



Peony Cut Flower Production Budget, One High Tunnel, Northern Utah, 2020

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This budget contains costs (preplant and site preparation, establishment and maintenance, harvest and storage) and returns for the production and sale of peony cut flowers that were grown in a high tunnel (14 feet by 42 feet). Peonies are perennial plants that require an establishment period in years 1–3, and a high tunnel in years 4–20 (production years 1–17).

Production methods, yield, costs, and pricing were determined from Utah State University research trials, as well as feedback from Northern Utah producers. The costs and returns represent typical production in Northern Utah, but should be adjusted where necessary for individual situations. Tunnel use, site selection, variety, pest management, and other practices will impact costs and returns to a cut-flower operation.

Farm

This publication assumes the use of one, 14' x 42' high tunnel (Black et al., 2008) that is installed in year 4 with three beds, each 1' x 42' and spaced 5' apart from center to center. All costs represent the production of one cultivar planted in bare soil with drip irrigation within the 588 ft² high tunnel on land currently owned.

Crop Pricing

This budget is for 'Coral Charm', an early-blooming and highly desirable peony variety among florists (i.e. desirable bloom type, color, and size). The cost per plant ranges, with more marketable varieties generally costing more. Therefore, not all plants cost the same amount or are marketed equally; investment in premium varieties affects sales in subsequent years. Stem pricing was calculated based on market testing

conducted with florists across Cache Valley and the Wasatch Front during April – May of 2018 through 2020. Pricing will vary by geographical region. Average prices were used to calculate revenues in Table 1, though stems have a potential to command higher, early-market pricing. High-quality, marketable stems were sold as single stems for at least \$5.00 each, and low-quality, cull stems sold for \$2.00 each. Stems were graded as marketable Grade 1 when buds were one inch or greater in diameter, stems were at least 24 inches long, relatively straight, and damage was minimal (USDA-AMS, 2016). While there was no price difference with Grade 1, marketable Grade 2 stems had 7/8 inch-diameter buds, 20 inch stem lengths, or one of the following flaws: moderate stem curvature, slight damage to buds, or slight damage to leaves. Culls had one or more severe deficiencies: buds less than 7/8 inches in diameter, severe curving of stems, and damage to buds or leaves. Stems were sold through a local cut flower co-op for a fee of 30% of revenue, which is calculated as 100% of marketable stems sold and 70% of cull stems sold. This cost is included in expenses.

Calculated Yield

Yield data of stem quantity and quality from Northern Utah were totaled across one harvest season each year, typically beginning in the last week of April and ending in mid-May. Yield was achieved by removing 50% of buds early in the season to promote larger flowers and other management practices described in Maughan et al. (2018). On average, annual harvests produced 520 marketable stems (360 of Grade 1 and 160 of Grade 2)

and 120 cull stems. Yields can be lower from high tunnel production due to increased heat, humidity, and pest pressure than in the field. Based on market demand in 2020, 100% of marketable stems (i.e. 520 marketable stems) and 70% of cull stems (i.e. 84 cull stems) are assumed to be sold each year, typically through pre-orders.

Establishment Costs

A minimum of three years is required for plants to establish and production occurs in years 4–20. The total establishment cost is \$2,151.71, and includes all materials, time, and labor in years 1–3. The annual cost allocated over a 17-year production period with 5% cost of capital is \$190.88.

Supplies

Production supply costs were based on average prices available in Logan, UT, and online in fall 2020, but may vary across regions and suppliers. Establishment costs include all operating and supply costs for the first 3 years. All production supplies must be purchased in year 4 (year 1 of production), but many last multiple years. Therefore, the cost of each input is annualized across the quantity used per year and the number of years until replacement.

Establishment Costs (Years 1–3)

- Tiller rental. One half-day rental in year 1.
- Compost. A one-time application of 2 yd³ (1-in. depth of low-salt compost across a 588 ft² area).
- Plants. 54 dormant, bareroot plants with 3-5 eyes are planted in fall and have a 20-year lifespan.
- Water usage. 192 gallons per irrigation with 28 total irrigation events per year for 3 years (irrigation frequency dependent on month and environmental conditions) = 16,128 gallons.
- Drip irrigation kit. 250 ft of dripline will be used and replaced each year from a kit with 1000 ft of dripline; a new kit is purchased every four years.
- Weed barrier fabric. 168 ft of one, 250 ft roll will last for 10 years.

Annual Production Costs (Years 4–20)

Maintenance

- Water usage. 288 gallons per irrigation event with 22 total irrigation events per year (irrigation frequency dependent on month and environmental conditions) = 6,336 gallons.
- Fertilizer (15-15-15). 0.6 lbs of a 6 lb bag are needed per year; one 6 lb bag is purchased every 5 years.

- Fungicide. A 32 oz. bottle is used to treat botrytis and powdery mildew; one bottle is purchased each year.
- Ant bait. One package contains 24 bait packets and six packets are used each year. One package is purchased every four years.

Harvest and Storage Costs

- Harvest snips. One pair is replaced after two years of use.
- Buckets. Six, 5-gallon buckets are needed each year and will be replaced after four years.
- Preservative. 5 lb of one, 10 lb package is used each year; one package is replaced after two years.

Hired Labor

Labor was priced at \$13.53 per hour (\$12.00 per hour plus employer-related costs), per feedback from local growers and within the low-end of wages reported by the USDA-ERS (2019). Quantity of hours per activity was averaged across 2018–20, with most labor occurring during February – September each year, and peak labor occurring in spring. Depending on available tools, the region, and experience, labor costs may vary.

Depreciation

Straight line depreciation was calculated for the high tunnel with no salvage value assumed after the years to replacement has been reached (Table 1). Initial costs were divided by the number of years until materials would need to be replaced to determine the annual depreciation cost. Calculations were based on the installation of a low-cost high tunnel (Black et al., 2008) in year 4 (production year 1). Costs will vary depending on materials used and high tunnel design.

Summary of Results

The net income resulting from stems harvested from a 14' x 42' high tunnel and sold at a price of \$5.00 per high-quality stem (100% sold) and \$2.00 per low quality stem (70% sold) is \$997.36 (\$1.70 per sq. ft) across one harvest period that lasts up to three weeks. Peak harvest of early-blooming cultivars in high tunnels occurs in early May, thus can supply early holiday markets, such as Mother's Day and Memorial Day.

References

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Disclaimers

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Table 1. Peony cut flower production budget for one 14'x42' high tunnel.

ESTABLISHMENT EXPENSES (Year 1–3)					
Supplies	Input	Units	Price/Unit	Quantity	Total Expense
Preplant & Site Preparation	Tiller rental	Half day rental	\$ 50.00	1	\$ 50.00
	Compost (1 in.)	yd ³	\$ 50.00	2	\$ 100.00
Establishment & Maintenance	Plants	Root (3-5 eyes)	\$ 23.00	54	\$ 1,242.00
	Drip irrigation kit	Kit	\$ 167.21	1	\$ 167.21
	Water usage	1000 gallons	\$ 1.62	16.13	\$ 26.13
	Weed barrier	Roll (3'x250')	\$ 114.00	1	\$ 114.00
Total Supply Expenses					\$ 1,699.34
Labor	Input	Units	Quantity	Wage	Total Wage
Preplant & Site Preparation	Soil tillage	Hours	4	\$ 13.53	\$ 54.12
	Apply compost	Hours	2	\$ 13.53	\$ 27.06
Establishment & Maintenance	Planting labor	Hours	5	\$ 13.53	\$ 67.65
	Install irrigation	Hours	4	\$ 13.53	\$ 54.12
	Cover with weed barrier fabric	Hours	2	\$ 13.53	\$ 27.06
	Hand weeding	Hours	12	\$ 13.53	\$ 162.36
Total Labor Expenses					\$ 392.37
Overhead					Total Expense
Land*					\$ 60.00
TOTAL ESTABLISHMENT EXPENSES					\$ 2,151.71
Annualized Establishment Costs (for 17-year production period with 5% interest)					\$ 190.88

DEPRECIATION EXPENSES						
High tunnel	Input	Units	Price	Quantity	Years until Replacement	Annual Costs
Annual Depreciation of the high tunnel, beginning in Year 4.	High tunnel	High tunnel (14'x42')	\$ 319.34	1	8	\$ 39.92
	Initial construction labor	Hours	\$ 13.53	20	8	\$ 33.83
	Plastic film	Roll (6 mil 24'x50')	\$ 130.00	1	4	\$ 32.50
TOTAL DEPRECIATION EXPENSES						\$ 106.25

REVENUES (Years 4–20)						
	Input	Units	Total Stems	% Sold	Price/Unit	Total
Peony Cut Flowers	Grade 1	Stems	360	100%	\$ 5.00	\$ 1,800.00
	Grade 2	Stems	160	100%	\$ 5.00	\$ 800.00
	Cull	Stems	120	70%	\$ 2.00	\$ 168.00
TOTAL ANNUAL REVENUES						\$ 2,768.00

OPERATING EXPENSES						
Supplies	Input	Units	Price/Unit	Quantity	Years until Replacement	Annual Expense
Maintenance	Drip irrigation kit	Kit	\$ 167.21	1	3	\$ 55.74
	Water usage	1000 gallons	\$ 1.62	6.336	1	\$10.26
	Fertilizer (15-15-15-3)	6 lb bag	\$ 9.00	0.58	5	\$ 1.04
	Fungicide	32 oz bottle	\$ 16.79	1	1	\$ 16.79
	Ant bait	24 pack	\$ 25.67	1	4	\$ 6.42
Harvest & Storage	Snips	Snip	\$ 6.08	1	4	\$ 1.52
	Buckets	Bucket	\$ 3.48	6	4	\$ 5.22
	Preservative	10 lb bucket	\$ 29.99	1	2	\$ 15.00
Total Supply Expenses						\$ 111.99

Labor	Input	Units	Quantity	Wage	Annual Wage
Maintenance	Plastic installation	Hours	2	\$ 13.53	\$ 27.06
	High tunnel venting	Hours	15	\$ 13.53	\$ 202.95
	Pesticide/fertilizer applications	Hours	7	\$ 13.53	\$ 94.71
	Hand weeding	Hours	4	\$ 13.53	\$ 54.12
Harvest & Storage	Harvest	Hours	8.00	\$ 13.53	\$ 108.24
	Processing	Hours	1.78	\$ 13.53	\$ 24.05
Total Labor Expenses					\$ 511.13

Co-op Fees	Description	Unit	Quantity	Revenue	Fee	Total Cost
	30% delivery charge	Stems	640	\$ 2,840.00	30%	\$ 830.40
TOTAL OPERATING EXPENSES						\$ 1,453.52

Overhead	Total Expense
High Tunnel Depreciation	\$ 106.24
Establishment Costs (allocated)	\$ 190.88
Land*	\$ 20.00
TOTAL OVERHEAD COSTS	\$ 317.12
TOTAL COSTS	\$ 1,770.64
NET PROJECTED RETURNS (14'x42' High Tunnel)	\$ 997.36
NET PROJECTED RETURNS (ft²)	\$ 1.70

*Land. One high tunnel of peonies uses less than 2% of one acre and is assumed to be on land already owned. However, \$20 is used as a proxy (2% @ \$1,000 / acre lease) (Curtis et al., 2015).

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