXES.					
*** NET FIRST YEAR LOSS PRORATED OVER FIVE YEARS AT 10% INTEREST.					

TABLE 2NR. Materials or Services Applied per Acre by Operation for
Establishing a Native Spearmint Field, Following Wheat, in Central
Washington: Rill Irrigation

Operation	Material or Services Applied
Fertilize-Dry (March)	Custom ground application (\$7.00 per acre) 150 lbs. nitrogen (\$.36 per lb.) 80 lbs. phosphate (\$.25 per lb.) 40 lbs. sulfur (\$.12 per lb.) 80 lbs. potash (\$.17 per lb.) 5 lbs. zinc (\$1.23 per lb.)
Plant (March)	Custom plant (\$100.00 per acre) Spearmint roots (\$150.00 per acre)
Spray (March)	Custom ground application (\$8.65 per acre) .75 lb. Sinbar (\$31.00 per lb.)
Irrigate (April-October)	Irrigation charge (\$62.00 per acre)
Apply P.A.M. (April-June)	4 lbs. P.A.M. (\$2.35 per lb.)
Apply Herbicide (April)	Custom ground application (\$8.65 per acre) 1 lb. Sinbar (\$31.00 per lb.) 10 oz. Assure II (\$1.04 per ounce) 1 qt. crop oil (\$9.00 per gal.)
Spray (May-October)	Field border spray (\$7.00 per acre)
Spot Spray (May)	1 oz. Stinger (\$4.49 per oz.)
Fertigation (May)	50 lbs. nitrogen (\$.42 per lb.)
Weeding (July)	Hand weeding (\$30.00 per acre)
Harvest & Process (August)	Custom harvest & processing (67 lbs. per acre @ \$3.00 per lb.)
Assessment (September)	Market assessment (67 lbs. per acre @ \$0.14 per lb.)
Residue Disposal (September)	Custom disposal (\$10.00 per acre)
Overhead (Annual)	8% variable cost

TABLE 3NR. ITEMIZED COST PER ACRE FOR ESTABLISHING A NATIVE SPEARMINT FIELD, FOLLOWING WHEAT, IN CENTRAL WASHINGTON:
RILL IRRIGATION.

		PRICE OR		VALUE OR	YOUR
	UNIT	COST/UNIT	QUANTITY	COST	FARM

VARIABLE COSTS		\$		\$	
CUSTOM PLANTING	ACRE	100.00	1.00	100.00	_____
NATIVE PLANTS	ACRE	150.00	1.00	150.00	_____
NITROGEN (DRY)	LB.	.36	150.00	54.00	_____
PHOSPHATE	LB.	.25	80.00	20.00	_____
SULFUR	LB.	.12	40.00	4.80	_____
POTASH	LB.	.17	80.00	13.60	_____
ZINC	LB.	1.25	5.00	6.25	_____
NITROGEN (LIQ)	LB.	.42	50.00	21.00	_____
SINBAR	LB.	31.00	1.75	54.25	_____
ASSURE II	OZ.	1.04	10.00	10.40	_____
CROP OIL	GAL.	9.00	.25	2.25	_____
STINGER	OZ.	4.49	1.00	4.49	_____
P.A.M.	LB.	2.35	4.00	9.40	_____
BORDER SPRAY	ACRE	7.00	1.00	7.00	_____
DRY FERT APPLICATION	ACRE	7.00	1.00	7.00	_____
CUSTOM APPLICATION	ACRE	8.65	2.00	17.30	_____
IRRIGATION CHARGE	ACRE	62.00	1.00	62.00	_____
HAND WEEDING	ACRE	30.00	1.00	30.00	_____
HAND LABOR	HOURL	9.00	10.06	90.50	_____
LABOR(TRAC/MACH)	HOURL	12.00	3.21	38.46	_____
HARVEST & PROCESS	LB.	3.00	67.00	201.00	_____
MARKET ASSESSMENT	LB.	.14	67.00	9.38	_____
RESIDUE DISPOSAL	ACRE	10.00	1.00	10.00	_____
TRACTOR REPAIR	ACRE	18.87	1.00	18.87	_____
TRACTOR FUEL/LUBE	ACRE	29.92	1.00	29.92	_____
MACHINERY REPAIRS*	ACRE	23.67	1.00	23.67	_____
MACHINE FUEL/LUBE	ACRE	20.19	1.00	20.19	_____
INTEREST ON OP. CAP.	ACRE	44.30	1.00	44.30	_____
OVERHEAD	ACRE	84.80	1.00	84.80	_____

TOTAL VARIABLE COST				1144.82	_____
FIXED COSTS		\$		\$	
TRACTOR DEPRECIATION	ACRE	20.89	1.00	20.89	_____
TRACTOR INTEREST	ACRE	30.73	1.00	30.73	_____
TRACTOR INSURANCE	ACRE	1.84	1.00	1.84	_____
TRACTOR TAXES	ACRE	5.53	1.00	5.53	_____
TRACTOR HOUSING	ACRE	3.07	1.00	3.07	_____
MACHINE DEPRECIATION*	ACRE	19.35	1.00	19.35	_____
MACHINE INTEREST*	ACRE	13.25	1.00	13.25	_____
MACHINE INSURANCE*	ACRE	.74	1.00	.74	_____
MACHINE TAXES*	ACRE	2.23	1.00	2.23	_____
MACHINE HOUSING	ACRE	1.21	1.00	1.21	_____
LAND TAXES	ACRE	20.00	1.00	20.00	_____
NET LAND RENT**	ACRE	130.00	1.00	130.00	_____
MANAGEMENT CHARGE	ACRE	50.00	1.00	50.00	_____

TOTAL FIXED COST				298.85	_____
TOTAL COST				1443.67	_____
LESS: GROSS REVENUE***				603.00	_____
NET FIRST YEAR LOSS				840.67	_____

* INCLUDES IRRIGATION EQUIPMENT.					
** \$150 RENT MINUS LAND TAXES.					
*** 67 LBS. AT \$9.00 PER LB.					

TABLE 4NR. SCHEDULE OF OPERATIONS AND ESTIMATED COSTS PER ACRE FOR PRODUCING NATIVE SPEARMINT IN CENTRAL WASHINGTON: RILL IRRIGATION

		VARIABLE COST											
OPERATION	TOOLING	MTH YEAR	MACH HOURS	LABOR HOURS	TOTAL FIXED COST	FUEL, LUBE, & REPAIRS	LABOR	SERVICE	MATER.	INTER.	TOTAL VARIABLE COST	TOTAL COST	
					\$	\$	\$	\$	\$	\$	\$	\$	\$
APPLY HERBICIDE	CUSTOM GROUND APPLICATION	FALL 2000	.00	.00	.00	.00	.00	8.65	31.00	3.63	43.28	43.28	
APPLY HERBICIDE	CUSTOM GROUND APPLICATION	FEB 2001	.00	.00	.00	.00	.00	8.65	39.14	3.19	50.98	50.98	
FERTILIZE (DRY)	CUSTOM GROUND APPLICATION	MAR 2001	.00	.00	.00	.00	.00	7.00	89.65	5.63	102.28	102.28	
CULT. & DITCH	100HP, 5-ROW CULTIVATOR	MAR 2001	.20	.24	3.46	2.93	2.88	.00	.00	.34	6.15	9.60	
BUILD DRAIN	100HP, BLADE	MAR 2001	.04	.04	.66	.46	.54	.00	.00	.06	1.06	1.72	
IRRIGATE(12X)	RILL IRRIGATION, 36 AC. IN.	APR-OCT 2001	.00	7.50	6.42	2.50	67.50	62.00	.00	3.30	135.30	141.72	
SPRAY	FIELD BORDERS	MAY-OCT 2001	.00	.00	.00	.00	.00	7.00	.00	.18	7.18	7.18	
SPOT SPRAY	4-WHEEL ATV W/SPRAYER	MAY 2001	.25	.30	.72	.39	2.70	.00	4.49	.32	7.90	8.62	
FERTIGATION	THROUGH THE IRRIGATION SYSTEM	MAY 2001	.00	.00	.00	.00	.00	.00	21.00	.88	21.88	21.88	
APPLY INSECT.*	AERIAL APPLICATION	MAY 2001	.00	.00	.00	.00	.00	2.83	8.10	.46	11.39	11.39	
HARVEST&PROCESS	CUSTOM HARVEST AND PROCESSING	JUN 2001	.00	.00	.00	.00	.00	234.00	.00	7.80	241.80	241.80	
FERTILIZE	CUSTOM GROUND APPLICATION	JUN 2001	.00	.00	.00	.00	.00	8.65	45.00	1.79	55.44	55.44	
DITCH	100HP, 5-ROW ROTARY DITCHER	JUL 2001	.33	.40	5.86	4.60	4.80	.00	.00	.24	9.64	15.50	
APPLY HERB.**	CUSTOM GROUND APPLICATION	JUL 2001	.00	.00	.00	.00	.00	4.32	7.75	.30	12.38	12.38	
APPLY INSECT.**	AERIAL APPLICATION	AUG 2001	.00	.00	.00	.00	.00	4.25	6.13	.17	10.55	10.55	
HARVEST&PROCESS.	CUSTOM HARVEST & PROCESSING	SEP 2001	.00	.00	.00	.00	.00	228.00	.00	1.90	229.90	229.90	
DITCH	100HP, 5-ROW ROTARY DITCHER	SEP 2001	.33	.40	5.86	4.60	4.80	.00	.00	.08	9.48	15.35	
ASSESSMENT	MARKETING	SEP 2001	.00	.00	.00	.00	.00	21.56	.00	.18	21.74	21.74	
RESIDUE DISPOSAL	CUSTOM DISPOSAL	OCT 2001	.00	.00	.00	.00	.00	30.00	.00	.00	30.00	30.00	
MISC USE	LABOR'S PICKUP	ANN 2001	1.80	1.98	5.53	13.56	17.82	.00	.00	1.57	32.95	38.47	
MISC USE	MANAGER'S 3/4 TON PICKUP	ANN 2001	1.60	.00	11.03	10.88	.00	.00	.00	.54	11.43	22.46	
MISC USE	4-WHEEL ATV	ANN 2001	.25	.28	.47	.34	2.47	.00	.00	.14	2.96	3.43	
OVERHEAD	UTILITIES, LEGAL, ACCTG., ETC.	ANN 2001	.00	.00	.00	.00	.00	84.45	.00	.00	84.45	84.45	
TAXES	LAND	ANN 2001	.00	.00	20.00	.00	.00	.00	.00	.00	.00	20.00	
LAND COST	NET RENT	ANN 2001	.00	.00	130.00	.00	.00	.00	.00	.00	.00	130.00	
INVESTMENT	PRORATED FIRST YEAR LOSS***	ANN 2001	.00	.00	221.77	.00	.00	.00	.00	.00	.00	221.77	
MANAGEMENT	MANAGEMENT CHARGE	ANN 2001	.00	.00	50.00	.00	.00	.00	.00	.00	.00	50.00	
TOTAL PER ACRE			4.80	10.06	461.79	40.28	103.51	711.38	252.26	32.69	1140.12	1601.91	

* APPLIED AN AVERAGE OF ONCE EVERY THREE YEARS.

** APPLIED AN AVERAGE OF ONCE EVERY OTHER YEAR.

*** \$840.67 AMORTIZED AT 10% OVER FIVE YEARS.

TABLE 5NR. Materials or Services Applied per Acre by Operation for Producing Native Spearmint in Central Washington: Rill Irrigation

Operation	Material or Service Applied
Apply Herbicide (Fall)	Custom ground application (\$8.65 per acre) 1 lb. Sinbar (\$31.00 per lb.)
Apply Herbicide (February)	Custom ground application (\$8.65 per acre) 3 pts. Prowl (\$2.63 per pint) 2 pts. Gramoxone (\$4.01 per pint) .75 lb. Sinbar (\$31.00 per lb.)
Fertilize-Dry (March)	Custom ground application (\$7.00 per acre) 125 lbs. nitrogen (\$.36 per lb.) 80 lbs. phosphate (\$.25 per lb.) 40 lbs. sulfur (\$.12 per lb.) 80 lbs. potash (\$.17 per lb.) 5 lbs. zinc (\$1.25 per lb.)
Irrigate (April-October)	Irrigation charge (\$62.00 per acre)
Spray (May-October)	Field border spray (\$7.00 per acre)
Spot Spray (May)	1 oz. Stinger (\$4.49 per oz.)
Fertigation (May)	50 lbs. nitrogen (\$0.42 per lb.)
Apply Insecticide (May)*	Aerial application (\$8.50 per acre) 1.25 qts. Comite (\$19.08 per qt.) 3.2 oz. of Nutra-Buffer (\$0.08 per oz.)
Harvest & Process (June)	Custom harvest and processing (78 lbs. per acre @ \$3.00 per lb.)
Fertilize (June)	Custom ground application (\$8.65 per acre) 125 lbs. of nitrogen (\$.36 per lb.)
Apply Herbicide (July)**	Custom ground application (\$8.65 per acre) .5 lbs. Sinbar (\$31.00 per lb.)
Apply Insecticide (August)**	Aerial application (\$8.50 per acre) 1 lb. Orthene (\$12.00 per lb.) 3.2 oz. of Nutra-Buffer (\$.08 per oz.)
Harvest & Process (September)	Custom harvest and processing (76 lbs. per acre @ \$3.00 per lb.)
Assessment (September)	Market assessment (154 lbs. per acre @ \$.14 per lb.)
Residue Disposal (October)	Custom disposal (\$30.00 per acre)
Overhead (Annual)	8% variable cost

* Applied an average of once every three years

** Applied an average of every other year.

TABLE 6NR. ITEMIZED COST PER ACRE FOR PRODUCING NATIVE SPEARMINT IN
CENTRAL WASHINGTON: RILL IRRIGATION

	UNIT	PRICE OR COST/UNIT	QUANTITY	VALUE OR COST	YOUR FARM

VARIABLE COSTS		\$		\$	
SINBAR	LB.	31.00	2.00	62.00	_____
PROWL	PINT	2.63	3.00	7.89	_____
GRAMOXONE	PINT	4.01	2.00	8.02	_____
STINGER	OZ.	4.49	1.00	4.49	_____
COMITE	QT.	19.08	.42	8.01	_____
NUTRA-BUFFER	OZ.	.08	2.70	.22	_____
ORTHENE	LB.	12.00	.50	6.00	_____
BORDER SPRAY	ACRE	7.00	1.00	7.00	_____
NITROGEN (DRY)	LB.	.36	260.00	90.00	_____
PHOSPHATE	LB.	.25	80.00	20.00	_____
SULFUR	LB.	.12	40.00	4.80	_____
ZINC	LB.	1.25	5.00	6.25	_____
POTASH	LB.	.17	80.00	13.60	_____
NITROGEN (LIQ)	LB.	.42	50.00	21.00	_____
DRY FERT APPLICATION	ACRE	7.00	1.00	7.00	_____
CUSTOM APPLICATION	ACRE	8.65	3.50	30.28	_____
AERIAL APPLICATION	ACRE	8.50	.83	7.08	_____
IRRIGATION CHARGE	ACRE	62.00	1.00	62.00	_____
HAND LABOR	HOURL	9.00	10.06	90.50	_____
LABOR (TRAC/MACH)	HOURL	12.00	1.08	13.02	_____
HARVEST & PROCESS	LB.	3.00	154.00	462.00	_____
MARKET ASSESSMENT	LB.	.14	154.00	21.56	_____
RESIDUE DISPOSAL	ACRE	30.00	1.00	30.00	_____
TRACTOR REPAIR	ACRE	5.52	1.00	5.52	_____
TRACTOR FUEL/LUBE	ACRE	5.65	1.00	5.65	_____
MACHINERY REPAIRS*	ACRE	8.92	1.00	8.92	_____
MACHINE FUEL/LUBE	ACRE	20.19	1.00	20.19	_____
INTEREST ON OP. CAP.	ACRE	32.69	1.00	32.69	_____
OVERHEAD	ACRE	84.45	1.00	84.45	_____

TOTAL VARIABLE COST				1140.12	_____
FIXED COST		\$		\$	
TRACTOR DEPRECIATION	ACRE	4.72	1.00	4.72	_____
TRACTOR INTEREST	ACRE	7.43	1.00	7.43	_____
TRACTOR INSURANCE	ACRE	.45	1.00	.45	_____
TRACTOR TAXES	ACRE	1.34	1.00	1.34	_____
TRACTOR HOUSING	ACRE	.74	1.00	.74	_____
MACHINE DEPRECIATION*	ACRE	14.97	1.00	14.97	_____
MACHINE INTEREST*	ACRE	7.95	1.00	7.95	_____
MACHINE INSURANCE*	ACRE	.42	1.00	.42	_____
MACHINE TAXES*	ACRE	1.28	1.00	1.28	_____
MACHINE HOUSING	ACRE	.71	1.00	.71	_____
LAND TAXES	ACRE	20.00	1.00	20.00	_____
NET LAND RENT**	ACRE	130.00	1.00	130.00	_____
PRORATED 1 ST YR LOSS***	ACRE	221.77	1.00	221.77	_____
MANAGEMENT CHARGE	ACRE	50.00	1.00	50.00	_____

TOTAL FIXED COST				461.79	_____
TOTAL COST				1601.91	_____

* INCLUDES IRRIGATION EQUIPMENT.					
** \$150 RENT MINUS LAND TAXES.					
*** NET FIRST YEAR LOSS PRORATED OVER FIVE YEARS AT 10% INTEREST.					

Table 7NR. AVERAGE ANNUAL PROFIT (OR LOSS)¹ PER ACRE FOR NATIVE SPEARMINT GROWN UNDER RILL IRRIGATION AT DIFFERENT PRICE AND YIELD LEVELS AND THE BREAKEVEN PRICE FOR THE GIVEN YIELD LEVELS.

FIRST YEAR YIELD	MATURE YEAR YIELD ²	PRICE PER POUND					BREAKEVEN PRICE
		\$9.00	\$10.00	\$11.00	\$12.00	\$13.00	
LBS.	LBS.	\$	\$	\$	\$	\$	\$
-----ANNUAL PROFIT-----							
67	140	-297	-139	18	176	334	10.88
67	145	-268	-105	57	220	383	10.65
67	150	-239	-71	96	264	432	10.43
67	155	-210	-37	135	308	481	10.22
67	160	-181	-3	174	352	530	10.02
67	165	-152	31	213	396	579	9.83
67	170	-123	65	252	440	623	9.66

¹RETURNS OVER ALL VARIABLE AND FIXED COSTS LISTED IN TABLE 6NR.

²FIVE YEARS OF MATURE YIELD.

TABLE 1SS. SCHEDULE OF OPERATIONS AND ESTIMATED COSTS PER ACRE FOR ESTABLISHING A SCOTCH SPEARMINT FIELD, FOLLOWING WHEAT, IN CENTRAL WASHINGTON: SIDE-ROLL IRRIGATION

VARIABLE COST												

OPERATION	TOOLING	MTH YEAR	MACH HOURS	LABOR HOURS	TOTAL FIXED COST	FUEL, LUBE, & REPAIRS	LABOR	SERVICE	MATER.	INTER.	TOTAL VARIABLE COST	TOTAL COST

					\$	\$	\$	\$	\$	\$	\$	\$
DISK(2X)	180HP, 15' OFFSET DISK	FALL 2000	.33	.40	10.35	9.98	4.80	.00	.00	1.36	16.14	26.49
RIP (2X)	180HP, 7 SHANK RIPPER	FALL 2000	.67	.80	22.31	18.97	9.60	.00	.00	2.62	31.19	53.50
CHISEL PLOW	180HP, 17' CHISEL PLOW	FALL 2000	.33	.40	11.23	9.48	4.80	.00	.00	1.31	15.59	26.82
FUMIGATE	CUSTOM GROUND APPLICATOR	FALL 2000	.00	.00	.00	.00	.00	39.00	168.00	18.98	225.98	225.98
CONSULTING	USE RECOMMENDATIONS	ANN 2001	.00	.00	.00	.00	.00	5.00	.00	.25	5.25	5.25
FERTILIZE (DRY)*	CUSTOM GROUND APPLICATOR	MAR 2001	.00	.00	.00	.00	.00	7.00	98.65	6.16	111.81	111.81
ROLL-HARROW(2X)*	180HP, 15' ROLLER-HARROW	MAR 2001	.50	.60	14.23	14.23	7.20	.00	.00	1.25	22.68	36.91
PLANT*	CUSTOM PLANT	MAR 2001	.00	.00	.00	.00	.00	100.00	250.00	20.42	370.42	370.42
SPRAY*	CUSTOM GROUND APPLICATOR	MAR 2001	.00	.00	.00	.00	.00	8.65	23.25	1.86	33.76	33.76
CULTIVATE	100HP, 5 ROW CULTIVATOR	MAR 2001	.20	.24	3.46	2.93	2.88	.00	.00	.34	6.15	9.60
IRRIGATE(10X)	SIDEROLL IRR.,25 AC. IN.	APR-OCT 2001	.00	3.00	100.96	5.88	27.00	117.00	.00	3.75	153.62	254.59
APPLY HERBICIDE	CUSTOM GROUND APPLICATOR	APR 2001	.00	.00	.00	.00	.00	8.65	43.65	2.62	54.92	54.92
SPRAY	FIELD BORDERS	MAY-OCT 2001	.00	.00	.00	.00	.00	7.00	.00	.18	7.18	7.18
SPOT SPRAY	4-WHEEL ATV W/SPRAYER	MAY 2001	.25	.30	.72	.39	2.70	.00	4.49	.32	7.90	8.62
APPLY SULFUR	MILDEW CONTROL\CUSTOM APPLIED	MAY 2001	.00	.00	.00	.00	.00	8.65	5.20	.58	14.43	14.43
FERTIGATE	THROUGH THE IRRIGATION SYSTEM	JUN 2001	.00	.00	.00	.00	.00	.00	21.00	.70	21.70	21.70
APPLY INSECT.**	AERIAL APPLICATION	JUN 2001	.00	.00	.00	.00	.00	4.25	12.05	.54	16.85	16.85
APPLY SULFUR	MILDEW CONTROL\AERIAL APPLIC.	JUN 2001	.00	.00	.00	.00	.00	8.50	5.20	.46	14.16	14.16
WEEDING	HAND WEEDING	JUL 2001	.00	.00	.00	.00	.00	30.00	.00	.75	30.75	30.75
APPLY INSECT.	AERIAL APPLICATION	JUL 2001	.00	.00	.00	.00	.00	8.50	12.26	.52	21.27	21.27
HARVEST&PROCESS.	CUSTOM HARVEST & PROCESSING	AUG 2001	.00	.00	.00	.00	.00	207.00	.00	3.45	210.45	210.45
ASSESSMENT	MARKETING	SEP 2001	.00	.00	.00	.00	.00	9.66	.00	.08	9.74	9.74
RESIDUE DISPOSAL	CUSTOM DISPOSAL	SEP 2001	.00	.00	.00	.00	.00	10.00	.00	.08	10.08	10.08
APPLY SULFUR	MILDEW CONTROL\CUSTOM APPLIED	OCT 2001	.00	.00	.00	.00	.00	8.65	5.20	.00	13.85	13.85
MISC USE	4-WHEEL ATV	ANN 2001	.25	.28	.47	.34	2.47	.00	.00	.14	2.96	3.43
MISC USE	LABOR'S PICKUP	ANN 2001	1.80	1.98	5.53	13.56	17.82	.00	.00	1.57	32.95	38.47
MISC USE	MANAGER'S 3/4 TON PICKUP	ANN 2001	1.60	.00	11.03	10.88	.00	.00	.00	.54	11.43	22.46
OVERHEAD	UTILITIES, LEGAL, ACCTG., ETC.	ANN 2001	.00	.00	.00	.00	.00	117.85	.00	.00	117.85	117.85
TAXES	LAND	ANN 2001	.00	.00	20.00	.00	.00	.00	.00	.00	.00	20.00
LAND COST	NET RENT	ANN 2001	.00	.00	155.00	.00	.00	.00	.00	.00	.00	155.00
MANAGEMENT	MANAGEMENT CHARGE	ANN 2001	.00	.00	50.00	.00	.00	.00	.00	.00	.00	50.00

TOTAL PER ACRE			5.93	8.00	405.29	86.65	79.27	705.37	648.95	70.80	1591.04	1996.33

* SOME PRODUCERS FERTILIZE, SPRAY, ROLL-HARROW AND THEN PLANT.

** AN AVERAGE OF EVERY OTHER YEAR.

TABLE 2SS. Materials or Services Applied per Acre by Operation for
Establishing a Scotch Spearmint Field in Central Washington:
Side-Roll Irrigation

Operation	Material or Services Applied
Fumigate (Fall)	Custom application (\$39.00 per acre) 40 gal. of Vapam (\$4.20 per gallon)
Consulting (Annual)	Use recommendations (\$5.00 per acre)
Fertilize-Dry (March)	Custom ground application (\$7.00 per acre) 150 lbs. nitrogen (\$.36 per lb.) 80 lbs. phosphate (\$.25 per lb.) 40 lbs. sulfur (\$.12 per lb.) 80 lbs. potash (\$.17 per lb.) 5 lbs. zinc (\$1.23 per lb.)
Plant (March)	Custom plant (\$100.00 per acre) Spearmint roots (\$250.00 per acre)
Spray (March)	Custom ground application (\$8.65) .75 lb. Sinbar (\$31.00 per lb.)
Irrigate (April-October)	Irrigation charge (\$62.00 per acre) Electrical charge (\$55.00 per acre)
Apply Herbicide (April)	Custom ground application (\$8.65 per acre) 10 oz. Assure II (\$1.04 per oz.) 1 lb. Sinbar (\$31.00 per lb.) 1 qt. crop oil (\$9.00 per gal.)
Spray (May-October)	Field border spray (\$7.00 per acre)
Spot Spray (May)	1 oz. Stinger (\$4.49 per oz.)
Apply Sulfur (May)	Custom ground application (\$8.65 per acre) 6 lbs. sulfur (\$.70 per lb.) 5 oz. Surfex (\$.20 per oz.)
Fertigate (June)	50 lbs. nitrogen (\$.42 per lb.)
Apply Insecticide (June)*	Aerial application (\$8.50 per acre) 1.25 qts. Comite (\$19.08 per qt.) 3.2 oz. Nutra-Buffer (\$.08 per oz.)
Apply Sulfur (June)	Custom ground application (\$8.65 per acre) 6 lbs. sulfur (\$.70 per lb.) 5 oz. Surfex (\$.20 per oz.)
Weeding (July)	Hand weeding (\$30.00 per acre)
Apply Insecticide (July)	Aerial application (\$8.50 per acre) 1.0 lbs. Orthene (\$10.00 per lb.) 3.2 oz. Nutra-Buffer (\$.08 per oz.)
Harvest & Process (August)	Custom harvest & processing (69 lbs. per acre @ 3.00 per lb.)
Assessment (September)	Market assessment (69 lbs. per acre @ \$.14 per lb.)

TABLE 2SS. Continued

Operation	Material or Services Applied
Residue Disposal (September)	Custom disposal (\$10.00 per acre)
Apply Sulfur (October)	Custom ground application (\$8.65 per acre) 6 lbs. sulfur (\$.70 per lb.) 5 oz. Surfix (\$.20 per oz.)
Overhead (Annual)	8% variable cost
* Average of once every two years.	

TABLE 3SS. ITEMIZED COST PER ACRE FOR ESTABLISHING A SCOTCH
SPEARMINT FIELD, FOLLOWING WHEAT, IN CENTRAL
WASHINGTON: SIDE-ROLL IRRIGATION

		PRICE OR		VALUE OR	YOUR
		UNIT COST/UNIT	QUANTITY	COST	FARM
VARIABLE COSTS		\$		\$	
VAPAM	GAL.	4.20	40.00	168.00	
CUSTOM FUMIGATION	ACRE	39.00	1.00	39.00	
SCOTCH PLANTS	ACRE	250.00	1.00	250.00	
CUSTOM PLANTING	ACRE	100.00	1.00	100.00	
CONSULTANT	ACRE	5.00	1.00	5.00	
NITROGEN (DRY)	LB.	.36	150.00	54.00	
PHOSPHATE	LB.	.25	80.00	20.00	
SULFUR	LB.	.12	40.00	4.80	
POTASH	LB.	.17	80.00	13.60	
ZINC	LB.	1.25	5.00	6.25	
NITROGEN (LIQ)	LB.	.42	50.00	21.00	
SULFUR (MILDEW)	LB.	.70	18.00	12.60	
SINBAR	LB.	31.00	1.75	54.25	
ASSURE II	OZ.	1.04	10.00	10.40	
CROP OIL	GAL.	9.00	.25	2.25	
STINGER	OZ.	4.49	1.00	4.49	
SURFIX	OZ.	.20	15.00	3.00	
COMITE	QT.	19.08	.63	11.92	
NUTRA-BUFFER	OZ.	.08	4.80	.39	
ORTHENE	LB.	12.00	1.00	12.00	
BORDER SPRAY	ACRE	7.00	1.00	7.00	
DRY FERT APPLICATION	ACRE	7.00	1.00	7.00	
CUSTOM APPLICATION	ACRE	8.65	4.00	34.60	
AERIAL APPLICATION	ACRE	8.50	2.50	21.25	
IRRIGATION CHARGE	ACRE	62.00	1.00	62.00	
ELECTRICAL COST	ACRE	55.00	1.00	55.00	
HAND WEEDING	ACRE	30.00	1.00	30.00	
HAND LABOR	HOURL	9.00	5.56	50.00	
LABOR(TRAC/MACH)	HOURL	12.00	2.44	29.28	
HARVEST & PROCESS	LB.	3.00	69.00	207.00	
MARKET ASSESSMENT	LB.	.14	69.00	9.66	
RESIDUE DISPOSAL	ACRE	10.00	1.00	10.00	
TRACTOR REPAIR	ACRE	15.05	1.00	15.05	
TRACTOR FUEL/LUBE	ACRE	26.11	1.00	26.11	
MACHINERY REPAIRS*	ACRE	25.31	1.00	25.31	
MACHINE FUEL/LUBE	ACRE	20.19	1.00	20.19	
INTEREST ON OP. CAP.	ACRE	70.80	1.00	70.80	
OVERHEAD	ACRE	117.85	1.00	117.85	
TOTAL VARIABLE COST				1591.04	
FIXED COSTS		\$		\$	
TRACTOR DEPRECIATION	ACRE	17.70	1.00	17.70	
TRACTOR INTEREST	ACRE	25.63	1.00	25.63	
TRACTOR INSURANCE	ACRE	1.54	1.00	1.54	
TRACTOR TAXES	ACRE	4.61	1.00	4.61	
TRACTOR HOUSING	ACRE	2.56	1.00	2.56	
MACHINE DEPRECIATION*	ACRE	50.92	1.00	50.92	
MACHINE INTEREST*	ACRE	54.96	1.00	54.96	
MACHINE INSURANCE*	ACRE	3.29	1.00	3.29	
MACHINE TAXES*	ACRE	9.89	1.00	9.89	
MACHINE HOUSING	ACRE	1.17	1.00	1.17	
LAND TAXES	ACRE	20.00	1.00	20.00	
NET LAND RENT**	ACRE	155.00	1.00	155.00	
MANAGEMENT CHARGE	ACRE	50.00	1.00	50.00	
TOTAL FIXED COST				405.29	
TOTAL COST				1996.33	
LESS: GROSS REVENUE***				483.00	
NET FIRST YEAR LOSS				1513.38	

* INCLUDES IRRIGATION EQUIPMENT.

** \$175 RENT MINUS LAND TAXES.

*** 69 LBS. AT \$7.00 PER LB.

TABLE 4SS. SCHEDULE OF OPERATIONS AND ESTIMATED COSTS PER ACRE FOR PRODUCING SCOTCH SPEARMINT IN CENTRAL WASHINGTON: SIDE-ROLL IRRIGATION

OPERATION	TOOLING	MTH YEAR	MACH HOURS	LABOR HOURS	TOTAL FIXED COST	VARIABLE COST					TOTAL VARIABLE COST	TOTAL COST
						FUEL, LUBE, & REPAIRS	LABOR	SERVICE	MATER.	INTER.		
					\$	\$	\$	\$	\$	\$	\$	\$
ROOT BOAR CONT.	THROUGH THE IRRIGATION SYSTEM	FALL 2000	.00	.00	.00	.00	.00	.00	16.25	1.49	17.74	17.74
FERTILIZE (DRY)	CUSTOM GROUND APPLICATION	FALL 2000	.00	.00	.00	.00	.00	7.00	39.00	4.22	50.22	50.22
APPLY HERBICIDE	CUSTOM GROUND APPLICATION	FALL 2000	.00	.00	.00	.00	.00	8.65	15.50	2.21	26.36	26.36
CONSULTING	USE APPLICATIONS	SEA 2001	.00	.00	.00	.00	.00	5.00	.00	.25	5.25	5.25
APPLY HERBICIDE	CUSTOM GROUND APPLICATION	FEB 2001	.00	.00	.00	.00	.00	8.65	67.89	5.10	81.64	81.64
FERTILIZE (DRY)	CUSTOM GROUND APPLICATION	MAR 2001	.00	.00	.00	.00	.00	7.00	58.80	3.84	69.64	69.64
IRRIGATE(12X)	SIDEROLL IRR., 30 AC. IN.	APR-OCT 2001	.00	4.37	100.96	5.88	39.33	128.00	.00	4.33	177.54	278.50
APPLY SULFUR	CUSTOM GROUND APPLICATION	APR 2001	.00	.00	.00	.00	.00	8.65	5.20	.69	14.54	14.54
SPRAY	FIELD BORDERS	MAY-OCT 2001	.00	.00	.00	.00	.00	7.00	.00	.18	7.18	7.18
SPOT SPRAY	4-WHEEL ATV W/SPRAYER	MAY 2001	.25	.30	.72	.39	2.70	.00	4.49	.32	7.90	8.62
APPLY INSECT.	AERIAL APPLICATION	MAY 2001	.00	.00	.00	.00	.00	8.50	16.22	1.03	25.75	25.75
APPLY SULFUR	AERIAL APPLICATION	MAY 2001	.00	.00	.00	.00	.00	8.50	5.20	.57	14.27	14.27
APPLY INSECT.	AERIAL APPLICATION	MAY 2001	.00	.00	.00	.00	.00	8.50	24.11	1.36	33.96	33.96
APPLY SULFUR	AERIAL APPLICATION	JUN 2001	.00	.00	.00	.00	.00	8.50	5.20	.46	14.16	14.16
HARVEST&PROCESS	CUSTOM HARVEST AND PROCESSING	JUL 2001	.00	.00	.00	.00	.00	261.00	.00	6.53	267.53	267.53
FERTILIZE (DRY)	CUSTOM GROUND APPLICATION	JUL 2001	.00	.00	.00	.00	.00	7.00	36.00	1.08	44.08	44.08
APPLY INSECT.	AERIAL APPLICATION	AUG 2001	.00	.00	.00	.00	.00	8.50	16.22	.41	25.13	25.13
APPLY SULFUR	AERIAL APPLICATION	AUG 2001	.00	.00	.00	.00	.00	8.50	5.20	.23	13.93	13.93
HARVEST& PROCESS	CUSTOM HARVEST & PROCESS	SEP 2001	.00	.00	.00	.00	.00	147.00	.00	1.23	148.22	148.22
ASSESSMENT	MARKETING	SEP 2001	.00	.00	.00	.00	.00	19.04	.00	.16	19.20	19.20
RESIDUE DISP.	CUSTOM DISPOSAL	OCT 2001	.00	.00	.00	.00	.00	30.00	.00	.00	30.00	30.00
APPLY SULFUR	CUSTOM GROUND APPLICATION	OCT 2001	.00	.00	.00	.00	.00	8.65	5.20	.00	13.85	13.85
MISC. USE	LABOR'S PICKUP	ANN 2001	1.80	1.98	5.53	13.56	17.82	.00	.00	1.57	32.95	38.47
MISC. USE	MANAGER'S 3/4 TON PICKUP	ANN 2001	1.60	.00	11.03	10.88	2.47	.00	.00	.54	11.43	22.46
MISC. USE	4-WHEEL ATV	ANN 2001	.25	.28	.47	.34	.00	.00	.00	.14	2.96	3.43
TAXES	LAND	ANN 2001	.00	.00	20.00	.00	.00	.00	.00	.00	.00	20.00
LAND COST	NET RENT	ANN 2001	.00	.00	155.00	.00	.00	.00	.00	.00	.00	155.00
OVERHEAD	UTILITIES, LEGAL, ACCTG., ETC.	ANN 2001	.00	.00	.00	.00	.00	92.44	.00	.00	92.44	92.44
INVESTMENT	PRORATED FIRST YEAR LOSS*	ANN 2001	.00	.00	608.53	.00	.00	.00	.00	.00	.00	608.53
MANAGEMENT	MANAGEMENT CHARGE	ANN 2001	.00	.00	50.00	.00	.00	.00	.00	.00	.00	50.00
TOTAL PER ACRE			3.90	6.93	952.24	31.05	62.32	796.08	320.47	37.92	1247.84	2200.08

* \$1513.33 AMORTIZED AT 10% OVER THREE YEARS.

TABLE 5SS. Materials or Services Applied per Acre by Operation for
Producing Scotch Spearmint in Central Washington: Side Roll
Irrigation

Operation	Material or Services Applied
Root Boar Control (Fall)	.5 gal. Lorsban 4E (\$32.50 per gal.)
Fertilize (Fall)	Custom ground application (\$7.00 per acre) 50 lbs. nitrogen (\$.36 per lb.) 50 lbs. phosphate (\$.25 per lb.) 50 lbs. potash (\$.17 per lb.)
Apply Herbicide (Fall)	Custom ground application (\$8.65 per acre) .5 lb. Sinbar (\$31.00 per lb.)
Consulting (Annual)	Use recommendations (\$5.00 per acre)
Apply Herbicide (February)	Custom ground application (\$8.65 per acre) 3 pts. Prowl (\$2.63 per pint) 2 pts. Gramoxone (\$4.00 per pint) .75 lb. Sinbar (\$31.00 per lb.) 2.5 pts Goal (\$11.50 per pint)
Fertilize (March)	Custom ground application (\$7.00 per acre) 150 lbs. nitrogen (\$.36 per lb.) 40 lbs. sulfur (\$.12 per lb.)
Irrigate (April-October)	Irrigation charge (\$62.00 per acre) Electrical charge (\$66.00 per acre)
Apply Sulfur (April)	Custom ground application (\$8.65 per acre) 6 lbs. sulfur (\$.70 per lb.) 5 ozs. Surfix (\$.20 per oz)
Border Spray (May-October)	Field border spray (\$7.00 per acre)
Spot Spray (May)	1 oz. Stinger (\$4.49 per oz.)
Apply Insecticide (May)	Aerial application (\$8.50 per acre) 1.25 qts. Comite (\$19.08 per qt.) 3.2 ozs. Nutra-Buffer (\$.08 per oz.)
Apply Sulfur (May)	Aerial application (\$8.50 per acre) 6 lbs. sulfur (\$.70 per lb.) 5 ozs. Surfix (\$.20 per oz.)
Apply Insecticide (May)	Aerial application (\$8.50 per acre) 1.33 lbs. Orthene (\$12.00 per lb.) 3.2 ozs. Nutra-Buffer (\$.08 per oz.)
Apply Sulfur (June)	Aerial application (\$8.50 per acre) 6 lbs. sulfur (\$.70 per lb.) 5 ozs. Surfix (\$.20 per oz.)
Harvest & Processing (July)	Custom harvest and processing (87 lbs. per acre @ \$3.00 per lb.)
Fertilize (July)	Custom ground application (\$8.65 per acre) 100 lbs. nitrogen (\$.36 per lb.)

TABLE 5SS. Continued.

Operation	Material or Services Applied
Apply Insecticide (August)	Aerial application (\$8.50 per acre) 1.33 lbs. Orthene (\$12.00 per lb.) 3.2 ozs. Nutra-Buffer (\$.08 per oz.)
Apply Sulfur (August)	Aerial application (\$8.50 per acre) 6 lbs. sulfur (\$.70 per lb.) 5 ozs. Surfix (\$.20 per oz.)
Harvest & Processing (Sept.)	Custom harvest and processing (49 lbs. per acre @ \$3.00 per lb.)
Assessment (Sept.)	Market assessment (136 lbs./ac. @ \$.14 per lb.)
Residue Disposal (October)	Custom disposal (\$30.00 per acre)
Apply Sulfur (October)	Custom ground application (\$8.65 per acre) 7 lbs. sulfur (\$.70 per lb.) 5 ozs. Surfix (\$.20 per oz.)
Overhead (Annual)	8% variable cost

TABLE 6SS. ITEMIZED COST PER ACRE FOR PRODUCING SCOTCH SPEARMINT
IN CENTRAL WASHINGTON: SIDE-ROLL IRRIGATION

		PRICE OR		VALUE OR	YOUR
	UNIT	COST/UNIT	QUANTITY	COST	FARM

VARIABLE COSTS		\$		\$	
CONSULTANT	ACRE	5.00	1.00	5.00	_____
NITROGEN	LB.	.36	300.00	108.00	_____
PHOSPHATE	LB.	.25	50.00	12.50	_____
POTASH	LB.	.17	50.00	8.50	_____
SULFUR	LB.	.12	40.00	4.80	_____
SULFUR (MILDEW)	LB.	.70	30.00	21.00	_____
SURFIX	OZ.	.20	25.00	5.00	_____
SINBAR	LB.	31.00	1.25	38.75	_____
LORSBAN 4E	GAL.	32.50	.50	16.25	_____
PROWL	PINT	2.63	3.00	7.89	_____
GRAMOXONE	PINT	4.00	2.00	8.00	_____
GOAL	PINT	11.50	2.50	28.75	_____
STINGER	OZ.	4.49	1.00	4.49	_____
ORTHENE	LB.	12.00	2.66	31.92	_____
NUTRA-BUFFER	OZ.	.08	9.60	.77	_____
COMITE	QT.	19.08	1.25	23.85	_____
BORDER SPRAY	ACRE	7.00	1.00	7.00	_____
DRY FERT APPLICATION	ACRE	7.00	3.00	21.00	_____
CUSTOM APPLICATION	ACRE	8.65	4.00	34.60	_____
AERIAL APPLICATION	ACRE	8.50	6.00	51.00	_____
IRRIGATION CHARGE	ACRE	62.00	1.00	62.00	_____
ELECTRICAL COST	ACRE	66.00	1.00	66.00	_____
HAND LABOR	HOURL	9.00	6.93	62.32	_____
HARVEST & PROCESS	LB.	3.00	136.00	408.00	_____
MARKET ASSESSMENT	LB.	.14	136.00	19.04	_____
RESIDUE DISPOSAL	ACRE	30.00	1.00	30.00	_____
MACHINERY REPAIRS*	ACRE	10.62	1.00	10.62	_____
MACHINE FUEL/LUBE	ACRE	20.43	1.00	20.43	_____
INTEREST ON OP. CAP.	ACRE	37.92	1.00	37.92	_____
OVERHEAD	ACRE	92.44	1.00	92.44	_____

TOTAL VARIABLE COST				1247.84	_____
FIXED COSTS		\$		\$	
MACHINE DEPRECIATION*	ACRE	56.13	1.00	56.13	_____
MACHINE INTEREST*	ACRE	49.93	1.00	49.93	_____
MACHINE INSURANCE*	ACRE	2.99	1.00	2.99	_____
MACHINE TAXES*	ACRE	8.99	1.00	8.99	_____
MACHINE HOUSING	ACRE	.67	1.00	.67	_____
LAND TAXES	ACRE	20.00	1.00	20.00	_____
NET LAND RENT**	ACRE	155.00	1.00	155.00	_____
PRORATED 1 ST YR LOSS***	ACRE	608.53	1.00	608.53	_____
MANAGEMENT CHARGE	ACRE	50.00	1.00	50.00	_____

TOTAL FIXED COST				952.24	_____

TOTAL COST				2200.08	_____

* INCLUDES IRRIGATION EQUIPMENT.

** \$175 RENT MINUS LAND TAXES.

*** NET FIRST YEAR LOSS PRORATED OVER THREE YEARS AT 10% INTEREST.

Table 7SS. AVERAGE ANNUAL PROFIT (OR LOSS)¹ PER ACRE FOR SCOTCH SPEARMINT GROWN UNDER SIDE-ROLL IRRIGATION AT DIFFERENT PRICE AND YIELD LEVELS AND THE BREAKEVEN PRICE FOR THE GIVEN YIELD LEVELS.

FIRST YEAR YIELD	MATURE YEAR YIELD ²	PRICE PER POUND					BREAKEVEN PRICE
		\$11.00	\$12.00	\$13.00	\$14.00	\$15.00	
LBS.	LBS.	\$	\$	\$	\$	\$	\$
-----ANNUAL PROFIT-----							
69	100	-874	-746	-619	-491	-363	17.85
69	110	-796	-658	-521	-383	-245	16.78
69	120	-718	-570	-423	-275	-127	15.86
69	130	-640	-482	-325	-167	-9	15.06
69	140	-562	-394	-227	-59	109	14.35
69	150	-484	-306	-129	49	227	13.72
69	160	-406	-218	-31	157	345	13.16

¹RETURNS OVER ALL VARIABLE AND FIXED COSTS LISTED IN TABLE 6SS.

²THREE YEARS OF MATURE YIELD.

TABLE 2SR. Materials or Services Applied per Acre by Operation for
Establishing a Scotch Spearmint Field in Central Washington:
Rill Irrigation

Operation	Material or Services Applied
Fumigate (Fall)	Custom application (\$39.00 per acre) 40 gal. of Vapam (\$4.20 per gallon)
Consulting (Annual)	Use recommendations (\$5.00 per acre)
Fertilize-Dry (March)	Custom ground application (\$7.00 per acre) 150 lbs. nitrogen (\$.36 per lb.) 80 lbs. phosphate (\$.25 per lb.) 40 lbs. sulfur (\$.12 per lb.) 80 lbs. potash (\$.17 per lb.) 5 lbs. zinc (\$1.23 per lb.)
Spray (March)	Custom ground application (\$8.65) .75 lb. Sinbar (\$31.00 per lb.)
Plant (March)	Custom plant (\$100.00 per acre) Spearmint roots (\$250.00 per acre)
Irrigate (April-October)	Irrigation charge (\$62.00 per acre)
Apply Herbicide (April)	Custom ground application (\$8.65 per acre) 10 oz. Assure II (\$1.04 per oz.) 1 lb. Sinbar (\$31.00 per lb.) 1 qt. crop oil (\$9.00 per gal.)
Spray (May-October)	Field border spray (\$7.00 per acre)
Spot Spray (May)	1 oz. Stinger (\$4.49 per oz.)
Apply Sulfur (May)	Custom ground application (\$8.65 per acre) 6 lbs. sulfur (\$.70 per lb.) 5 oz. Surfix (\$.20 per oz.)
Fertigate (June)	50 lbs. nitrogen (\$.42 per lb.)
Apply Insecticide (June)*	Aerial application (\$8.50 per acre) 1.25 qts. Comite (\$19.08 per qt.) 3.2 oz. Nutra-Buffer (\$.08 per oz.)
Apply Sulfur (June)	Custom ground application (\$8.65 per acre) 6 lbs. sulfur (\$.70 per lb.) 5 oz. Surfix (\$.20 per oz.)
Weeding (July)	Hand weeding (\$30.00 per acre)
Apply Insecticide (July)	Aerial application (\$8.50 per acre) 1.0 lbs. Orthene (\$10.00 per lb.) 3.2 oz. Nutra-Buffer (\$.08 per oz.)
Harvest & Process (August)	Custom harvest & processing (69 lbs. per acre @ 3.00 per lb.)
Assessment (September)	Market assessment (69 lbs. per acre @ \$.14 per lb.)

TABLE 2SR. Continued.

Operation	Material or Services Applied
Residue Disposal (September)	Custom disposal (\$10.00 per acre)
Apply Sulfur (October)	Custom ground application (\$8.65 per acre) 6 lbs. sulfur (\$.70 per lb.) 5 oz. Surfex (\$.20 per oz.)
Overhead (Annual)	8% variable cost

* Average of every two years.

TABLE 3SR. ITEMIZED COST PER ACRE FOR ESTABLISHING A SCOTCH
SPEARMINT FIELD, FOLLOWING WHEAT, IN CENTRAL WASHINGTON:
RILL IRRIGATION

		PRICE OR		VALUE OR	YOUR
	UNIT	COST/UNIT	QUANTITY	COST	FARM

VARIABLE COSTS		\$		\$	
VAPAM	GAL.	4.20	40.00	168.00	_____
CUSTOM FERTIGATE	ACRE	39.00	1.00	39.00	_____
SCOTCH PLANTS	ACRE	250.00	1.00	250.00	_____
CUSTOM PLANTING	ACRE	100.00	1.00	100.00	_____
CONSULTANT	ACRE	5.00	1.00	5.00	_____
NITROGEN (DRY)	LB.	.36	150.00	54.00	_____
PHOSPHATE	LB.	.25	80.00	20.00	_____
SULFUR	LB.	.12	40.00	4.80	_____
POTASH	LB.	.17	80.00	13.60	_____
ZINC	LB.	1.25	5.00	6.25	_____
NITROGEN (LIQ)	LB.	.42	50.00	21.00	_____
SULFUR (MILDEW)	LB.	.70	18.00	12.60	_____
SINBAR	LB.	31.00	1.75	54.25	_____
ASSURE II	OZ.	1.04	10.00	10.40	_____
CROP OIL	GAL.	9.00	.25	2.25	_____
P.A.M.	LB.	2.35	4.00	9.40	_____
STINGER	OZ.	4.49	1.00	4.49	_____
SURFIX	OZ.	.20	15.00	3.00	_____
COMITE	QT.	19.08	.63	11.92	_____
NUTRA-BUFFER	OZ.	.08	4.80	.39	_____
ORTHENE	LB.	12.00	1.00	12.00	_____
BORDER SPRAY	ACRE	7.00	1.00	7.00	_____
DRY FERT APPLICATION	ACRE	7.00	1.00	7.00	_____
CUSTOM APPLICATION	ACRE	8.65	4.00	34.60	_____
AERIAL APPLICATION	ACRE	8.50	2.50	21.25	_____
IRRIGATION CHARGE	ACRE	62.00	1.00	62.00	_____
HAND WEEDING	ACRE	30.00	1.00	30.00	_____
HAND LABOR	HOURL	9.00	10.06	90.50	_____
LABOR (TRAC/MACH)	HOURL	12.00	3.21	38.46	_____
HARVEST & PROCESS	LB.	3.00	69.00	207.00	_____
MARKET ASSESSMENT	LB.	.14	69.00	9.66	_____
RESIDUE DISPOSAL	ACRE	10.00	1.00	10.00	_____
TRACTOR REPAIR	ACRE	18.87	1.00	18.87	_____
TRACTOR FUEL/LUBE	ACRE	29.92	1.00	29.92	_____
MACHINERY REPAIRS	ACRE	23.67	1.00	23.67	_____
MACHINE FUEL/LUBE	ACRE	20.19	1.00	20.19	_____
INTEREST ON OP. CAP.	ACRE	71.39	1.00	71.39	_____
OVERHEAD	ACRE	118.71	1.00	118.71	_____
TOTAL VARIABLE COST				1602.57	_____

FIXED COSTS		\$		\$	
TRACTOR DEPRECIATION	ACRE	20.89	1.00	20.89	_____
TRACTOR INTEREST	ACRE	30.73	1.00	30.73	_____
TRACTOR INSURANCE	ACRE	1.84	1.00	1.84	_____
TRACTOR TAXES	ACRE	5.53	1.00	5.53	_____
TRACTOR HOUSING	ACRE	3.07	1.00	3.07	_____
MACHINE DEPRECIATION	ACRE	19.35	1.00	19.35	_____
MACHINE INTEREST	ACRE	13.25	1.00	13.25	_____
MACHINE INSURANCE	ACRE	.74	1.00	.74	_____
MACHINE TAXES	ACRE	2.23	1.00	2.23	_____
MACHINE HOUSING	ACRE	1.21	1.00	1.21	_____
LAND TAXES	ACRE	20.00	1.00	20.00	_____
NET LAND RENT**	ACRE	155.00	1.00	155.00	_____
MANAGEMENT CHARGE	ACRE	50.00	1.00	50.00	_____
TOTAL FIXED COST				323.85	_____
TOTAL COST				1926.42	_____
LESS: GROSS REVENUE***				483.00	_____
NET FIRST YEAR LOSS				1443.41	_____

* INCLUDES IRRIGATION EQUIPMENT.

** \$175 RENT MINUS LAND TAXES.

*** 69 LBS. AT \$7.00 PER LB.

TABLE 4SR. SCHEDULE OF OPERATIONS AND ESTIMATED COSTS PER ACRE FOR PRODUCING SCOTCH SPEARMINT IN CENTRAL WASHINGTON: RILL IRRIGATION

OPERATION	TOOLING	MTH YEAR	MACH HOURS	LABOR HOURS	TOTAL FIXED COST	VARIABLE COST					TOTAL VARIABLE COST	TOTAL COST
						FUEL, LUBE, & REPAIRS	LABOR	SERVICE	MATER.	INTER.		
ROOT BOAR CONT.	THROUGH THE IRRIGATION SYSTEM	FALL 2000	.00	.00	.00	.00	.00	.00	.00	16.25	1.49	17.74
FERTILIZE (DRY)	CUSTOM GROUND APPLICATION	FALL 2000	.00	.00	.00	.00	.00	7.00	39.00	4.22	50.22	50.22
APPLY HERBICIDE	CUSTOM GROUND APPLICATION	FALL 2000	.00	.00	.00	.00	.00	8.65	15.50	2.21	26.36	26.36
CONSULTING	USE APPLICATIONS	ANN 2001	.00	.00	.00	.00	.00	5.00	.00	.25	5.25	5.25
APPLY HERBICIDE	CUSTOM GROUND APPLICATION	FEB 2001	.00	.00	.00	.00	.00	8.65	67.89	5.10	81.64	81.64
FERTILIZE (DRY)	CUSTOM GROUND APPLICATION	MAR 2001	.00	.00	.00	.00	.00	7.00	58.80	3.84	69.64	69.64
CULT. & DITCH	100HP-WT, 5-ROW CULTIVATOR	MAR 2001	.20	.24	3.46	2.93	2.88	.00	.00	.34	6.15	9.60
BUILD DRAIN	100HP-WT, BLADE	MAR 2001	.04	.04	.66	.46	.54	.00	.00	.06	1.06	1.72
IRRIGATE(12X)	RILL IRRIGATION,36 AC. IN.	APR-OCT 2001	.00	7.50	6.42	2.50	67.50	62.00	.00	3.30	135.30	141.72
APPLY SULFUR	CUSTOM GROUND APPLICATION	APR 2001	.00	.00	.00	.00	.00	8.65	5.20	.69	14.54	14.54
SPRAY	FIELD BORDERS	MAY-OCT 2001	.00	.00	.00	.00	.00	7.00	.00	.18	7.18	7.18
SPOT SPRAY	4-WHEEL ATV W/SPRAYER	MAY 2001	.25	.30	.72	.39	2.70	.00	4.49	.32	7.90	8.62
APPLY INSECT.	AERIAL APPLICATION	MAY 2001	.00	.00	.00	.00	.00	8.50	16.22	1.03	25.75	25.75
APPLY SULFUR	AERIAL APPLICATION	MAY 2001	.00	.00	.00	.00	.00	8.50	5.20	.57	14.27	14.27
APPLY INSECT.	AERIAL APPLICATION	MAY 2001	.00	.00	.00	.00	.00	8.50	24.11	1.36	33.96	33.96
APPLY SULFUR	AERIAL APPLICATION	JUN 2001	.00	.00	.00	.00	.00	8.50	5.20	.46	14.16	14.16
HARVEST&PROCESS	CUSTOM HARVEST AND PROCESSING	JUL 2001	.00	.00	.00	.00	.00	261.00	.00	6.53	267.53	267.53
FERTILIZE (DRY)	CUSTOM GROUND APPLICATION	JUL 2001	.00	.00	.00	.00	.00	7.00	36.00	1.08	44.08	44.08
DITCH	100HP-WT, 5-ROW ROTARY DITCHER	JUL 2001	.33	.40	5.86	4.60	4.80	.00	.00	.24	9.64	15.50
APPLY INSECT.	AERIAL APPLICATION	AUG 2001	.00	.00	.00	.00	.00	8.50	16.22	.41	25.13	25.13
APPLY SULFUR	AERIAL APPLICATION	AUG 2001	.00	.00	.00	.00	.00	8.50	5.20	.23	13.93	13.93
HARVEST&PROCESS	CUSTOM HARVEST & PROCESS	SEP 2001	.00	.00	.00	.00	.00	147.00	.00	1.23	148.22	148.22
DITCH	100HP-WT, 5-ROW ROTARY DITCHER	SEP 2001	.33	.40	5.86	4.60	4.80	.00	.00	.08	9.48	15.35
ASSESSMENT	MARKETING	SEP 2001	.00	.00	.00	.00	.00	19.04	.00	.16	19.20	19.20
RESIDUE DISPOSAL	CUSTOM DISPOSAL	OCT 2001	.00	.00	.00	.00	.00	30.00	.00	.00	30.00	30.00
APPLY SULFUR	CUSTOM GROUND APPLICATION	OCT 2001	.00	.00	.00	.00	.00	8.65	5.20	.00	13.85	13.85
MISC. USE	LABOR'S PICKUP	ANN 2001	1.80	1.98	5.53	13.56	17.92	.00	.00	1.57	32.95	38.47
MISC. USE	MANAGER'S 3/4 TON PICKUP	ANN 2001	1.60	.00	11.03	10.88	.00	.00	.00	.54	11.43	22.46
MISC. USE	4-WHEEL ATV	ANN 2001	.25	.28	.47	.34	2.47	.00	.00	.14	2.96	3.43
TAXES	LAND	ANN 2001	.00	.00	20.00	.00	.00	.00	.00	.00	.00	20.00
LAND COST	NET RENT	ANN 2001	.00	.00	155.00	.00	.00	.00	.00	.00	.00	155.00
OVERHEAD	UTILITIES,LEGAL,ACCTG.,ETC.	ANN 2001	.00	.00	.00	.00	.00	91.16	.00	.00	91.16	91.16
INVESTMENT	PRORATED FIRST YEAR LOSS*	ANN 2001	.00	.00	580.41	.00	.00	.00	.00	.00	.00	580.41
MANAGEMENT	MANAGEMENT CHARGE	ANN 2001	.00	.00	50.00	.00	.00	.00	.00	.00	.00	50.00
TOTAL PER ACRE			4.80	11.14	845.42	40.28	103.51	728.80	320.47	37.60	1230.66	2076.08

* \$1443.41 AMORTIZED AT 10% OVER THREE YEARS.

TABLE 5SR. Materials or Services Applied per Acre by Operation for
Producing Scotch Spearmint in Central Washington: Rill
Irrigation

Operation	Material or Services Applied
Root Boar Control (Fall)	.5 gal. Lorsban 4E (\$32.50 per gal.)
Fertilize (Fall)	Custom ground application (\$7.00 per acre) 50 lbs. nitrogen (\$.36 per lb.) 50 lbs. phosphate (\$.25 per lb.) 50 lbs. potash (\$.17 per lb.)
Apply Herbicide (Fall)	Custom ground application (\$8.65 per acre) .5 lb. Sinbar (\$31.00 per lb.)
Consulting (Annual)	Use recommendations (\$5.00 per acre)
Apply Herbicide (February)	Custom ground application (\$8.65 per acre) 3 pts. Prowl (\$2.63 per pint) 2 pts. Gramoxone (\$4.00 per pint) .75 lb. Sinbar (\$31.00 per lb.) 2.5 pts Goal (\$11.50 per pint)
Fertilize (March)	Custom ground application (\$7.00 per acre) 150 lbs. nitrogen (\$.36 per lb.) 40 lbs. sulfur (\$.12 per lb.)
Irrigate (April-October)	Irrigation charge (\$62.00 per acre)
Apply Sulfur (April)	Custom ground application (\$8.65 per acre) 6 lbs. sulfur (\$.70 per lb.) 5 ozs. Surfix (\$.20 per oz.)
Spray (May-October)	Field border spray (\$7.00 per acre)
Spot Spray (May)	1 oz. Stinger (\$4.49 per oz.)
Apply Insecticide (May)	Aerial application (\$8.50 per acre) 1.25 qts. Comite (\$19.08 per qt.) 3.2 ozs. Nutra-Buffer (\$.08 per oz.)
Apply Sulfur (May)	Aerial application (\$8.50 per acre) 6 lbs. sulfur (\$.70 per lb.) 5 ozs. Surfix (\$.20 per oz.)
Apply Insecticide (May)	Aerial application (\$8.50 per acre) 1.33 lbs. Orthene (\$12.00 per lb.) 3.2 ozs. Nutra-Buffer (\$.08 per oz.)
Apply Sulfur (June)	Aerial application (\$8.50 per acre) 6 lbs. sulfur (\$.70 per lb.) 5 ozs. Surfix (\$.20 per oz.)
Harvest & Processing (July)	Custom harvest & processing (87 lbs./acre @ \$3.00/lb.)
Fertilize (July)	Custom ground application (\$8.65 per acre) 100 lbs. nitrogen (\$.36 per lb.)
Apply Insecticide (August)	Aerial application (\$8.50 per acre) 1.33 lbs. Orthene (\$12.00 per lb.) 3.2 ozs. Nutra-Buffer (\$.08 per oz.)

TABLE 5SR. Continued.

Operation	Material or Services Applied
Apply Sulfur (August)	Aerial application (\$8.50 per acre) 6 lbs. sulfur (\$.70 per lb.) 5 ozs. Surfix (\$.20 per oz.)
Harvest & Processing (Sept.)	Custom harvest & processing (49 lbs./acre @ \$3.00/lb.)
Assessment (Sept.)	Market assessment (136 lbs. per acre @ \$.14 per lb.)
Residue Disposal (October)	Custom disposal (\$30.00 per acre)
Apply Sulfur (October)	Custom ground application (\$8.65 per acre) 7 lbs. sulfur (\$.70 per lb.) 5 ozs. Surfix (\$.20 per oz.)
Overhead (Annual)	8% variable cost

TABLE 6SR. ITEMIZED COST PER ACRE FOR PRODUCING SCOTCH SPEARMINT IN
CENTRAL WASHINGTON: RILL IRRIGATION

		PRICE OR		VALUE OR	YOUR
	UNIT	COST/UNIT	QUANTITY	COST	FARM

VARIABLE COSTS		\$		\$	
CONSULTANT	ACRE	5.00	1.00	5.00	_____
NITROGEN	LB.	.36	300.00	108.00	_____
PHOSPHATE	LB.	.25	50.00	12.50	_____
POTASH	LB.	.17	50.00	8.50	_____
SULFUR	LB.	.12	40.00	4.80	_____
SULFUR (MILDEW)	LB.	.70	30.00	21.00	_____
SURFIX	OZ.	.20	25.00	5.00	_____
SINBAR	LB.	31.00	1.25	38.75	_____
LORSBAN 4E	GAL.	32.50	.50	16.25	_____
PROWL	PINT	2.63	3.00	7.89	_____
GRAMOXONE	PINT	4.00	2.00	8.00	_____
GOAL	PINT	11.50	2.50	28.75	_____
STINGER	OZ.	4.49	1.00	4.49	_____
ORTHENE	LB.	12.00	2.66	31.92	_____
NUTRA-BUFFER	OZ.	.08	9.60	.77	_____
COMITE	QT.	19.08	1.25	23.85	_____
BORDER SPRAY	ACRE	7.00	1.00	7.00	_____
DRY FERT APPLICATION	ACRE	7.00	3.00	21.00	_____
CUSTOM APPLICATION	ACRE	8.65	4.00	34.60	_____
AERIAL APPLICATION	ACRE	8.50	6.00	51.00	_____
IRRIGATION CHARGE	ACRE	62.00	1.00	62.00	_____
HAND LABOR	HOURL	9.00	10.06	90.50	_____
LABOR (TRAC/MACH)	HOURL	12.00	1.08	13.02	_____
HARVEST & PROCESS	LB.	3.00	136.00	408.00	_____
MARKET ASSESSMENT	LB.	.14	136.00	19.04	_____
RESIDUE DISPOSAL	ACRE	30.00	1.00	30.00	_____
TRACTOR REPAIR	ACRE	5.52	1.00	5.52	_____
TRACTOR FUEL/LUBE	ACRE	5.65	1.00	5.65	_____
MACHINERY REPAIRS*	ACRE	8.92	1.00	8.92	_____
MACHINE FUEL/LUBE	ACRE	20.19	1.00	20.19	_____
INTEREST ON OP. CAP.	ACRE	37.60	1.00	37.60	_____
OVERHEAD	ACRE	91.16	1.00	91.16	_____

TOTAL VARIABLE COST				1230.66	_____
FIXED COSTS		\$		\$	
TRACTOR DEPRECIATION	ACRE	4.72	1.00	4.72	_____
TRACTOR INTEREST	ACRE	7.43	1.00	7.43	_____
TRACTOR INSURANCE	ACRE	.45	1.00	.45	_____
TRACTOR TAXES	ACRE	1.34	1.00	1.34	_____
TRACTOR HOUSING	ACRE	.74	1.00	.74	_____
MACHINE DEPRECIATION*	ACRE	14.97	1.00	14.97	_____
MACHINE INTEREST*	ACRE	7.95	1.00	7.95	_____
MACHINE INSURANCE*	ACRE	.42	1.00	.42	_____
MACHINE TAXES*	ACRE	1.28	1.00	1.28	_____
MACHINE HOUSING	ACRE	.71	1.00	.71	_____
LAND TAXES	ACRE	20.00	1.00	20.00	_____
NET LAND RENT**	ACRE	155.00	1.00	155.00	_____
PRORATED 1 ST YR LOSS***	ACRE	580.41	1.00	580.41	_____
MANAGEMENT CHARGE	ACRE	50.00	1.00	50.00	_____

TOTAL FIXED COST				845.42	_____

TOTAL COST				2076.08	_____

* INCLUDES IRRIGATION EQUIPMENT.

** \$175 RENT MINUS LAND TAXES.

*** NET FIRST YEAR LOSS PRORATED OVER THREE YEARS AT 10% INTEREST.

Table 7SR. AVERAGE ANNUAL PROFIT (OR LOSS)¹ PER ACRE FOR SCOTCH SPEARMINT GROWN UNDER RILL IRRIGATION AT DIFFERENT PRICE AND YIELD LEVELS AND THE BREAK EVEN PRICE FOR THE GIVEN YIELD LEVELS.

FIRST YEAR YIELD	MATURE YEAR YIELD ²	PRICE PER POUND					BREAK EVEN PRICE
		\$11.00	\$12.00	\$13.00	\$14.00	\$15.00	
LBS.	LBS.	\$	\$	\$	\$	\$	\$
-----ANNUAL PROFIT-----							
69	100	-750	-623	-495	-367	-240	16.88
69	110	-673	-535	-397	-259	-122	15.88
69	120	-595	-447	-299	-151	-4	15.03
69	130	-517	-359	-201	-43	114	14.28
69	140	-439	-271	-103	65	232	13.62
69	150	-361	-183	-5	172	350	13.03
69	160	-283	-95	93	280	468	12.51

¹RETURNS OVER ALL VARIABLE AND FIXED COSTS LISTED IN TABLE 6SR.

²THREE YEARS OF MATURE YIELD.

TABLE 8. Equipment Complement

Description	Replacement Value	Years of Life	Salvage Value	Annual Hours of Use	Annual Repair	Fuel Type	Gallons per Hour
	\$		\$		\$		
180HP-WHEEL TRACTOR	110,000	20	20,000	500	3,750	Diesel	9.0
100HP-WHEEL TRACTON	65,000	20	15,000	500	3,000	Diesel	4.0
15' ROLLER-HARROW	3,500	20	0	200	1,500		
15' OFFSET DISC	7,500	20	3,000	200	1,800		
7 SHANK RIPPER	4,600	20	1,500	80	600		
5 ROW CULTIVATOR	2,000	20	0	150	400		
17' CHISEL	12,000	20	3,000	200	1,500		
5 ROW ROTARY DITCHER	3,500	10	700	300	550		
BLADE	750	15	150	50	15		
4-WHEEL ATV	3,500	15	500	250	100	Gas	0.5
ATV SPRAYER	300	10	0	50	10		
3/4 TON PICKUP	30,000	6	15,000	800	750	Gas	3.0
LABOR PICKUP	15,000	8	2,000	900	1500	Gas	3.0
				<u>Acreage Covered</u>			
SIDE-ROLL IRRIGATION	31,500	15	3,100	40	235		
RILL IRRIGATION	670	3	0	40	100		
FISH FEEDER	210	3	0	40	5		

MACHINERY	PURCHASE PRICE	YEARS	ANNUAL HOURS	DEPREC- IATION	INTER- EST	INSUR- ANCE	TAXES	HOUSING	TOTAL	REPAIR	FUEL	TOTAL	TOTAL	
		TO TRADE							FIXED COST		AND LUBE	VARIABLE COST		COST

	\$								-----COST PER HOUR-----					
WH. TRAC. - 180HP	110,000.00	20	500	9.00	13.00	.78	2.34	1.30	26.42	7.50	13.46	20.96	47.38	
WH. TRAC. - 100HP	65,000.00	20	500	5.00	8.00	.48	1.44	.80	15.72	6.00	5.98	11.98	27.70	
15' ROLLER HARROW	3,500.00	20	200	.88	.88	.05	.16	.09	2.05	7.50	.00	7.50	9.55	
15' OFFSET DISC	7,500.00	20	200	1.13	2.63	.16	.47	.26	4.64	9.00	.00	9.00	13.64	
7 SHANK RIPPER	4,600.00	20	80	1.94	3.81	.23	.69	.38	7.05	7.50	.00	7.50	14.55	
5R CULTIVATOR	2,000.00	20	150	.67	.67	.04	.12	.07	1.56	2.67	.00	2.67	4.23	
17' CHISEL	12,000.00	20	200	2.25	3.75	.23	.68	.38	7.28	7.50	.00	7.50	14.78	
5R ROTARY DITCHER	3,500.00	10	300	.93	.70	.04	.13	.07	1.87	1.83	.00	1.83	3.70	
BLADE	750.00	15	50	.80	.90	.05	.16	.09	2.01	.30	.00	.30	2.31	
4-WHEEL ATV	3,500.00	15	250	.80	.80	.05	.14	.08	1.87	.40	.98	1.38	3.25	
ATV SPRAYER	300.00	10	50	.60	.30	.02	.05	.03	1.00	.20	.00	.20	1.20	
LABOR PICKUP	15,000.00	8	900	1.81	.94	.06	.17	.09	3.07	1.67	5.87	7.53	10.60	
3/4 TON PICKUP	30,000.00	6	800	3.13	2.81	.17	.51	.28	6.89	.94	5.87	6.80	13.70	

									-----COST PER ACRE-----					
SIDE-ROLL IRRIGATN	25,500.00	15	-	37.33	35.75	2.15	6.44	.00	81.66	5.88	.00	5.88	87.54	
RILL IRRIGATION	670.00	3	-	5.58	.84	.00	.00	.00	6.42	2.50	.00	2.50	8.92	
FISH FEEDER	210.00	3	-	1.75	.26	.02	.05	.00	2.08	.13	.00	.13	2.20	

TABLE 10. Prices for Selected Inputs.

Input	Price per Unit
Chemicals:	\$
Nitrogen (dry)	.36/lb.
Nitrogen (liq.)	.42/lb.
Phosphate	.25/lb.
Sulfur	.12/lb.
Potash	.17/lb.
Zinc	1.23lb.
Sulfur (mildew control)	.70/lb.
Sinbar	31.00/lb.
Comite	19.08/qt.
Vapam	4.20/gal.
Lorsban 4E	32.50/acre
Prowl	2.63/pint
Gramoxone	4.01/pint
Poast	18.75/pint
Crop Oil	9.00/gal.
Orthene	12.00/lb.
Assure II	1.04/oz.
Stinger	4.49/oz.
Goal	11.50/pint
Nutra-Buffer	.08/oz.
Surfix	.20/oz.
P.A.M.	2.35/lb.
Services:	
Consultant	5.00/acre
Custom fertilizer (dry) application	7.00/acre
Custom ground (liquid) application	8.65/acre
Custom aerial application	8.50/acre
Custom planting of spearmint roots	100.00/acre
Custom harvesting and processing	3.00/lb.
Irrigation charge	62.00/acre
Electrical charge (establishment year)	55.00/acre
Electrical charge (production year)	66.00/acre
Other:	
Hand labor	9.00/hour
Machine labor	12.00/hour
Hand weeding	30.00/acre
Diesel fuel	1.30/gal ¹
Gasoline	1.70/gal ¹
Market assessment	.14/lb.
Native spearmint roots	150.00/acre
Scotch spearmint roots	250.00/acre

¹ Fuel prices include an additional \$.10 per gallon to reflect fuel storage costs.

Use pesticides with care. Apply them only to plants, animals, or sites listed on the label. When mixing and applying pesticides, follow all label precautions to protect yourself and others around you. It is violation of law to disregard label directions. If pesticides are spilled on skin or clothing, remove clothing and wash skin thoroughly. Store pesticides in their original containers and keep them out of the reach of children, pets, and livestock.

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