



Snapdragon 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, and harvest and processing) and returns for the production and sale of snapdragon cut flowers that were grown in a high tunnel (14 feet by 40 feet). 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 40' high tunnel (see Black et al., 2008) with two beds, each 4' x 40' and spaced 6.5' apart from center to center, using a variety of cultivars including, 'Animation', 'Chantilly', 'Legend', 'Madame Butterfly', 'Monaco', 'Potomac', and 'Rocket' planted in field soil with black plastic mulch and drip irrigation. All costs represent the production of multiple cultivars within the 560 ft² high tunnel on land currently owned.

Crop Pricing

Stem pricing was calculated based on market testing conducted with florists across Cache Valley and the Wasatch Front from May through September of 2019 and 2020. Pricing will vary by geographical region. Average prices were used to calculate revenues in Table 1. High-quality, marketable stems were sold in bundles of 5 stems for \$6.00 (\$1.20 per stem) and low-quality,

cull stem bundles sold for \$3.75 (\$0.75 per stem). Stems were graded as marketable when they were at least 18 inches, straight, and undamaged. Cull stems were shorter than 18 inches, deformed, or damaged. 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 40% of culled stems sold. This cost is included in budget expenses.

Calculated Yield

Yield data for stem quantity and quality from Northern Utah were totaled across two harvest periods. The first period represents yields of a typical harvest season from May-July. After yield declined in July, stems were cut back and allowed to regrow for a second harvest period in August-September. On average, harvest during the first period produced 2,231 marketable stems and 821 cull stems. Harvest during the second period produced 1,523 marketable stems and 1,394 cull stems. Based on market demand in 2019, 100% of marketable stems and 40% of cull stems are sold each year.

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. All supplies must be purchased in year 1, 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.

Preplant and Site Preparation

- Tiller rental. One, half-day rental annually.
- Slow release fertilizer (14-14-14). 1.8 lbs of a 5 lb bag are needed annually; a 5 lb bag is purchased every two years.
- Urea fertilizer (46-0-0). 0.9 lbs of a 5 lb bag are needed per year; a 5 lb bag is purchased every five years.
- 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.
- Plastic mulch (1-mil). 80 ft of one, 600 ft roll will be used and replaced each year; a new roll is purchased every seven years.

Establishment and Growth

- Snapdragon plugs. 576 plugs are needed in the 125-cell tray size.
- Stakes. One pack contains 12 stakes and three packs are needed; stakes are replaced every three years.
- Trellis. 76 ft of trellis will be used and replaced each year from a roll of 328 ft; one roll is replaced every four years.
- Frost blanket. 76 ft of frost blanket from a 250 ft roll will be used each year and will last four years before replacement is needed; one roll is replaced every 13 years.
- Water usage. 192 gallons per irrigation with 54 total irrigation events (irrigation frequency dependent on month and environmental conditions) = 10,368 gallons. The price of water per 1,000 gallons varies across Northern Utah, and a median residential rate of \$1.62 per 1000 gallons is used here.
- Rodent bait. One package contains 16, 4-oz packets and four packets are used each year; one package is purchased every four years.
- Insecticide. One, 16 oz bottle is used each year.
- Ant bait. One package contains 24 bait stations and six packets are used each year; one package is purchased every four years.
- Fertilizer (20-20-20). 0.3 lbs of a 4 lb bag are needed per year; one 4 lb bag is replaced every five years.

Harvest and Processing

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

- Rubber bands. Half of one, 1 lb bag is used each year; one package is purchased every 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 non-supervisory wages reported by the USDA-ERS (2019). Quantity of hours per activity was averaged across the 2018-20 field trials. Depending on available tools, region, and experience, labor costs may vary.

Depreciation

Straight line depreciation was calculated for the high tunnel with no salvage value assumed after the year of 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. High tunnel calculations were based on the low-cost high tunnel used at Utah State University (Black et al., 2008). 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 40' high tunnel and sold at a price of \$1.20 per marketable stem (100% sold) and \$0.75 per cull stem (40% sold) is \$534.27 (\$0.95 per sq. ft) for the first harvest period, \$906.58 for the second harvest period (\$1.62 per sq. ft), and \$1,440.85 (\$2.57 per sq. ft) totaled across harvest periods in one year (Table 2).

References

- Black, B., D. Drost, D. Rowley, and R. Heflebower. 2008. [Constructing a low-cost high tunnel](#). Utah State University Extension. HG/HighTunnels/2008-01pr.
- Curtis, K., S. Olsen, T. Knudsen, and K. Wagner. 2015. [Utah Urban Small-Scale Mixed Vegetable Production Costs and Returns - 5 Acres, 2015](#). Utah State University Extension. AG/Applied Economics/2015-03pr.
- USDA – Economic Research Service (USDA – ERS). 2019. [Farm labor](#). Accessed 20 Oct. 2020.

Disclaimers

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Table 1. Snapdragon cut flower production budget based on one 14'x40' high tunnel (March – September)

| REVENUES | | | | | | |
|-----------------------|--------------|--------------|--------------------|---------------|-------------------|--------------------|
| | Input | Units | Total stems | % Sold | Price/Unit | Total |
| 1st Flush | Marketable | Stems | 2231 | 100% | \$ 1.20 | \$ 2,677.20 |
| | Cull | Stems | 821 | 40% | \$ 0.75 | \$ 246.30 |
| 2nd Flush | Marketable | Stems | 1523 | 100% | \$ 1.20 | \$ 1,827.60 |
| | Cull | Stems | 1394 | 40% | \$ 0.75 | \$ 418.20 |
| TOTAL REVENUES | | | | | | \$ 5,169.30 |

| OPERATING EXPENSES | | | | | | |
|------------------------------|------------------------------------|-----------------|-------------------|-----------------|-----------------------------|-----------------------|
| Supplies | Input | Units | Price/unit | Quantity | Years to Replacement | Annual Expense |
| Preplant & Site Preparation | Tiller rental | Half day rental | \$ 50.00 | 1 | 1 | \$ 50.00 |
| | Slow release fertilizer (14-14-14) | 5 lb bag | \$ 19.95 | 1 | 2 | \$ 9.98 |
| | Urea fertilizer (46-0-0) | 5 lb bag | \$ 19.99 | 1 | 5 | \$ 4.00 |
| | Drip irrigation kit | Kit | \$ 167.21 | 1 | 4 | \$ 41.80 |
| | Plastic mulch (1 mil) | Roll | \$ 60.95 | 1 | 7 | \$ 8.71 |
| Establishment & Maintenance | Snapdragon plugs | Plug | \$ 0.22 | 576 | 1 | \$ 126.72 |
| | Stakes | 12 pack | \$ 14.89 | 3 | 3 | \$ 14.89 |
| | Trellis | Roll | \$ 39.99 | 1 | 4 | \$ 10.00 |
| | Frost blanket | Roll | \$ 58.00 | 1 | 13 | \$ 4.46 |
| | Water usage* | 1000 gallons | \$ 1.62 | 10.3 | 1 | \$ 16.73 |
| | Rodent bait | 16 pack | \$ 16.79 | 1 | 4 | \$ 4.20 |
| | Insecticide* | 16 oz bottle | \$ 23.63 | 1 | 1 | \$ 23.63 |
| | Ant bait | 24 pack | \$ 25.67 | 1 | 4 | \$ 6.42 |
| Harvest & Storage | Fertilizer (20-20-20)* | 4 lb bag | \$ 19.99 | 1 | 5 | \$ 4.00 |
| | Harvest snips | Snip | \$ 6.08 | 1 | 2 | \$ 3.04 |
| | Buckets | Bucket | \$ 3.48 | 6 | 4 | \$ 5.22 |
| | Preservative* | 10 lb bucket | \$ 29.99 | 1 | 1 | \$ 29.99 |
| | Rubber bands* | 1 lb bag | \$ 2.86 | 3 | 1 | \$ 8.58 |
| Total Supply Expenses | | | | | | \$ 372.36 |

| Labor | Input | Units | Quantity | Wage | Annual Wage |
|-----------------------------|---------------------------|-------|----------|----------|--------------------|
| Preplant & Site Preparation | Soil tillage | Hours | 4 | \$ 13.53 | \$ 54.12 |
| | Apply preplant fertilizer | Hours | 0.25 | \$ 13.53 | \$ 3.38 |
| | Install irrigation | Hours | 1.5 | \$ 13.53 | \$ 20.30 |
| | Cover with plastic mulch | Hours | 2 | \$ 13.53 | \$ 27.06 |
| Establishment & Maintenance | Planting labor | Hours | 4 | \$ 13.53 | \$ 54.12 |
| | Trellising | Hours | 2 | \$ 13.53 | \$ 27.06 |
| | Pesticide applications* | Hours | 2 | \$ 13.53 | \$ 27.06 |
| | Hand weeding* | Hours | 7 | \$ 13.53 | \$ 94.71 |
| | Install plastic and shade | Hours | 2 | \$ 13.53 | \$ 27.06 |
| | Monitor/ventilate | Hours | 10 | \$ 13.53 | \$ 135.30 |
| Harvest & Storage | Harvest* | Hours | 74.61 | \$ 13.53 | \$ 1,009.51 |
| | Processing* | Hours | 12.89 | \$ 13.53 | \$ 174.39 |
| Total Labor Expenses | | | | | \$ 1,654.06 |

| Co-op Fees | Description | Unit | Quantity | Revenue | Fee | Total Cost |
|--------------------------|----------------------|-------|----------|-------------|-----|--------------------|
| | 30% delivery charge* | Stems | 4640 | \$ 5,169.30 | 30% | \$ 1,550.79 |
| TOTAL OPERATING EXPENSES | | | | | | \$ 3,577.21 |

| FIXED EXPENSES | | | | | | |
|--------------------------|------------------------------|-------------|-----------|----------|-------------------------|------------------|
| | Input | Units | Price | Quantity | Years until replacement | Annual Costs |
| Annual | High tunnel (14'x40') | High tunnel | \$ 319.34 | 1 | 8 | \$ 39.92 |
| Depreciation High Tunnel | Initial construction labor | Hours | \$ 13.53 | 20 | 8 | \$ 33.83 |
| | Plastic film (6 mil 24'x50') | Roll | \$ 130.00 | 1 | 4 | \$ 32.50 |
| | Shade cloth (20'x48') | Roll | \$ 199.99 | 1 | 8 | \$ 25.00 |
| TOTAL FIXED EXPENSES | | | | | | \$ 131.24 |

| OWNERSHIP COSTS | |
|-----------------------|-----------------|
| Land** | \$ 20.00 |
| TOTAL OWNERSHIP COSTS | \$ 20.00 |

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| TOTAL COSTS | \$ 3,728.45 |
| NET PROJECTED RETURNS (14'x40' High Tunnel) | \$ 1,440.85 |
| NET PROJECTED RETURNS (ft²) | \$ 2.57 |

*Costs include first and second flush inputs.

** Land. One snapdragon field 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).

| Table 2. Net income for first flush, second flush, and the total across one growing season (1 st & 2 nd Flush). | | | | |
|---|-------------|-------------|--------------------------|-------------------------------|
| Flush | Revenue | Costs | Net Income (high tunnel) | Net Income (ft ²) |
| First flush | \$ 2,923.50 | \$ 2,389.23 | \$ 534.27 | \$ 0.95 |
| Second flush | \$ 2,245.80 | \$ 1,339.22 | \$ 906.58 | \$ 1.62 |
| 1 st & 2 nd flush | \$ 5,169.30 | \$ 3,728.45 | \$ 1,440.85 | \$ 2.57 |