

Growing Grapes in Minnesota

**Table 6.** Vineyard layout and operating assumptions used to estimate the establishment and operating expenses for 1, 2 and 5 acre vineyards trained to a single curtain bilateral cordon (high-wire cordon), Geneva double curtain, and mid-wire cordon with vertical shoot positioning (VSP).

<b>Vineyard Layout and Production Potential</b>									
<b>Training System:</b>	<b>High-wire Cordon</b>			<b>Geneva Double Curtain</b>			<b>Mid-wire Cordon w/ VSP</b>		
Vine spacing:	8 x 10 ft			8 x 12 ft			8 x 9 ft		
Vines per acre:	545			454			605		
Row length:	432 ft			432 ft			432 ft		
Rows per acre:	10			8.5			11		
Vines per row:	54			54			54		
<b>Production Potential:</b>									
	<b>Year</b>			<b>Year</b>			<b>Year</b>		
	<b>3</b>	<b>4</b>	<b>5 &amp; beyond</b>	<b>3</b>	<b>4</b>	<b>5 &amp; beyond</b>	<b>3</b>	<b>4</b>	<b>5 &amp; beyond</b>
Yield per vine:	7.3	14.7	18.3	12.8	25.6	29.5	7.3	14.7	18.3
Tons per Acre	2	4	5	2.9	5.8	6.7	2.2	4.4	5.5
<b>Operating Expenses</b>									
<b>Labor &amp; Overhead:</b>	<b>Base Pay per hour</b>	<b>Social Security (@ 6.2%)</b>	<b>Medicare (@ 1.45%)</b>	<b>Worker Compensation (@ 1.0%)</b>	<b>Vacation (@ 4.0%)</b>	<b>Health Insurance (@ 10.0%)</b>	<b>Total Labor + Overhead per hour</b>		
Full-time General	\$10.00	x	x	x	x	x	\$12.27		
Full-time Skilled	\$15.00	x	x	x	x	x	\$18.40		
Harvest piece work	\$1.50/ 30 lb lug	x	x	x			\$1.63/lug		
<b>Tractor Operating Cost:<sup>z</sup></b>									
<b>Tractor horsepower</b>	<b>Task</b>	<b>Fuel use per HP (Gallons)</b>	<b>Rental value per horsepower</b>	<b>On farm Fuel cost per gallon (diesel)</b>	<b>Operating cost per hour</b>				
35	heavy	.06	\$0.28	\$2.255	\$14.54				
35	light	.02	\$0.28	\$2.255	\$11.38				
50	heavy	.06	\$0.28	\$2.255	\$20.77				
50	light	.02	\$0.28	\$2.255	\$16.26				

<sup>z</sup> Tractor operating cost/hour = (Tractor HP x rental value/HP) + (Tractor HP x fuel use/HP x fuel cost/gal)

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**Table 7.** Trellising and cultural tools needed to establish and maintain a vineyard.

<b>Trellising tools:</b>	<b>Year of Purchase</b>	<b>Quantity</b>	<b>Cost</b>	<b>Cost used in Workbooks</b>	<b>Cost range</b>	<b>Options</b>
Auger: 3-pt, PTO drive, with 6-9” dia. & 12” dia. min. (14-16” dia. preferred) augers					\$660 – 1,600	<i>Rent, borrow</i>
Wire jenny	1	1	\$86.10	\$86.10	\$45.00 - 86.10	<i>Borrow</i>
Crimping tool	1	1	50.00	50.00	50.00 - 90.00	<i>Borrow</i>
Strainer handle	1	1	7.50	7.50	7.50 – 9.50	<i>Extra advised</i>
Hammer, 20-24 oz framing	1	2	24.98	49.96	20.00 – 27.00	
Fencing plier	1	2	13.00	26.00	13.00 – 19.00	
Eye adapter (installing earth anchors)	1	1			46.00 – 83.00	<i>Borrow</i>
3-Pt pallet lift (when harvesting in bins)					180.00 – 350.00	
<b>Total trellising tools:</b>				<b>241.76</b>		
<b>Cultural tools:</b>						
Pruning shear	1	1	55.60	55.60	31.00 – 68.00	<i>One per person</i>
Holster	1	1	11.00	11.00	5.00 – 11.00	<i>One per person</i>
Shovel, long handled	1	3	24.00	72.00	20.00 – 27.00	<i>One per person</i>
MaxTapener	1	1	64.25	64.25		<i>One per person</i>
Thinning clippers	1	1	15.00	15.00	8.00 – 17.00	<i>One per person</i>
Loppers, 16-19” handles	3	1	52.00	52.00	52.00 – 93.00	<i>One per person</i>
Harvest clippers	3	4	9.50	38.00	9.00 – 17.00	<i>One per person</i>
<b>Total cultural tools:</b>				<b>\$307.85</b>		

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**Table 8.** Cost of vines and major training supplies per acre during the first year for vineyards trained to a single curtain bilateral cordon (high-wire cordon), Geneva double curtain, and mid-wire cordon with vertical shoot positioning (VSP).

<b>Training System:</b>	<b>High-wire Cordon</b>				<b>Geneva Double Curtain</b>				<b>Mid-wire Cordon w/ VSP</b>			
<b>Grapevines</b>	<b>Size/ grade</b>	<b>Cost/ item</b>	<b>Quantity</b>	<b>Cost/ acre</b>	<b>Size/ grade</b>	<b>Cost/ item</b>	<b>Quantity</b>	<b>Cost/ acre</b>	<b>Size/ grade</b>	<b>Cost/ item</b>	<b>Quantity</b>	<b>Cost/ acre</b>
@ \$2.80 per vine	1-1	\$2.80	545	\$1,526.00	1-1	\$2.80	454	\$1,271.20	1-1	\$2.80	605	\$1,694.00
@ \$3.50 per vine*	1-X	\$ 3.50	545	\$1,907.50	1-X	\$ 3.50	454	\$1,589.00	1-X	\$ 3.50	605	\$2,117.50
@ \$4.15 per vine	1-X	\$4.15	545	\$2,261.75	1-X	\$4.15	454	\$1,884.10	1-X	\$4.15	605	\$2,510.75
<b>First Year Training*</b>												
Bamboo stakes	7' x 5/8"	0.55	545	299.75	6' x 5/8"	0.44	454	199.76	4' x 1/2"	0.22	605	133.10
Grow tubes	30"	0.85	545	463.25	30"	0.85	454	385.90	30"	0.85	605	514.25
T-bands (attach stakes to wires)	½"	0.03	908	27.24	½"	0.03	454	13.62	½"	0.03	605	18.15
Plant tie ribbon (per roll)	4 mil	1.66	10.5	17.43	4 mil	1.66	9	14.94	4 mil	1.66	12	19.92
<b>Total training supplies:</b>				<b>807.67</b>				<b>614.22</b>				<b>685.52</b>
<b>Cost of vines &amp; training supplies per acre:</b>												
@ \$2.80 per vine				<b>\$2,333.67</b>				<b>\$1,885.42</b>				<b>\$2,379.52</b>
@ \$3.50 per vine				<b>\$2,715.17</b>				<b>\$2,203.22</b>				<b>\$2,803.02</b>
@ \$4.15 per vine				<b>\$3,069.42</b>				<b>\$2,498.32</b>				<b>\$3,196.27</b>

\* Options used in the estimated establishment and operating cost budgets presented in Tables 12-20.

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**Table 9.** Cost of trellis materials per acre for vineyards trained to a single curtain bilateral cordon (high-wire cordon), Geneva double curtain, and mid-wire cordon with vertical shoot positioning (VSP) using the H-brace and anchored end post systems.

<b>Training System:</b>	<b>High-wire Cordon</b>				<b>Geneva Double Curtain</b>				<b>Mid-wire Cordon w/ VSP</b>			
<b>H-Brace System:*</b>	<b>Size/ grade</b>	<b>Cost/ item</b>	<b>Quantity</b>	<b>Cost/ acre</b>	<b>Size/ grade</b>	<b>Cost/ item</b>	<b>Quantity</b>	<b>Cost/ acre</b>	<b>Size/ grade</b>	<b>Cost/ item</b>	<b>Quantity</b>	<b>Cost/ acre</b>
Line posts	4" x 8'	\$5.81	172	\$999.32	4" x 8'	\$5.81	143	\$830.83	4" x 8'	\$5.81	190	\$1,103.90
Brace posts (4/row)	4" x 8'	\$5.81	40	\$232.40	4" x 8'	\$5.81	34	\$197.54	4" x 8'	\$5.81	44	\$255.64
End posts	6" x 10'	\$15.75	20	\$315.00	6" x 10'	\$15.75	17	\$267.75	6" x 10'	\$15.75	22	\$346.50
Brace pins (pairs)	10" & 5"	\$1.02	20	\$20.40	10" & 5"	\$1.02	17	\$17.34	10" & 5"	\$1.02	22	\$22.44
9 ga Soft wire	17 ft/lb	\$0.60/lb	27 lb	\$16.20	17 ft/lb	\$0.60/lb	23 lb	\$13.80	17 ft/lb	\$0.60/lb	30 lb	\$18.00
Cross arm + brace					48"	\$7.20	160	\$1,152.00				
12.5 ga Hi-tensile wire (4000ft, 100 lb/roll)	2 strands	\$122.00	2.3	\$280.60	3 strands	\$122.00	2.8	\$341.60	7 strands	\$122.00	8.8	\$1,073.60
Strainers	1/strand	\$3.25	20	\$65.00	1/strand	\$3.25	25.5	\$82.88	1/strand	\$3.25	77	\$250.25
Crimping sleeves (2/splice)	small	\$0.24	126	\$30.24	small	\$0.24	160	\$38.40	small	\$0.24	484	\$116.16
Staples, slash-cut (45/lb)	2"	\$2.25/lb	18.8	\$42.30	2"	\$2.25/lb	7.9	\$17.78	2"	\$2.25/lb	10.4	\$23.40
"J" Staples (81/lb)									1-3/4"	\$5.30	16.5	\$87.45
<b>Total cost per acre:</b>				<b>\$2001.46</b>				<b>\$2,959.92</b>				<b>\$3,297.34</b>
<b>Earth Anchor System:</b>												
Line posts	4" x 8'	\$5.81	172	\$999.32	4" x 8'	\$5.81	160	\$929.60	4" x 8'	\$5.81	190	\$1,103.90
Earth anchor w/ 6" helix	¾" x 48"	\$9.75	20	\$195.00	¾" x 48"	\$9.75	17	\$165.75	¾" x 48"	\$9.75	22	\$214.50
End posts	6" x 10'	\$15.75	20	\$315.00	6" x 10'	\$15.75	17	\$267.75	6" x 10'	\$15.75	22	\$346.50
9 ga Soft wire	17 ft/lb	\$0.60/lb	20 lb	\$12.00	17 ft/lb	\$0.60/lb	17 lb	\$10.20	17 ft/lb	\$0.60/lb	22lb	\$13.20
Cross arm + brace					48"	\$7.20	160	\$1,152.00				
12.5 ga Hi-tensile wire (4000ft, 100 lb/roll)	2 strands	\$122.00	2.3	\$280.60	3 strands	\$122.00	2.8	\$341.60	7 strands	\$122.00	8.8	\$1,073.60
Strainers	1/strand	\$3.25	20	\$65.00	1/strand	\$3.25	25.5	\$82.88	1/strand	\$3.25	77	\$250.25
Crimping sleeves (2/splice)	small	\$0.24	126	\$30.24	small	\$0.24	160	\$38.40	small	\$0.24	484	\$116.16
Staples, slash-cut (45/lb)	2"	\$2.25/lb	18.8	\$42.30	2"	\$2.25/lb	7.9	\$17.78	2"	\$2.25/lb	10.4	\$23.40
"J" Staples (81/lb)									1-3/4"	\$5.30	16.5	\$87.45
<b>Total cost per acre:</b>				<b>\$1,939.46</b>				<b>\$3,005.96</b>				<b>\$3,228.96</b>

\* Options used in the estimated establishment and operating cost budgets presented in Tables 12-20.

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**Table 10.** Bird netting and harvest container options for vineyards trained to a single curtain bilateral cordon (high-wire cordon), Geneva double curtain, and mid-wire cordon with vertical shoot positioning (VSP). Items purchased beginning in the first year of production (Year 3).

<b>Bird Netting:</b>	<b>Cost/ roll</b>	<b>High-wire Cordon</b>		<b>Geneva Double Curtain</b>		<b>Mid-wire Cordon w/ VSP</b>		
		<b>Quantity</b>	<b>Cost/ acre</b>	<b>Quantity</b>	<b>Cost/ acre</b>	<b>Quantity</b>	<b>Cost/ acre</b>	
<b>17 x 1,320 ft</b>	\$545.00	3.3 rolls*	<b>\$1,798.50</b>	2.75 rolls	<b>\$1,498.75</b>	3.67	<b>\$2,000.15</b>	
<b>22 x 1320 ft</b>	\$704.00			2.75 rolls*	<b>\$1,936.00</b>			
<b>6 x 3,280 ft side netting</b>	\$294.00					3.0 rolls*	<b>\$882.00</b>	
<b>Harvest Containers:</b>								
	Year of purchase	Cost	<b>Potential Production per Acre for a Mature Vineyard</b>					
			<b>(5 tons/acre)</b>		<b>(6.7 tons/acre)</b>		<b>tons/acre)</b>	
<b>Lugs*</b> (30 lb capacity)	3, 4, 5	\$10.25	340	<b>\$3,485.00</b>	450	<b>\$4,612.50</b>	375	<b>\$3,843.75</b>
<i>Need a narrow trailer to haul lugs in &amp; out of the vineyard</i>								
<b>Bins</b> (1,000 lb capacity)	3, 4, 5	\$274.00	10	<b>\$2,740.00</b>	14	<b>\$3,836.00</b>	11	<b>\$3,014.00</b>
<i>Need a 3-pt pallet lift to haul bins in and out of the vineyard</i>								

\* Options used in the estimated establishment and operating cost budgets presented in Tables 12-20.

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**Table 11.** Labor and machinery requirements, and annual materials cost per acre to operate a mature vineyard trained a single curtain bilateral cordon (high-wire cordon), Geneva double curtain, and a mid-wire cordon with vertical shoot positioning (VSP).

Practice:	High-wire Cordon				Geneva Double Curtain				Mid-wire Cordon w/ VSP			
	No. times	Labor Hrs.	Machinery Hrs,	Materials Cost	No. times	Labor Hrs.	Machinery Hrs,	Materials Cost	No. times	Labor Hrs.	Machinery Hrs,	Materials Cost
Dormant pruning	1	40.0			1	63.6			1	44.4		
Adjusting & tying w/ AgLocs @ \$0.07 ea	1	4.5		\$3.63	1	7.6		\$6.01	1	5.0		\$4.03
Brush removal	1	1.2	1.2		1	0.9	0.9		1	1.3	1.3	
Fertilize w/ urea	1	0.6	0.3	\$32.45	1	0.5	0.3	\$29.98	1	0.7	0.4	\$36.03
Insect & disease control	11	9.6	4.8	\$728.50	11	8.2	4.0	\$728.50	11	10.6	5.2	\$728.50
Weed control	2	3.0	2.0	\$50.80	2	2.8	1.8	\$42.63	2	3.4	2.2	\$56.16
Mowing	5	1.7	1.7		5	1.5	1.5		5	1.9	1.9	
Canopy Management:												
Suckering & basal shoot removal	1	9.1			1	15.1			1	10.1		
Cluster thinning based on shoot length	1	4.5			1				1	5.0		
Shoot positioning	1	18.2			2	30.3			3	20.0		\$4.98
Lateral shoot removal in the fruiting zone	1	13.6			1	22.7			1	10.1		
Petiole Analysis	1	0.3		\$15.00	1	0.3		\$15.00	1	0.3		\$15.00
Harvest (to haul lugs to and from the vineyard)	1	12.5	5.0		1	16.8	6.7		1	13.8	5.5	
<b>Total:</b>		<b>132.8</b>	<b>17.0</b>	<b>\$830.83</b>		<b>188.4</b>	<b>16.7</b>	<b>\$822.11</b>		<b>140.2</b>	<b>19.6</b>	<b>\$844.69</b>

\* Options used in the estimated establishment and operating cost budgets presented in Tables 12-20.

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**Table 12.** Summary of the estimated cost to establish and operate a one acre vineyard trained to a single curtain bilateral cordon (high-wire cordon).

Year	Labor		Machinery		Materials Cost	Harvest Cost	Land Charge	Interest or Lost Opportunity	Annual			Accumulated Income or (Expense)
	Hrs.	Cost	Hrs.	Cost					Expenses	Income	Profit or (Expense)	
<b>Pre-plant</b>	6.2	\$109	3.1	\$62	\$162		\$165	\$15	\$513		(\$513)	(\$513)
Yr. 1 Plant	49.3	\$662	7.1	\$82	\$2,083							
Yr. 1 Trellis	45.2	\$706	12.9	\$147	\$2,273							
Yr. 1 Culture	76.0	\$999	20.2	\$261	\$1,097							
<b>Year 1 Total</b>	170.5	\$2,367	40.2	\$490	\$5,452		\$165	\$285	\$8,760		(\$8,760)	(\$9,272)
<b>Year 2</b>	57.2	\$769	6.8	\$112	\$530		\$165	\$604	\$2,179		(\$2,179)	(\$11,452)
<b>Year 3</b>	116.2	\$1,526	14.0	\$219	\$5,577	\$218	\$165	\$918	\$8,622	\$3,000	(\$5,622)	(\$17,074)
<b>Year 4</b>	132.3	\$1,667	16.0	\$241	\$2,286	\$435	\$165	\$1,168	\$5,961	\$6,000	\$39	(\$17,035)
<b>Year 5</b>	137.4	\$1,786	17.0	\$253	\$1,602	\$543	\$165	\$1,153	\$5,501	\$7,500	\$1,999	(\$15,036)
<b>Year 6</b>	132.8	\$1,729	17.0	\$253	\$830	\$543	\$165	\$1,008	\$4,528	\$7,500	\$2,972	(\$12,064)
<b>Year 7</b>	132.8	\$1,729	17.0	\$253	\$817	\$543	\$165	\$829	\$4,336	\$7,500	\$3,164	(\$8,900)
<b>Year 8</b>	132.8	\$1,729	17.0	\$253	\$830	\$543	\$165	\$640	\$4,160	\$7,500	\$3,340	(\$5,560)
<b>Year 9</b>	132.8	\$1,729	17.0	\$253	\$817	\$543	\$165	\$439	\$3,945	\$7,500	\$3,555	(\$2,005)
<b>Year 10</b>	132.8	\$1,729	17.0	\$253	\$830	\$543	\$165	\$226	\$3,746	\$7,500	\$3,754	\$1,748

**Table 13.** Summary of the estimated cost to establish and operate a 2 acre vineyard trained to a single curtain bilateral cordon (high-wire cordon).

Year	Labor		Machinery		Materials Cost	Harvest Cost	Land Charge	Interest or Lost Opportunity	Annual			Accumulated Income or (Expense)
	Hrs.	Cost	Hrs.	Cost					Expenses	Income	Profit or (Expense)	
<b>Pre-plant</b>	12.4	\$217	6.2	\$123	\$325		\$330	\$30	\$1,025		(\$1,025)	(\$1,025)
Yr. 1 Plant	98.6	\$1,323	14.2	\$165	\$4,027							
Yr. 1 Trellis	90.4	\$1,412	25.8	\$294	\$4,276							
Yr. 1 Culture	152.0	\$1,999	40.4	\$521	\$2,106							
<b>Year 1 Total</b>	341.0	\$4,735	80.4	\$980	\$10,409		\$330	\$555	\$17,009		(\$17,009)	(\$18,034)
<b>Year 2</b>	114.4	\$1,538	13.6	\$224	\$1,060		\$330	\$1,177	\$4,328		(\$4,328)	(\$22,364)
<b>Year 3</b>	232.4	\$3,052	28.0	\$437	\$8,320	\$435	\$330	\$1,719	\$14,292	\$6,000	(\$8,292)	(\$30,654)
<b>Year 4</b>	264.6	\$3,333	32.0	\$483	\$3,188	\$869	\$330	\$2,085	\$10,288	\$12,000	\$1,712	(\$28,942)
<b>Year 5</b>	274.8	\$3,571	34.0	\$505	\$2,487	\$1,087	\$330	\$1,976	\$9,956	\$15,000	\$5,044	(\$23,898)
<b>Year 6</b>	265.6	\$3,458	34.0	\$505	\$1,661	\$1,087	\$330	\$1,645	\$8,686	\$15,000	\$6,314	(\$17,584)
<b>Year 7</b>	265.6	\$3,458	34.0	\$505	\$1,633	\$1,087	\$330	\$1,265	\$8,279	\$15,000	\$6,721	(\$10,863)
<b>Year 8</b>	265.6	\$3,458	34.0	\$505	\$1,661	\$1,087	\$330	\$863	\$7,904	\$15,000	\$7,096	(\$3,766)
<b>Year 9</b>	265.6	\$3,458	34.0	\$505	\$1,633	\$1,087	\$330	\$439	\$7,452	\$15,000	\$7,548	\$3,782
<b>Year 10</b>	265.6	\$3,458	34.0	\$505	\$1,661	\$1,087	\$330	\$0	\$7,041	\$15,000	\$7,959	\$11,741

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**Table 14.** Summary of the estimated cost to establish and operate a 5 acre vineyard trained to a single curtain bilateral cordon (high-wire cordon).

Year	Labor		Machinery		Materials Cost	Harvest Cost	Land Charge	Interest or Lost Opportunity	Annual			Accumulated Income or (Expense)
	Hrs.	Cost	Hrs.	Cost					Expenses	Income	Profit or (Expense)	
<b>Pre-plant</b>	31.0	\$544	15.5	\$308	\$812		\$825	\$75	\$2,563		(\$2,563)	(\$2,563)
Yr. 1 Plant	246.5	\$3,308	35.5	\$412	\$9,859							
Yr. 1 Trellis	226.0	\$3,531	64.5	\$736	\$10,286							
Yr. 1 Culture	380.0	\$4,998	101.0	\$1,303	\$5,133							
<b>Year 1 Total</b>	852.5	\$11,836	201.0	\$2,451	\$25,278		\$825	\$1,365	\$41,756		(\$41,756)	(\$44,319)
<b>Year 2</b>	286.0	\$3,844	34.0	\$560	\$2,649		\$825	\$2,895	\$10,774		(\$10,774)	(\$55,093)
<b>Year 3</b>	581.0	\$7,629	70.0	\$1,093	\$16,550	\$1,087	\$825	\$4,121	\$31,303	\$15,000	(\$16,303)	(\$71,396)
<b>Year 4</b>	661.5	\$8,333	80.0	\$1,206	\$5,894	\$2,173	\$825	\$4,837	\$23,268	\$30,000	\$6,732	(\$64,664)
<b>Year 5</b>	687.0	\$8,928	85.0	\$1,263	\$5,142	\$2,716	\$825	\$4,446	\$23,320	\$37,500	\$14,180	(\$50,484)
<b>Year 6</b>	664.0	\$8,646	85.0	\$1,263	\$4,152	\$2,716	\$825	\$3,557	\$21,159	\$37,500	\$16,341	(\$34,143)
<b>Year 7</b>	664.0	\$8,646	85.0	\$1,263	\$4,083	\$2,716	\$825	\$2,575	\$20,107	\$37,500	\$17,393	(\$16,750)
<b>Year 8</b>	664.0	\$8,646	85.0	\$1,263	\$4,152	\$2,716	\$825	\$1,533	\$19,135	\$37,500	\$18,365	\$1,615
<b>Year 9</b>	664.0	\$8,646	85.0	\$1,263	\$4,083	\$2,716	\$825	\$0	\$17,533	\$37,500	\$19,967	\$21,582
<b>Year 10</b>	664.0	\$8,646	85.0	\$1,263	\$4,152	\$2,716	\$825	\$0	\$17,602	\$37,500	\$19,898	\$41,480

**Table 15.** Summary of the estimated cost to establish and operate a one acre vineyard trained to a Geneva double curtain.

Year	Labor		Machinery		Materials Cost	Harvest Cost (tons/A)	Land Charge	Interest or Lost Opportunity	Annual			Accumulated Income or (Expense)
	Hrs.	Cost	Hrs.	Cost					Expenses	Income	Profit or (Expense)	
<b>Pre-plant</b>	6.2	\$109	3.1	\$62	\$162		\$165	\$15	\$513		(\$530)	(\$530)
Yr. 1 Plant	42.2	\$622	6.1	\$71	\$1,756							
Yr. 1 Trellis	63.6	\$927	10.1	\$123	\$3,230							
Yr. 1 Culture	64.2	\$830	17.8	\$211	\$892							
<b>Year 1 Total</b>	170.0	\$2,380	34.0	\$405	\$5,878		\$165	\$296	\$9,123		(\$9,123)	(\$9,635)
<b>Year 2</b>	78.2	\$979	5.8	\$95	\$489		\$165	\$630	\$2,353		(\$2,358)	(\$11,994)
<b>Year 3</b>	167.7	\$2,145	12.9	\$196	\$4,924	\$315	\$165	\$952	\$8,696	\$4,350	(\$4,346)	(\$16,340)
<b>Year 4</b>	205.4	\$2,607	15.8	\$229	\$2,953	\$630	\$165	\$1,178	\$7,762	\$8,700	\$938	(\$15,402)
<b>Year 5</b>	195.9	\$2,490	16.7	\$239	\$1,537	\$728	\$165	\$1,079	\$6,238	\$10,050	\$3,812	(\$11,590)
<b>Year 6</b>	188.4	\$2,398	16.7	\$239	\$822	\$728	\$165	\$826	\$5,178	\$10,050	\$4,876	(\$6,718)
<b>Year 7</b>	188.4	\$2,398	16.7	\$239	\$811	\$728	\$165	\$533	\$4,874	\$10,050	\$5,176	(\$1,542)
<b>Year 8</b>	188.4	\$2,398	16.7	\$239	\$822	\$728	\$165	\$232	\$4,575	\$10,050	\$5,475	\$3,933
<b>Year 9</b>	188.4	\$2,398	16.7	\$239	\$811	\$728	\$165	\$0	\$4,341	\$10,050	\$5,709	\$9,642
<b>Year 10</b>	188.4	\$2,398	16.7	\$239	\$822	\$728	\$165	\$0	\$4,352	\$10,050	\$5,698	\$15,339

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**Table 16.** Summary of the estimated cost to establish and operate a 2 acre vineyard trained to a Geneva double curtain.

Year	Labor		Machinery		Materials Cost	Harvest Cost	Land Charge	Interest or Lost Opportunity	Annual			Accumulated Income or (Expense)
	Hrs.	Cost	Hrs.	Cost					Expenses	Income	Profit or (Expense)	
<b>Pre-plant</b>	12.4	\$217	6.2	\$123	\$325		\$330	\$30	\$1,025		(\$1,025)	(\$1,025)
Yr. 1 Plant	84.4	\$1,244	12.2	\$142	\$3,445							
Yr. 1 Trellis	127.2	\$1,855	20.2	\$246	\$6,095							
Yr. 1 Culture	128.4	\$1,661	35.6	\$422	\$1,695							
<b>Year 1 Total</b>	340.0	\$4,759	68.0	\$810	\$11,235		\$330	\$576	\$17,710		(\$17,710)	(\$18,735)
<b>Year 2</b>	156.4	\$1,958	11.6	\$191	\$979		\$330	\$1,228	\$4,685		(\$4,685)	(\$23,420)
<b>Year 3</b>	335.4	\$4,289	25.8	\$391	\$7,797	\$630	\$330	\$1,808	\$15,246	\$8,700	(\$6,546)	(\$29,966)
<b>Year 4</b>	410.8	\$5,214	31.6	\$457	\$3,908	\$1,260	\$330	\$2,133	\$13,303	\$17,400	\$4,097	(\$25,868)
<b>Year 5</b>	391.8	\$4,981	33.4	\$478	\$2,458	\$1,456	\$330	\$1,843	\$11,546	\$20,100	\$8,554	(\$17,314)
<b>Year 6</b>	376.8	\$4,797	33.4	\$478	\$1,644	\$1,456	\$330	\$1,300	\$10,005	\$20,100	\$10,095	(\$7,219)
<b>Year 7</b>	376.8	\$4,797	33.4	\$478	\$1,621	\$1,456	\$330	\$694	\$9,375	\$20,100	\$10,725	\$3,506
<b>Year 8</b>	376.8	\$4,797	33.4	\$478	\$1,644	\$1,456	\$330	\$0	\$8,928	\$20,100	\$11,395	\$14,901
<b>Year 9</b>	376.8	\$4,797	33.4	\$478	\$1,621	\$1,456	\$330	\$0	\$8,682	\$20,100	\$11,418	\$26,319
<b>Year 10</b>	376.8	\$4,797	33.4	\$478	\$1,644	\$1,456	\$330	\$0	\$8,705	\$20,100	\$11,395	\$37,714

**Table 17.** Summary of the estimated cost to establish and operate a 5 acre vineyard trained to a Geneva double curtain.

Year	Labor		Machinery		Materials Cost	Harvest Cost	Land Charge	Interest or Lost Opportunity	Annual			Accumulated Income or (Expense)
	Hrs.	Cost	Hrs.	Cost					Expenses	Income	Profit or (Expense)	
<b>Pre-plant</b>	31.0	\$544	15.5	\$308	\$812		\$825	\$75	\$2,563		(\$2,563)	(\$2,563)
Yr. 1 Plant	211.0	\$3,110	30.5	\$355	\$8,511							
Yr. 1 Trellis	318.0	\$4,637	50.5	\$614	\$14,691							
Yr. 1 Culture	321.0	\$4,152	89.0	\$1,055	\$4,106							
<b>Year 1 Total</b>	850.0	\$11,898	170.0	\$2,025	\$27,309		\$825	\$1,415	\$43,473		(\$43,473)	(\$46,035)
<b>Year 2</b>	391.0	\$4,895	29.0	\$476	\$2,446		\$825	\$3,021	\$11,664		(\$11,664)	(\$57,699)
<b>Year 3</b>	838.5	\$10,728	64.5	\$978	\$16,416	\$1,575	\$825	\$4,377	\$34,894	\$21,750	(\$13,144)	(\$70,843)
<b>Year 4</b>	1,027.0	\$13,035	79.0	\$1,143	\$6,772	\$3,151	\$825	\$4,998	\$29,924	\$43,500	\$13,576	(\$57,267)
<b>Year 5</b>	979.5	\$12,452	83.5	\$1,194	\$5,223	\$3,640	\$825	\$4,136	\$27,470	\$50,250	\$22,780	(\$34,487)
<b>Year 6</b>	942.0	\$11,992	83.5	\$1,194	\$4,111	\$3,640	\$825	\$2,722	\$24,484	\$50,250	\$25,766	(\$8,721)
<b>Year 7</b>	942.0	\$11,992	83.5	\$1,194	\$4,053	\$3,640	\$825	\$1,174	\$22,878	\$50,250	\$27,372	\$18,651
<b>Year 8</b>	942.0	\$11,992	83.5	\$1,194	\$4,111	\$3,640	\$825	\$0	\$21,762	\$50,250	\$28,488	\$47,139
<b>Year 9</b>	942.0	\$11,992	83.5	\$1,194	\$4,053	\$3,640	\$825	\$0	\$21,704	\$50,250	\$28,546	\$75,685
<b>Year 10</b>	942.0	\$11,992	83.5	\$1,194	\$4,111	\$3,640	\$825	\$0	\$21,762	\$50,250	\$28,488	\$104,173

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**Table 18.** Summary of the estimated cost to establish and operate a one acre vineyard trained to a mid-wire cordon with vertical shoot positioning (VSP).

Year	Labor		Machinery		Materials Cost	Harvest Cost	Land Charge	Interest or Lost Opportunity	Annual			Accumulated Income or (Expense)
	Hrs.	Cost	Hrs.	Cost					Expenses	Income	Profit or (Expense)	
<b>Pre-plant</b>	6.2	\$109	3.1	\$62	\$162		\$165	\$15	\$513		(\$513)	(\$513)
Yr. 1 Plant	54.2	\$810	7.8	\$90	\$2,296							
Yr. 1 Trellis	76.5	\$1,127	13.1	\$149	\$3,576							
Yr. 1 Culture	82.7	\$1,078	21.2	\$275	\$982							
<b>Year 1 Total</b>	213.4	\$3,015	42.1	\$514	\$6,855		\$165	\$347	\$10,896		(\$10,896)	(\$11,408)
<b>Year 2</b>	63.5	\$854	7.5	\$123	\$591		\$165	\$736	\$2,469		(\$2,469)	(\$13,877)
<b>Year 3</b>	134.3	\$1,759	16.8	\$256	\$3,611	\$239	\$165	\$1,014	\$7,421	\$3,300	(\$2,702)	(\$17,620)
<b>Year 4</b>	138.1	\$1,805	19.0	\$276	\$2,483	\$478	\$165	\$1,213	\$6,421	\$6,600	\$179	(\$17,441)
<b>Year 5</b>	141.5	\$1,847	20.1	\$295	\$1,598	\$598	\$165	\$1,182	\$5,683	\$8,400	\$2,567	(\$14,874)
<b>Year 6</b>	141.5	\$1,847	20.1	\$294	\$844	\$598	\$165	\$1005	\$4,753	\$8,250	\$3,497	(\$11,377)
<b>Year 7</b>	141.5	\$1,847	20.1	\$294	\$829	\$598	\$165	\$795	\$4,528	8,250	\$3,722	(\$7,765)
<b>Year 8</b>	141.5	\$1,847	20.1	\$294	\$844	\$598	\$165	\$572	\$4,320	8,250	\$3,930	(\$3,725)
<b>Year 9</b>	141.5	\$1,847	20.1	\$294	\$829	\$598	\$165	\$336	\$4,069	8,250	\$4,181	\$456
<b>Year 10</b>	141.5	\$1,847	20.1	\$294	\$844	\$598	\$165	\$0	\$3,749	8,250	\$4,501	\$4,957

**Table 19.** Summary of the estimated cost to establish and operate a 2 acre vineyard trained to a mid-wire cordon with vertical shoot positioning (VSP).

Year	Labor		Machinery		Materials Cost	Harvest Cost	Land Charge	Interest or Lost Opportunity	Annual			Accumulated Income or (Expense)
	Hrs.	Cost	Hrs.	Cost					Expenses	Income	Profit or (Expense)	
<b>Pre-plant</b>	12.4	\$217	6.2	\$123	\$325		\$330	\$30	\$1,025		(\$1,025)	(\$1,025)
Yr. 1 Plant	108.4	\$1,619	15.6	\$181	\$4,454							
Yr. 1 Trellis	153.0	\$2,253	26.2	\$298	\$6,899							
Yr. 1 Culture	165.4	\$2,157	42.4	\$550	\$1,876							
<b>Year 1 Total</b>	426.8	\$6,029	84.2	\$1,029	\$13,229		\$330	\$680	\$21,297		(\$21,297)	(\$22,322)
<b>Year 2</b>	127.0	\$1,707	15.0	\$246	\$1,182		\$330	\$1,443	\$4,909		(\$4,909)	(\$27,231)
<b>Year 3</b>	268.6	\$3,518	33.6	\$511	\$5,585	\$478	\$330	\$1,947	\$12,091	\$6,600	(\$5,768)	(\$32,999)
<b>Year 4</b>	276.2	\$3,611	38.0	\$552	\$3,396	\$956	\$330	\$2,245	\$11,091	\$13,200	\$2,109	(\$30,890)
<b>Year 5</b>	283.0	\$3,694	40.2	\$588	\$2,427	\$1,195	\$330	\$2,100	\$10,335	\$16,500	\$6,165	(\$24,725)
<b>Year 6</b>	283.0	\$3,694	40.2	\$588	\$1,689	\$1,195	\$330	\$1,708	\$9,206	\$16,500	\$7,294	(\$17,430)
<b>Year 7</b>	283.0	\$3,694	40.2	\$588	\$1,658	\$1,195	\$330	\$1,270	\$8,736	\$16,500	\$7,764	(\$9,666)
<b>Year 8</b>	283.0	\$3,694	40.2	\$588	\$1,689	\$1,195	\$330	\$805	\$8,302	\$16,500	\$8,198	(\$1,469)
<b>Year 9</b>	283.0	\$3,694	40.2	\$588	\$1,658	\$1,195	\$330	\$336	\$7,802	\$16,500	\$8,698	\$7,230
<b>Year 10</b>	283.0	\$3,694	40.2	\$588	\$1,689	\$1,195	\$330	\$0	\$7,497	\$16,500	\$9,003	\$16,233

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**Table 20.** Summary of the estimated cost to establish and operate a 5 acre vineyard trained to a mid-wire cordon with vertical shoot positioning (VSP).

Year	Labor		Machinery		Materials Cost	Harvest Cost	Land Charge	Interest or Lost Opportunity	Annual			Accumulated Income or (Expense)
	Hrs.	Cost	Hrs.	Cost					Total Expenses	Income	Profit or (Expense)	
<b>Pre-plant</b>	31.0	\$544	15.5	\$308	\$812		\$825	\$75	\$2,563		(\$2,563)	(\$2,563)
Yr. 1 Plant	271.0	\$4,048	39.0	\$454	\$10,927							
Yr. 1 Trellis	382.5	\$5,633	65.5	\$745	\$16,869							
Yr. 1 Culture	413.5	\$5,392	106.0	\$1,374	\$4,559							
<b>Year 1 Total</b>	1,067.0	\$15,073	210.5	\$2,571	\$32,354		\$825	\$1,678	\$52,501		(\$52,501)	(\$55,064)
<b>Year 2</b>	317.5	\$4,268	37.5	\$616	\$2,955		\$825	\$3,564	\$12,228		(\$12,228)	(\$67,292)
<b>Year 3</b>	371.5	\$8,794	84.0	\$1,277	\$11,509	\$1,195	\$825	\$4,746	\$28,346	\$16,500	(\$11,846)	(\$79,138)
<b>Year 4</b>	690.5	\$9,027	95.0	\$1,380	\$6,136	\$2,390	\$825	\$5,341	\$25,100	\$33,000	\$7,900	(\$71,238)
<b>Year 5</b>	707.5	\$9,236	100.5	\$1,470	\$4,915	\$2,988	\$825	\$4,855	\$24,289	\$41,250	\$16,961	(\$54,278)
<b>Year 6</b>	707.5	\$9,236	100.5	\$1,470	\$4,223	\$2,988	\$825	\$3,819	\$22,562	\$41,250	\$18,688	(\$35,590)
<b>Year 7</b>	707.5	\$9,236	100.5	\$1,470	\$4,146	\$2,988	\$825	\$2,695	\$21,361	\$41,250	\$19,889	(\$15,701)
<b>Year 8</b>	707.5	\$9,236	100.5	\$1,470	\$4,223	\$2,988	\$825	\$1,504	\$20,247	\$41,250	\$21,003	\$5,302
<b>Year 9</b>	707.5	\$9,236	100.5	\$1,470	\$4,146	\$2,988	\$825	\$0	\$18,665	\$41,250	\$25,585	\$27,887
<b>Year 10</b>	707.5	\$9,236	100.5	\$1,470	\$4,223	\$2,988	\$825	\$0	\$18,743	\$41,250	\$22,507	\$50,394