



2010 Estimated Cost of Producing Hops in the Yakima Valley, Washington

WASHINGTON STATE UNIVERSITY EXTENSION FACT SHEET • FS028E

Introduction

Commercial hop acreage within Washington is located in the Yakima Valley. In 2008, with a value of \$263.8 million, hops ranked 9th in agricultural commodity value in Washington. In 2009, 74.95 million pounds of hops from 29,588 acres were harvested in the state, accounting for 79% of the U.S. production. Washington hop acreage is expected to decline 30% in the next few years, a consequence of a worldwide oversupply. As a result, the economic climate for Washington hop producers is currently in chaos.

In previous times, growers could generally count on putting in a trellis, along with a drip irrigation system, and leaving it in place for its useful life of approximately 20 years. This assumed that the grower would sign a 5-year contract, and renew it for 3 additional cycles on the same piece of ground. (The plant variety might need to be changed and replanted, but the trellis and irrigation system would remain in service.) However, the current market is so volatile that growers can no longer count on being able to amortize the costs of planting along with installing a new trellis and drip irrigation system over more than a few years. Under the current situation, some growers who thought they had a 5-year contract to amortize establishment costs are being asked to sell back or roll forward those contracts in as little as 2 years. Other growers may see their plantings and trellis and irrigation system remaining longer.

In light of these circumstances, it is important to have a tool for estimating establishment and production costs so hop growers can evaluate the profitability of their enterprise and make informed decisions regarding future expansion. There is also value in having this information for future contract and banking negotiations. Having a document that lays out these expenses gives credibility to a grower who is trying to negotiate loan terms or contract amounts.

Objectives of Study

The primary objectives of this study are:

- To provide a representative estimate of capital requirements and production costs of a well-managed hop enterprise grown under drip irrigation.
- To provide producers with a procedure and a tool for analyzing the profitability of their own hop enterprise.
- To develop an Excel workbook that allows the user to estimate production costs of producing hops and that has the flexibility to examine the impact of changing input assumptions.

Sources of Information

In putting together this study, a committee of area producers identified the inputs, yields, and assumptions under which the budgets for the representative hop situation were developed. These producers are considered to represent well-managed hop farms. The quantities and types of materials (plants, fertilizers, herbicides, insecticides, etc.) used in the budgets were based on widely used practices. Building and machinery costs were based on what the producer committee deemed typical of an average-size hop farm in the Yakima Valley.

Basic Assumptions

Following are the general assumptions made in developing the enterprise budget for hops grown in the Yakima Valley:

1. The representative farm has 660 acres devoted to hop production, with 600 acres in hops currently being established or currently producing. It takes 1.1 acres of land to establish 1 acre of hops. Thus, on this representative farm approximately 60 acres of land are needed for roads, buildings, picking equipment, etc. in support of hops production.
2. Bare land is valued at \$4,500 per acre.
3. A drip irrigation system costs \$1,500 per acre to

- install. Annual repair and maintenance costs are \$15 per acre. The water charge is \$90 per acre.
4. The drip irrigation system, hop trellis systems, and hop plants have a 4-year life.¹
 5. Management is valued at \$400 per acre. This value is representative of what the producer committee felt was a fair return on an operator's management skills.
 6. The prevailing interest rate is 6% for a short-term loan, and 7.5% for a long-term loan.

Representative Situation

The representative situation is a 40-acre hop field within the 660-acre farm that needs to be completely reestablished if production is to occur on this field. The producer has been offered a 4-year contract to establish and produce hops on this field. The producer needs to determine the price that must be received if all costs (financial and opportunity) are to be covered over a four-year production period. The variety of hop to be grown is to be on a standard trellis and projected to have an average mature-year production of 2,600 lbs. First-year production is projected to be 80% of mature-year production, or 2,080 lbs.

Table 1 displays the establishment costs, given the above general assumptions along with the specific assumptions listed in the table, estimated at \$5,873 per acre. Establishment costs include land preparation done in the fall of the previous year, constructing the trellis system, planting the hop roots, and installing the irrigation system.

Table 2 presents the estimated production costs per acre during the first year and subsequent mature years, for our representative situation. Production costs are classified into: variable costs, which are associated with materials, labor, consulting services, and machinery operations; and fixed costs, which are incurred whether or not hops are grown and include equipment and buildings' annual replacement costs² (a proxy for depreciation); interest and taxes on investment; and establishment, management, and administration costs.

Interest costs represent required return on investments. They can be actual interest payments on loans to finance

¹ Under the current market situation (2010), there are hopyards with a 2-year life after which the trellis and drip irrigation system are removed; other yards have trellis and/or irrigation systems that remain for 20 years or more, and there are other combinations in between. Four years was selected for this enterprise budget to evaluate the return to growers if they have a 4-year life for the hop planting as well as trellis and irrigation systems. However, the spreadsheets accompanying this budget allow growers to change the number of years in the life of the hopyard.

² This represents the amount a producer would pay to replace equipment and buildings, per year, on average. The use of replacement prices may overstate costs growers currently experience. However, it provides an indication of the earnings needed to replace depreciable assets. Recent increases in prices paid for machinery and equipment mean that the depreciation claimed on older purchases substantially understates the amount of capital required to replace that asset. When looking at the long-term viability of the enterprise, it is important to consider its ability to replace depreciable assets on a replacement cost basis.

the investment, or an opportunity cost (a return that would have been received if the investment had been in an alternative activity), or a combination of the two. An opportunity cost of \$400 per acre for management is listed as a fixed cost rather than a variable cost because one either uses or loses management skills during the production year. Amortized establishment costs are also included in the fixed costs. In this example, the amortized establishment costs comprise the planting costs amortized over 4 years based on the life of hop plants, and trellis and irrigation costs amortized over 4 years based on the assumed life of the trellis and irrigation systems. In both cases, a short term interest of 6% is used. These costs must be recaptured during the production years in order for an enterprise to be profitable.

In Table 2, the mature years' per-acre yield was estimated at 2,600 pounds, with the first year of production being 80% of that. Given these production estimates, the breakeven price³ of hops for the first 4-year planting is estimated at \$3.20 per pound. Table 3 shows the amortization calculations used to determine the amount to be amortized over the expected years of life for the hop plants and for the trellis and irrigation systems in Table 2.

Producers reviewing these budgets most likely will state that their own costs are lower than those presented. Furthermore, others outside the industry may question the cost estimates and breakeven prices stating, "If the breakeven price is more than the market price then the producers are operating at a loss. How do they stay in business?" To adequately address these concerns and questions, one must understand the difference between "economic" and "financial" (cash) budgets and how an economic budget can be used to develop a financial budget. The budgets shown in Tables 1 and 2 are economic budgets used for project planning and feasibility assessment.

While individual producers may differ as to their types and amounts of inputs and yield projections, the main sources of confusion are establishment costs and the costs of owned capital, labor, management, and land. To fully understand the representative hop budgets shown in Tables 1 and 2, one must understand the concepts of opportunity costs and amortized establishment costs.

Opportunity cost is the revenue lost by not investing in the next best, similar risk alternative. For instance, if a producer invests \$50,000 of equity capital in equipment, the producer gives up the alternative of investing this money in the stock market or paying off an outstanding loan. Thus, if the producer is to realize an "economic" profit, the equipment investment must realize a return greater than that associated with the next best alternative. If the next best alternative happens to be paying off an outstanding loan that carries 9% annual interest, economic profits are not realized until a net return greater than \$4,500 is realized by the equipment investment. Thus,

³ The breakeven price is equal to the total production cost over the life of the hop plants divided by the total hop yield over the same period.

the hop enterprise budgets reflect an interest cost on both owned and borrowed capital.

The same is true for operator labor and management, and owned land. In calculating labor and management costs, operator labor and management are valued at their opportunity cost of being hired out to a neighboring farm, or the dollar amount it would cost to hire someone else to do the labor and management being furnished by the producer. For land owned, the opportunity cost included in the hop budgets represents the rental rate the producer could rent the land for if the land is not used by the producer.

Establishment costs are those costs incurred during the establishment of the enterprise. In the case of hops, these costs include the costs of materials and labor needed for establishing both the trellis system (including land preparation) and the irrigation system, and for planting the hop roots, as well as any interest costs incurred.

Situation 1

Situation 1 is the same as the Representative Situation (4-year hopyard life), except that the “Your Costs” columns include producer costs.

Since most producers have equity in their farm business and also provide labor and management associated with running their operation, in order to determine a given producer’s financial costs (that is, excluding opportunity costs), adjustments must be made to the “economic” hop budgets presented for the representative situation above.

For Situation 1, we assume a producer pays \$100 per acre for management and administration on the farm, and furnishes all other management himself/herself. Being a fulltime manager, the amount of actual unpaid labor the producer contributes to the operation is minimal. This producer has an outstanding real estate loan of \$1,600,000 on which 7.5% interest is being paid over the remaining 15-year period, an outstanding machinery and building loan of \$2,500,000 on which 7.5% interest is being paid, and operating loans totaling approximately \$800,000 carried for an average of 6 months per year at 6.0% annual interest.

Table 4, is essentially Table 1 with this producer’s “financial” budget information entered in the “Your Costs” columns for preparing and establishing a standard trellis hop field. Table 5 is essentially Table 2 with this producer’s “financial” budget information entered in the “Your Costs” columns for producing standard trellis hops. In the “Your Costs” columns for both Table 4 and Table 5, all opportunity costs on equity capital and unpaid operator labor and management are eliminated. Management and administrative costs were reduced from \$400 per acre to \$100 per acre since the operator furnishes all but \$100 per acre of the management and administration. All other entries, with the exception of land cost, have to do with eliminating opportunity cost on equity capital and including only interest costs actually paid, which is why the interest costs in Situation 1 are lower than that of the Representative Situation.

Note that in the case of land cost, although principal payments are not expenses, both the principal and interest payment on the land loan are included since principal payments are annual cash obligations that the enterprise must cover. In the case of machinery and buildings, the principal payments on the loans are covered by “Machinery & Building Annual Replacement Cost.” In both Table 7 and Table 8, additional costs incurred by the producer that are different from the representative situation (fertilizer, chemicals, packaging, etc.) were listed as an illustration of how producers can further customize the worksheet by entering their own costs. Table 6 shows the amortization calculations for Table 5.

The results for Situation 1 show that at a price of \$2.88 per pound the producer will be able to cover all financial costs. At any price above \$2.88, the producer will be able to realize a return to management, equity capital, and financial risk.

Situation 2

Situation 2 is similar to Situation 1 in that all the basic data are the same. However, in this situation the producer wants to make his economic and financial comparisons based on a 5-year hop life and a 10-year trellis and irrigation system life. In this situation, after the first five years of production the current hop planting is removed and replaced with another planting of hop.

The establishment costs for this situation are the same as those listed in Table 4. Therefore, only the production cost changes are shown in Table 7. In this scenario, the 4-year hop life is changed to a 5-year hop life and the 4-year trellis and irrigation life is changed to a 10-year life. The establishment costs calculations for the “Your Costs” figures also need to be recalculated based on the change in the number of years over which establishment costs are to be amortized. When this is finished, both the breakeven price for the representative situation and the “Your Costs” columns will change.

The results for Situation 2 show that the representative situation “economic” breakeven price is \$2.85 while the producer’s “financial” breakeven price is \$2.51. Table 8 shows the amortization calculations for Table 7.

Using the WSU Hop Enterprise Budget Excel Workbook

Individual growers and others can use the MS Excel workbook that is available at the WSU IMPACT Center website: <http://www.impact.wsu.edu/IMPACTProjects.html>. The user will find a copy of this publication and the workbook containing four different sets of data: (1) a workbook with entries for the Representative Situation; (2) a workbook with entries for Situation 1; (3) a workbook with entries for Situation 2; and (4) a workbook with blank entries, which can be especially useful for researchers, growers, or advanced spreadsheet users who prefer to enter their own data using a blank template. It is suggested that you download these files and store them on your hard drive in a folder created just for this purpose.

Before changing any data in an existing spreadsheet, the original file should be saved under a different filename in order to keep that original file intact without changes.

There are two methods by which users can estimate their own production costs. The first method is to download the workbook containing the blank template and enter your own data directly into the yellow cells. Note, if changes are desired in any of the blue cells, the spreadsheet must be “unprotected” before this can be done.

The second method is to modify an existing workbook according to your own specifications by making changes directly in the spreadsheet and/or in the “Your Costs” columns. For example, the “Representative Situation Workbook” is divided into three spreadsheets. The first spreadsheet, Establishment, is for estimating establishment costs for a hop field. The yellow cells are unprotected cells into which data or comments may be entered. The blue cells are protected cells that cannot be changed

unless the spreadsheet is “unprotected.” By unprotecting the spreadsheet, advanced users will be able to modify the input names and formulas as necessary. To use the “Unprotect” and “Protect” features of the software, click on these features in the “Review” menu at the top of the page. No passwords are needed to use these features. To the right of the “colored” spreadsheet are “unprotected” white columns that may be used to provide “Your Costs” figures and comments that differ from those in the “colored” columns.

The second spreadsheet, Production, is for estimating the production costs for Year 1 and the mature years. As with the first spreadsheet, yellow cells are unprotected and data or comments may be entered in them. The blue cells are protected and cannot be changed unless the spreadsheet is “unprotected.” The third spreadsheet, Amortization Calculators, shows the calculators used with the other spreadsheets to amortize establishment costs over their expected life.

Table 1.

ESTIMATED COSTS PER ACRE FOR PREPARING AND ESTABLISHING A STANDARD TRELLIS HOP FIELD UNDER DRIP IRRIGATION			Your Costs
Comments and Notes			\$
LAND PREPARATION:	\$	October-November of Previous Year	
Disc	22.00	Custom hire 1.1 acres @ \$20/acre	
Subsoil	35.00	Custom hire 1.1 acres @ \$31.80/acre	
Plow/Rototill	50.00	Custom hire 1.1 acres @ \$45.45/acre	
Cultipack/Sprtooth (2X)	34.00	Custom hire 1.1 acres @ \$15.45/acre each time	
Fumigate		Not a standard practice	
Interest	8.46	6% of land prep cost	
Total Land Preparation	149.46		0.00
ESTABLISHMENT:			
Materials and Labor			
Field Poles	900.00	60 poles @ \$15.00/pole	
Anchor Poles	235.00	10 poles @ \$23.50/pole	
Anchor Holes	35.00	10 holes @ \$3.50/hole	
Anchor Material	200.00	10 holes @ \$20/hole	
Wire and Staples	630.00	2,100 lbs. of wire @ 30 cents/lb.	
Hop Roots	800.00	4,000 roots @ 20 cents/root	
Labor	900.00		
Management	200.00	10 hours @ \$20/hour	
Irrigation System	1500.00	Labor and materials	
Interest	324.00	6% of above establishment costs	
Total Establishment Cost	5724.00		0.00
Total Land Preparation and Establishment Costs	5873.46		0.00

NOTE: All machinery costs, other than custom hired, are included in Year 1 production costs.

Table 2.

ESTIMATED PER ACRE COSTS AND RETURNS FROM PRODUCING STANDARD TRELLIS HOPS UNDER DRIP IRRIGATION						Your Costs	
	Year 1	Mature	Comments and Notes			Year 1	Mature
	\$	Years					Years
		\$					
			4	years of hop life			
			4	years of trellis and irrigation life			
Variable Costs:							
Fertilizer & Leaf Feed	275.00	250.00	Includes line cleaner				
Chemicals	325.00	450.00	Includes herbicide, insecticide & fungicides				
Consulting and custom hire	20.00	20.00	Includes scouting				
Licenses, fees and dues	40.00	40.00	Assessments, dues licenses, inspection fees				
Parts and Repairs	400.00	400.00	Includes equipment, trellis, irrigation, facilities				
Fuel and Oil	200.00	200.00					
Supplies	150.00	150.00	Includes twine & clips, general supplies				
Packaging	57.20	71.50	\$5.50	per bale	Burlap, plastic, pelletizing		
Kiln Fuel	145.60	182.00	\$14.00	per bale			
Utilities	90.00	90.00					
Hop Dryer & Baler	104.00	130.00	\$10.00	per bale			
Seasonal Labor	1600.00	1500.00	Includes benefits, employer taxes, etc.				
Interest	102.20	104.51	6% of above variable costs x 6/12 (6 months)				
Total Variable Costs	3509.00	3588.01				0.00	0.00
Fixed Costs:							
Equipment & Building Annual Replacement Cost	500.00	500.00	\$300,000 per year for a 600-acre hop ranch with capital investments having a 5-10 year lifespan				
Interest on Mach. & Buildings	1000.00	1000.00	\$8 million @ 7.5% divided by 600 acres (picker, kiln, baler, shop, office @ \$6.5 million + equipment @ \$1.5 million)				
Insurance Cost (all farm insurance)	190.00	190.00					
Amortized Establishment Costs:							
Planting Costs	4 years, 6%	288.59	288.59	\$1,000	Hop roots plus \$200 labor		
Trellis & Irrig. Costs	4 years, 6%	1406.31	1406.31	\$4,873	Land prep & estab. - planting costs		
Land & Property Taxes		82.50	82.50	\$75 per acre x 1.1 acres			
Land Cost		371.25	371.25	(\$4,500 per acre x 1.1 acres) x 7.5%			
Irrigation Water		90.00	90.00				
Management & Administration		400.00	400.00				
Total Fixed Costs	4328.65	4328.65				0.00	0.00
TOTAL COSTS	7837.65	7916.65				0.00	0.00
Estimated Production Level (Lbs.)	2080.00	2600.00	Fill in the blank with your estimates				
Breakeven Price		3.20	4	years of hop life			

Table 3.

AMORTIZATION CALCULATORS

A. Establishment cost attributed to Planting	
Dollar amount to be amortized:	\$1,000.00
Number of years:	4
Interest rate:	6.00%
Amortized amount per year:	-\$288.59

B. Establishment cost attributed to Trellis & Irrigation System	
Dollar amount to be amortized:	\$4,873.00
Number of years:	4
Interest rate:	6.00%
Amortized amount per year:	-\$1,406.31

Table 4.

ESTIMATED COSTS PER ACRE FOR PREPARING AND ESTABLISHING A STANDARD TRELLIS HOP FIELD UNDER DRIP IRRIGATION		
Comments and Notes		
LAND PREPARATION:	\$	
Disc	22.00	October-November of Previous Year
Subsoil	35.00	Custom hire 1.1 acres @ \$20/acre
Plow/Rototill	50.00	Custom hire 1.1 acres @ \$31.80/acre
Cultipack/Sprtooth (2X)	34.00	Custom hire 1.1 acres @ \$45.45/acre
Fumigate		Custom hire 1.1 acres @ \$15.45/acre each time
		Not a standard practice
Interest	8.46	6% of land prep cost
Total Land Preparation	149.46	
ESTABLISHMENT:		
Materials and Labor		
Field Poles	900.00	60 poles @ \$15.00/pole
Anchor Poles	235.00	10 poles @ \$23.50/pole
Anchor Holes	35.00	10 holes @ \$3.50/hole
Anchor Material	200.00	10 holes @ \$20/hole
Wire and Staples	630.00	2,100 lbs. of wire @ 30 cents/lb.
Hop Roots	800.00	4,000 roots @ 20 cents/root
Labor	900.00	
Management	200.00	10 hours @ \$20/hour
Irrigation System	1500.00	Labor and materials
Interest	324.00	6% of above establishment costs
Total Establishment Cost	5724.00	
Total Land Preparation and Establishment Costs	5873.46	

Your Costs	Comments
\$	
18.00	My cost. I do this myself with my equipment
30.00	My cost. I do this myself with my equipment
42.00	My cost. I do this myself with my equipment
30.00	My cost. I do this myself with my equipment
7.20	6% of land prep cost
127.20	
900.00	60 poles @ \$15/pole
250.00	10 poles @ \$25/pole
40.00	10 holes @ \$4/hole
220.00	10 holes @ \$22/hole
651.00	2,100 lbs. of wire @ 31 cents/lb.
800.00	Same cost
1000.00	
250.00	10 hours @ \$25/hour
1700.00	
348.66	6% of above establishment costs
6159.66	
6286.86	

NOTE: All machinery costs, other than custom hired, are included in Year 1 production costs.

Table 5.

ESTIMATED PER ACRE COSTS AND RETURNS FROM PRODUCING STANDARD TRELLIS HOPS UNDER DRIP IRRIGATION				Your Costs		Comments
	Year 1 \$	Mature Years \$	Comments and Notes	Year 1	Mature Years	
			4 years of hop life			
			4 years of trellis and irrigation life			
Variable Costs:						
Fertilizer & Leaf Feed	275.00	250.00	Includes line cleaner	280.00	260.00	
Chemicals	325.00	450.00	Includes herbicide, insecticide & fungicides	335.00	470.00	
Consulting and custom hire	20.00	20.00	Includes scouting	22.00	22.00	
Licenses, fees and dues	40.00	40.00	Assessments, dues licenses, inspection fees	40.00	40.00	
Parts and Repairs	400.00	400.00	Includes equipment, trellis, irrigation, facilities	420.00	420.00	
Fuel and Oil	200.00	200.00		210.00	210.00	
Supplies	150.00	150.00	Includes twine & clips, general supplies	165.00	165.00	
Packaging	57.20	71.50	\$5.50 per bale Burlap, plastic, pelletizing	62.40	78.00	\$6.00 per bale
Kiln Fuel	145.60	182.00	\$14.00 per bale	156.00	195.00	\$15.00 per bale
Utilities	90.00	90.00		100.00	100.00	
Hop Dryer & Baler	104.00	130.00	\$10.00 per bale	109.20	136.50	\$10.50 per bale
Seasonal Labor	1600.00	1500.00	Includes benefits, employer taxes, etc.	1750.00	1600.00	
Interest	102.20	104.51	6% of above variable costs x 6/12 (6 months)	40.00	40.00	(\$800,000 x 6% x 6/12) / 600 acres
Total Variable Costs	3509.00	3588.01		3689.60	3736.50	
Fixed Costs:						
Equipment & Building Annual Replacement Cost	500.00	500.00	\$300,000 per year for a 600-acre hop ranch with capital investments having a 5-10 year lifespan.	500.00	500.00	
Interest on Mach. & Buildings	1000.00	1000.00	\$8 million @ 7.5% divided by 600 acres (picker, kiln, baler, shop, office @ \$6.5 million + equipment @ \$1.5 million)	312.50	312.50	(\$2.5 million loan @ 7.5% interest) / 600 acres
Insurance Cost (all farm insurance)	190.00	190.00		190.00	190.00	
Amortized Establishment Costs:						
Planting Costs	288.59	288.59	\$1,000 Hop roots plus \$200 labor	317.45	317.45	Hop roots plus \$300 L & M : (\$1,100, 4 years, 6%)
Trellis & Irrig. Costs	1406.31	1406.31	\$4,873 Land prep & estab. - planting costs	1496.88	1496.88	Land prep. & estab. - planting costs: (\$5,186.86, 4 years, 6%)
Land & Property Taxes	82.50	82.50	\$75 per acre x 1.1 acres	82.50	82.50	
Land Cost	371.25	371.25	(\$4,500 per acre x 1.1 acres) x 7.5%	302.10	302.10	P&I for (\$1,600,000, 7.5%, 15 years) / 600 acres
Irrigation Water	90.00	90.00		90.00	90.00	
Management & Administration	400.00	400.00		100.00	100.00	Rest of Management & Administration furnished by the producer
Total Fixed Costs	4328.65	4328.65		3391.43	3391.43	
TOTAL COSTS	7837.65	7916.65		7081.03	7127.93	
Estimated Production Level (Lbs.)	2080.00	2600.00	Fill in the blank with your estimates	2080.00	2600.00	
Breakeven Price		3.20	4 years of hop life		2.88	4 year hop life

Table 6.

AMORTIZATION CALCULATORS

A. Establishment cost attributed to Planting	
Dollar amount to be amortized:	\$1,000.00
Number of years:	4
Interest rate:	6.00%
Amortized amount per year:	-\$288.59

B. Establishment cost attributed to Trellis & Irrigation System	
Dollar amount to be amortized:	\$4,873.00
Number of years:	4
Interest rate:	6.00%
Amortized amount per year:	-\$1,406.31

**AMORTIZATION CALCULATOR
TO BE USED FOR
"YOUR COST" COLUMNS**

Dollar amount to be amortized:	\$1,100.00
Number of years:	4
Interest rate:	6.00%
Amortized amount per year:	-\$317.45

Dollar amount to be amortized:	\$5,186.86
Number of years:	4
Interest rate:	6.00%
Amortized amount per year:	-\$1,496.88

Table 7.

ESTIMATED PER ACRE COSTS AND RETURNS FROM PRODUCING STANDARD TRELLIS HOPS UNDER DRIP IRRIGATION				Your Costs		Comments
	Year 1 \$	Mature Years \$	Comments and Notes	Year 1	Mature Years	
			5 years of hop life			
			10 years of trellis and irrigation life			
Variable Costs:						
Fertilizer & Leaf Feed	275.00	250.00	Includes line cleaner	280.00	260.00	
Chemicals	325.00	450.00	Includes herbicide, insecticide & fungicides	335.00	470.00	
Consulting and custom hire	20.00	20.00	Includes scouting	22.00	22.00	
Licenses, fees and dues	40.00	40.00	Assessments, dues licenses, inspection fees	40.00	40.00	
Parts and Repairs	400.00	400.00	Includes equipment, trellis, irrigation, facilities	420.00	420.00	
Fuel and Oil	200.00	200.00		210.00	210.00	
Supplies	150.00	150.00	Includes twine & clips, general supplies	165.00	165.00	
Packaging	57.20	71.50	\$5.50 per bale Burlap, plastic, pelletizing	62.40	78.00	\$6.00 per bale
Kiln Fuel	145.60	182.00	\$14.00 per bale	156.00	195.00	\$15.00 per bale
Utilities	90.00	90.00		100.00	100.00	
Hop Dryer & Baler	104.00	130.00	\$10.00 per bale	109.20	136.50	\$10.50 per bale
Seasonal Labor	1,600.00	1,500.00	Includes benefits, employer taxes, etc.	1,750.00	1,600.00	
Interest	102.20	104.51	6% of above variable costs x 6/12 (6 months)	40.00	40.00	(\$800,000 x 6% x 6/12) / 600 acres
Total Variable Costs	3,509.00	3,588.01		3,689.60	3,736.50	
Fixed Costs:						
Equipment & Building Annual Replacement Cost	500.00	500.00	\$300,000 per year for a 600-acre hop ranch with capital investments having a 5-10 year lifespan.	500.00	500.00	
Interest on Mach. & Buildings	1,000.00	1,000.00	\$8 million @ 7.5% divided by 600 acres (picker, kiln, baler, shop, office @ \$6.5 million + equipment @ \$1.5 million)	312.50	312.50	(\$2.5 million loan @ 7.5% interest) / 600 acres
Insurance Cost (all farm insurance)	190.00	190.00		190.00	190.00	
Amortized Establishment Costs:						
Planting Costs	5 years, 6%	237.40	\$1,000 Hop roots plus \$200 labor	261.14	261.14	Hop roots plus \$300 L & M : (\$1,100, 5 years, 6%)
Trellis & Irrig. Costs	10 years, 6%	662.08	\$4,873 Land prep & estab. - planting costs	704.73	704.73	Land prep. & estab. - planting costs: (\$5,186.86, 10 years, 6%)
Land & Property Taxes		82.50	\$75 per acre x 1.1 acres	82.50	82.50	
Land Cost		371.25	(\$4,500 per acre x 1.1 acres) x 7.5%	302.10	302.10	P&I for (\$1,600,000, 7.5%, 15 years) / 600 acres
Irrigation Water		90.00		90.00	90.00	
Management & Administration		400.00		100.00	100.00	Rest of Management & Administration furnished by the producer
Total Fixed Costs	3,533.23	3,533.23		2,542.97	2,542.97	
TOTAL COSTS	7,042.23	7,121.24		6,232.57	6,279.47	
Estimated Production Level (Lbs.)	2,080.00	2,600.00	Fill in the blank with your estimates	2,080.00	2,600.00	
Breakeven Price		2.85	5 years of hop life		2.51	5 year hop life

Table 8.

AMORTIZATION CALCULATORS

A. Establishment cost attributed to Planting	
Dollar amount to be amortized:	\$1,000.00
Number of years:	5
Interest rate:	6.00%
Amortized amount per year:	-\$237.40

B. Establishment cost attributed to Trellis & Irrigation System	
Dollar amount to be amortized:	\$4,873.00
Number of years:	10
Interest rate:	6.00%
Amortized amount per year:	-\$662.08

AMORTIZATION CALCULATOR TO BE USED FOR "YOUR COST" COLUMNS

Dollar amount to be amortized:	\$1,100.00
Number of years:	5
Interest rate:	6.00%
Amortized amount per year:	-\$261.14

Dollar amount to be amortized:	\$5,186.86
Number of years:	10
Interest rate:	6.00%
Amortized amount per year:	-\$704.73

Acknowledgements

The authors thank the Washington Hop Commission and WSU IMPACT Center for funding this study. Assistance from hop growers in developing the enterprise budget is also greatly appreciated.



By **Suzette Galinato**, Research Associate, IMPACT Center, School of Economic Sciences, Washington State University; **Ann George**, Administrator, Washington Hop Commission; and **Herbert Hinman**, Farm Management Specialist and Professor (retired), School of Economic Sciences, Washington State University.

Copyright 2011 Washington State University

WSU Extension bulletins contain material written and produced for public distribution. Alternate formats of our educational materials are available upon request for persons with disabilities. Please contact Washington State University Extension for more information.

You may order copies of this and other publications from WSU Extension at 1-800-723-1763 or <http://pubs.wsu.edu>.

Issued by Washington State University Extension and the U.S. Department of Agriculture in furtherance of the Acts of May 8 and June 30, 1914. Extension programs and policies are consistent with federal and state laws and regulations on nondiscrimination regarding race, sex, religion, age, color, creed, and national or ethnic origin; physical, mental, or sensory disability; marital status or sexual orientation; and status as a Vietnam-era or disabled veteran. Evidence of noncompliance may be reported through your local WSU Extension office. Trade names have been used to simplify information; no endorsement is intended. Published August 2011.