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A Comparison of Northern Utah High Tunnel Strawberry Production Costs and Returns with Low Tunnels

Tiffany Maughan, Research Associate, Department of Plants, Soils and Climate
Kynda Curtis, Associate Professor and Extension Specialist, Department of Applied Economics
Brent Black, Professor and Extension Specialist, Department of Plants, Soils and Climate
Dan Drost, Professor and Extension Specialist, Department of Plants, Soils and Climate

Introduction

High tunnels have been shown to improve yields and overall profitability when used for strawberry production in Utah. This publication uses partial budgets to compare the costs, returns and resulting changes in net income when low tunnels are added to a high tunnel production system. Data for two different strawberry cultivars, 'Seascape' and 'Chandler,' were collected through a research study conducted at Utah State University across a two year period. Costs and returns for the baseline high tunnel strawberry production system are taken from Rowley et al. (2010). Practices, yields, costs, and pricing are not applicable to all situations as management, cultural practices, markets, and growing conditions vary across the region

Tunnels, Supplies and Labor

The expenses presented in the partial budgets are based on low tunnels in a 14 x 96 foot high tunnel with an annual hill production system. Three low tunnels were used within one high tunnel and supplies were priced based on the 2013 average cost at local suppliers in Logan, Utah. A complete description of low tunnel construction is provided in Maughan et al. (2014). Labor was priced at $10 per hour. Quantity of hours needed per activity was recorded and averaged over the study period, although depending on tools and experience, time needed may vary.

Crop Pricing

Early strawberries typically command price premiums over in-season production. Based on interviews with strawberry growers in Utah, the pricing used is $4.50 per pound for in season and $6.00 per pound for early season strawberries sold through direct markets. Price per pound will vary by market and geographical area.

Calculated Yield

Yield data (quantity of one pound clamshells) were collected in North Logan, Utah. A comparison of yields for both Seascape and Chandler are shown in Figure 1. The early yields used for comparison purposes in Tables 1 and 2 were 373 and 225 one pound units per high tunnel for 'Chandler' and

'Seascape' respectively. In-season yields were 472 and 379 one pound units per high tunnel for 'Chandler' and 'Seascape' respectively. Early yield was calculated as the amount of strawberries produced before non-protected field production begins. For the high tunnel only system, the yield amount was averaged over the study period. High tunnel plus low tunnel system yield was based on 2012 production data.

Depreciation

Asset depreciation for the low tunnels was calculated using straight line depreciation and assumed no salvage value at the end of the useful life (Table 3). Total cost of investment was divided by number of years the asset is assumed to be useful, resulting in the annual depreciation cost.

Plastic useful life is 2 years and the support structures 6 years. Low tunnel cost will vary depending on design and materials used.

Straight Line Depreciation Computation

$$\left(\frac{\text{Purchase Price - Salvage Value}}{\text{Useful Life}}\right)$$

Summary of Results

For 'Seascape' plug plantings, the high tunnel plus low tunnel system had a $1,098.94 per 96' high tunnel higher net income than the high tunnel only system (Table 1). However, 'Chandler' did not have a higher yield than the high tunnel only system and actually had $580.01 less return (Table 2).

References

Maughan, T., D. Drost, B. Black. 2014. Low Tunnels: A Low-cost Protected Cultivation Option. Utah State University Fact Sheet, Horticulture/HighTunnels/2014-03pr

Rowley, D., B. Black and D. Feuz. 2010. High Tunnel June-bearing Strawberry Budget 2010, Based on a 14' x 96' High Tunnel. 2010 Utah Agriculture Statistics and Utah Department of Agriculture and Food Annual Report. p. 94.

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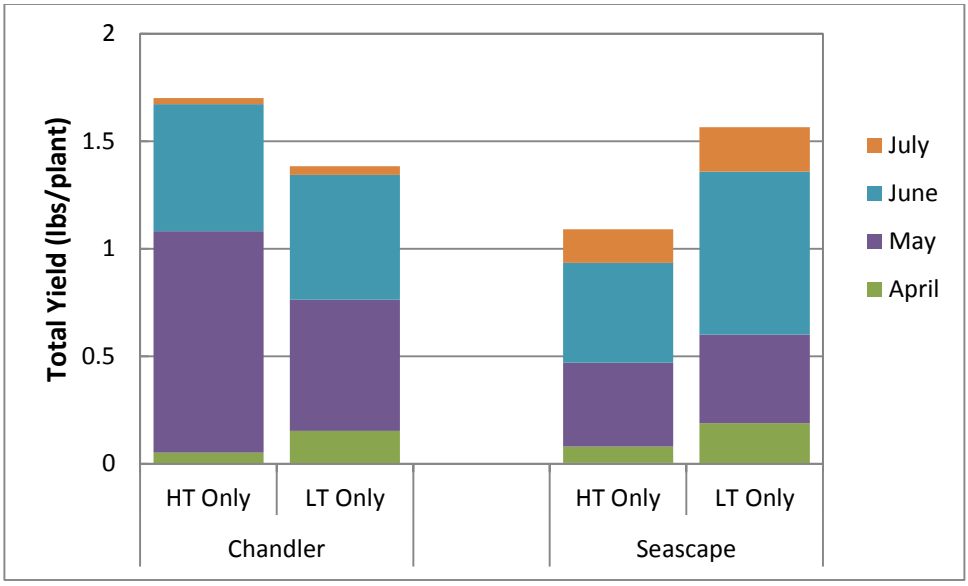

Figure 1. Yield Comparison, High Tunnel and High Tunnel plus Low Tunnel, 2012.

Table 1. Comparison of High Tunnel and High Tunnel + Low Tunnel for 'Seascape'

Revenues		
	High Tunnel Only	
	Early Out-of Season Strawberries	$ 1,336.21
	In-Season Strawberries	$ 1,705.86
	High Tunnel Only Total	$ 3,042.07
	High Tunnel + Low Tunnel	
	Early Out-of Season Strawberries	$ 1,799.87
	In-Season Strawberries	$ 2,536.61
	High Tunnel + Low Tunnel Total	$ 4,336.49
Costs		
	Added Costs of Low Tunnel	
	Annual Supplies	
	2 mil Plastic (10 x 300')	$ 81.00
	Bailing Twine	$ 8.55
	Labor	
	Installation and Removal (7.75 hrs)	$ 77.50
	Annual Depreciation of Low Tunnel	$ 23.75
	Total	$ 192.47
Resulting Change in Net Income		
	Difference in Revenue	$ 1,294.41
	Difference in Costs	$ (192.47)
Total Change		**$ 1,098.94**

Table 2. Comparison of High Tunnel and High Tunnel Plus Low Tunnel for 'Chandler'

Revenues	
High Tunnel Only	
Early Out-of Season Strawberries	$2,238.70
In-Season Strawberries	$2,122.61
High Tunnel Only Total	$4,361.31
High Tunnel + Low Tunnel	
Early Out-of Season Strawberries	$ 2,151.81
In-Season Strawberries	$ 1,821.96
High Tunnel + Low Tunnel Total	$ 3,973.77
Costs	
Added Costs of Low Tunnel	
Annual Supplies	
2 mil Plastic (10 x 300')	$ 81.00
Bailing Twine	$ 8.55
Labor	
Installation and Removal (7.75 hrs)	$ 77.50
Annual Depreciation of Low Tunnel	$ 25.42
Total	$ 192.47
Resulting Change in Net Income	
Difference in Revenue	$ (387.54)
Difference in Costs	$ (192.47)
Total Change	**$ (580.01)**

Table 3. Annual Depreciation for Low Tunnel Materials

	Units	Useful Life (yrs)	Quantity	Unit Cost	Total
Low Tunnel					
10' Low Tunnel Supports (1/2" conduit)	Each	6	30	$1.65	$49.50
2'' Binder clips	Box of 60	6	1	$10.00	$10.00
1/2"X24" rebar	Each	6	60	$1.55	$93.00
Depreciation Total					$152.50
Total Annual Depreciation Cost					**$25.42**