



Cost of Growing Hops in the Northeast

Introduction:

As demand grows for hops in the Northeast, many farmers and entrepreneurs are thinking about the possibility of growing hops. Since this crop has been absent from the region for over a century, information is not readily available about the costs of hop production. This document is intended to help prospective hop growers consider the financial side of hop production. It complements an editable spreadsheet that you can use to model your hop farm available on the UVM Extension website¹. The numbers included are based on interviews with Northeast hop growers in 2015. It is important to note that while the numbers are based on real businesses, your business may end up looking very different. This could mean that certain parts of the business could be more expensive than stated here; it also could mean that you can find cheaper ways to do things. All growers in the Northeast are developing their production systems and working on making them more efficient, including the growers interviewed in this project.

Context:

Washington State Extension and Michigan State Extension have created other useful financial examples that can be found online². This document is intended to provide a regional version based on New England and New York, and to add detail on processing equipment and labor costs. While processing infrastructure carries a high capital cost, it can be spread out over the lifetime of the equipment. The highest costs per acre across all growers interviewed were weeding and harvesting labor. From a financial perspective, the biggest improvements can be made from systems that cut labor time and by increasing hop yield. Yields in the Pacific Northwest are as much as double the yields in this region for some varieties, so we know that it is possible to get more hops per acre. For information on how to achieve better yield, visit our website at <http://www.uvm.edu/extension/cropsoil/hops>.

Growing practices:

Interest in Vermont has leaned toward organic growing practices, which is reflected in the model. However, information is included below on cost of conventional fertilizer and pesticide per acre. Those numbers can be substituted in the spreadsheet if you would like to model conventional costs. It is worth noting that interest in organic production practices has been mostly driven by growers; the regional hop market does not currently have a strong preference between organic certified hops and conventionally grown hops.

Not Covered in budget:

This model does not include water sourcing. Where will your irrigation water come from? Drip irrigation and infrastructure for distribution across planted area is included, but will you need to run water to the yard? Are you paying for a well or for city water?

The business loan is calculated for a 20-year pay off. If cared for properly, hop plants, trellis and harvest/processing equipment could last for 20 years, but demand for a given hop variety often does not. Driven by demand, it is likely that you will want to replant with new hop varieties before the plants actually need replacing. That is why estimated net income is not forecasted for the full 20 years of the loan. To change the loan payoff period, go to the "business loan" tab of the Excel spreadsheet. Changes to that sheet will be reflected on the main budgets.

¹<http://www.uvm.edu/extension/cropsoil/hops>

²<https://www.usahops.org/growers/cost-of-production.html>

Sample Budget for 10 Acre Hop Enterprise

Julian Post, UVM Extension

This is a sample, not a rule book. Your numbers WILL be different!

Income	Unit	Number	Price per	Total	Yield per acre
Dry pelleted hops	dry lb	10,000	\$15.00	\$150,000.00	1000
Total Income				\$150,000.00	

Expenses	Unit	Number	Price per	Cost per acre	Total	Notes
Coir	bale	8	\$500.00	\$400.00	\$4,000.00	2500 strings per bale
W-clips	acre	20	\$50.00	\$100.00	\$1,000.00	1000ct box
Fertilizer	ton	7	\$621.00	\$434.70	\$4,347.00	1,250lbs/acre Cheep Cheep (4-3-3) for 200# N/planted acre (50# N/actual acre)
Fungicide OG	20# bag	3	\$160.00	\$48.00	\$480.00	6lbs/acre
Herbicide OG	5 gallon barrel	10	\$260.00	\$260.00	\$2,600.00	2 applications @ 2.5 gallons/acre
Training - Labor	hours	400	\$10.00	\$400.00	\$4,000.00	40hrs/acre
Stringing - Labor	hours	120	\$15.00	\$180.00	\$1,800.00	12hrs/acre
Weed control - Labor	hours	800	\$15.00	\$1,200.00	\$12,000.00	hand weeding, trimming, and herbicide
Spraying - Labor	hours	450	\$15.00	\$675.00	\$6,750.00	4hrs/week x 15 weeks
Tractor fuel for field work	acre	10	\$420.00	\$420.00	\$4,200.00	
Oast Fuel	season	1	\$879.00	\$87.90	\$879.00	
Harvester Fuel	season	1	\$1,000.00	\$100.00	\$1,000.00	
Harvest - Labor	hours	400	\$15.00	\$600.00	\$6,000.00	
Post-harvest processing - Labor	hours	160	\$240.00	\$240.00	\$2,400.00	200 cutting, 200 picking, 100 drying, 60 baling
Pelletizing - contracted	lb	10,000	\$1.50	\$1,500.00	\$15,000.00	
Packaging - contracted	lb	10,000	\$0.65	\$650.00	\$6,500.00	
Total Labor				\$3,295.00	\$32,950.00	
Total Variable (including labor)				\$7,295.60	\$72,956.00	

Fixed	Unit	Number	Price per	Cost per acre	Total	Notes
Rent	acre	10	\$150.00	\$150.00	\$1,500.00	
Insurance	year	1	\$1,200.00	\$120.00	\$1,200.00	
Taxes	year	1	\$1,000.00	\$100.00	\$1,000.00	
Total Fixed				\$370.00	\$3,700.00	
Total Fixed + Variable				\$7,665.60	\$76,656.00	

Loans (annual payment total)	Cost per acre	Total	Notes
Start-up: Capital/Equipment (detailed below)	\$1,602.50	\$16,025.05	\$202350 at 5% for 20 years

Net Income	Total	Notes
Net after Capital Expense Yr 1	-\$60,902.05	no crop
Yr 2	\$11,233.50	half crop
Yrs 3+	\$57,318.95	
5 Yr Average	\$24,457.66	

Input costs for conventional growing practices:

Pesticides: \$300/acre

Fertilizer: \$350/acre

10 Acre Detail

Start up					Total	Notes
Capital/Equipment	Unit	Number	Price per			
Plants	plant	10000	\$4.00		\$40,000.00	
Field poles	pole	1080	\$20.00		\$21,600.00	
Drainage Stone	ton	15	\$1,000.00		\$15,000.00	
Wire	feet	85000	\$0.15		\$12,750.00	
Hardware	acre	10	\$2,500.00		\$25,000.00	
Irrigation drip system	acre	10	\$1,500.00		\$15,000.00	
Small Tractor	tractor	1	\$20,000.00		\$20,000.00	
Sprayer	sprayer machine	1	\$10,000.00		\$10,000.00	
Harvester	harvester machine	1	\$25,000.00		\$25,000.00	
Oast	oast machine	1	\$11,000.00		\$11,000.00	
Baler	baler machine	1	\$4,500.00		\$4,500.00	
Refrigeration unit	refrigeration cooler	1	\$2,500.00		\$2,500.00	
Total startup cost					\$202,350.00	

Labor			
	Hours per week per acre	Number of weeks	Total Hours
Training	40	1	400
Stringing	12	1	120
Weed control	10	8	800
Spraying	3	15	450
Harvest	10	4	400
Post-harvest processing	4	4	160

Business loan payment (10-acre)	
Loan Amount	\$202,350.00
Interest rate	5%
Life of loan (years)	20
Payments per year	12
Total number of payments	240
Payment per period (month)	-\$ 1,335.42
Sum of payments per year	-\$ 16,025.05
Sum of payments (total cost of loan)	-\$320,500.91
Total interest cost	-\$118,150.91

Sample Budget for 2 Acre Hop Enterprise

Julian Post, UVM Extension

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Income	Unit	Number	Price per	Cost per acre	Total	Yield per acre
Dry pelleted hops	dry lb	2,000	\$15.00		\$30,000.00	1000
Total Income					\$30,000.00	

Expenses	Unit	Number	Price per	Cost per acre	Total	Notes
Coir	bale	2	\$500.00	\$500.00	\$1,000.00	2500 strings per bale
W-clips	acre	4	\$50.00	\$100.00	\$200.00	1000ct box
Fertilizer	ton	1.25	\$621.00	\$388.13	\$776.25	1,250lbs/acre Cheep Cheep (4-3-3) for 200# N/planted acre (50# N/actual acre)
Fungicide OG	20# bag	1	\$160.00	\$80.00	\$160.00	6lbs/acre
Herbicide OG	5 gallon barrel	2	\$260.00	\$260.00	\$520.00	2 applications @ 2.5 gallons/acre
Training - Labor	hours	80	\$15.00	\$600.00	\$1,200.00	40hrs/acre
Stringing - Labor	hours	24	\$15.00	\$180.00	\$360.00	12hrs/acre
Weed control - Labor	hours	160	\$15.00	\$1,200.00	\$2,400.00	hand weeding, trimming, and herbicide
Spraying - Labor	hours	90	\$15.00	\$675.00	\$1,350.00	4hrs/week x 15 weeks
Tractor fuel for field work	acre	2	\$420.00	\$420.00	\$840.00	
Oast Fuel	season	1	\$176.00	\$88.00	\$176.00	
Harvester Fuel	season	1	\$200.00	\$100.00	\$200.00	
Harvest - Labor	hours	80	\$15.00	\$600.00	\$1,200.00	
Post-harvest processing - Labor	hours	32	\$15.00	\$240.00	\$480.00	200 cutting, 200 picking, 100 drying, 60 baling
Pelletizing - contracted	lb	2,000	\$1.50	\$1,500.00	\$3,000.00	
Packaging - contracted	lb	2,000	\$0.65	\$650.00	\$1,300.00	
Total Labor				\$3,495.00	\$6,990.00	
Total Variable (including labor)				\$7,581.13	\$15,162.25	

Fixed	Unit	Number	Price per	Cost per acre	Total	Notes
Rent	acre	2	\$150.00	\$150.00	\$300.00	
Insurance	year	1	\$1,200.00	\$600.00	\$1,200.00	
Taxes	year	1	\$200.00	\$100.00	\$200.00	
Total Fixed				\$850.00	\$1,700.00	
Total Fixed + Variable				\$8,431.13	\$16,862.25	

Loans (annual payment total)	Unit	Number	Price per	Cost per acre	Total	Notes
Start-up, Capital/Equipment (detailed below)				\$2,766.67	\$5,533.33	\$69870 at 5% for 20 years

Net Income	Unit	Number	Price per	Cost per acre	Total	Notes
Net after Capital Expense Yr 1					-\$16,039.58	no crop
Yr 2					\$715.75	half crop
Yrs 3+					\$7,604.42	
5 Yr Average					\$1,497.88	
10 Yr Average					\$4,551.15	

Input costs for conventional growing practices:
Pesticides: \$300/acre
Fertilizer: \$350/acre

2 Acre Detail

Start up					Total	Notes
Capital/Equipment	Unit	Number	Price per			
Plants	plant	2000	\$4.00		\$8,000.00	
Field poles	pole	216	\$20.00		\$4,320.00	
Drainage Stone	ton	3	\$1,000.00		\$3,000.00	
Wire	feet	17000	\$0.15		\$2,550.00	
Hardware	acre	2	\$2,500.00		\$5,000.00	
Irrigation drip system	acre	2	\$1,500.00		\$3,000.00	
Small Tractor	tractor	1	\$10,000.00		\$10,000.00	
Sprayer	sprayer	1	\$3,000.00		\$3,000.00	
Harvester	machine	1	\$25,000.00		\$25,000.00	
Oast	machine	1	\$3,000.00		\$3,000.00	
Baler	machine	1	\$2,000.00		\$2,000.00	
Refrigeration unit	cooler	1	\$1,000.00		\$1,000.00	
Total startup cost					\$69,870.00	

Labor				Total Hours
	Hours per week per acre	Number of weeks		
Training	40	1		80
Stringing	12	1		24
Weed control	10	8		160
Spraying	3	15		90
Harvest	10	4		80
Post-harvest processing	4	4		32

Business loan payment (2-acre)	
Loan Amount	\$ 69,870.00
Interest rate	5%
Life of loan (years)	20
Payments per year	12
Total number of payments	240
Payment per period (month)	-\$ 461.11
Sum of payments per year	-\$ 5,533.33
Sum of payments (total cost of loan)	-\$110,666.66
Total interest cost	-\$ 40,796.66



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