

Cost of Producing, Harvesting and Marketing Strawberries in North Carolina
 Estimated Costs for a Five Acre Direct Market Strawberry Operation
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Month	Type of Operation		Equipment Costs	Material Costs	Labor Costs	Total Costs	Your Value
LAND PREPARATION STAGE							
June							
week 1-4	Internet service	Total Monthly Rate	0.00	3.00	0.00	3.00	
week 1	Treat old crop w/Gramoxone (2x)	Sprayer+Tractor 55hp	65.85	23.00	28.48	117.34	
week 1	Remove plastic from previous crop	Hand	0.00	0.00	142.41	142.41	
		Lifter+Tractor 80hp	82.20	0.00	0.00	82.20	
week 2	Disposal of plastic and tape	Pickup	20.01	0.00	9.49	29.50	
week 2	Disking	Tandem 8'+Tractor 80hp	29.97	0.00	9.49	39.47	
week 2	Liming	Custom	0.00	45.00	0.00	45.00	
week 2	Planting for cover crop soybeans	Grain drill 10'+Tractor 55hp	141.18	0.00	23.74	164.92	
	Soybeans seeds		0.00	32.00	0.00	32.00	
	Millet		0.00	7.33	0.00	7.33	
TOTAL JUNE			\$339.22	\$110.33	\$213.62	\$663.17	
PRE-PLANT STAGE							
July							
week 1-4	Internet service	Monthly fee	0.00	3.00	0.00	3.00	
week 1	Ordering plant materials		0.00	325.50	4.21	329.71	
week 1	Ordering fumigant		0.00	79.20	0.84	80.04	
week 1	Ordering plastic mulch		0.00	64.80	0.84	65.64	
TOTAL JULY			\$0.00	\$472.50	\$5.89	\$478.39	
August							
week 1-4	Internet service	Monthly fee	0.00	3.00	0.00	3.00	
week 1	Rotovating cover crop	Rototiller 2x+Trac 80hp	174.11	0.00	53.74	227.86	
week 2	Subsoiling	Subsoiler+Tractor 55 hp	37.18	0.00	14.24	51.42	
week 2	Disking (break up soil clods)	Tandem 8'+Tractor 80hp	8.33	0.00	2.42	10.75	
TOTAL AUGUST			\$219.62	\$3.00	\$70.41	\$293.03	
September							
week 1-4	Internet service	Monthly fee	0.00	3.00	0.00	3.00	
week 1	Assembling irrigation system	Wagon+Tractor 45hp.	2.04	0.00	94.94	96.98	
week 1	Irrigating for fumigation (0.5")	Irrigation system	7.18	0.00	0.79	7.97	
week 1	Rotovating for fumigation	Rototiller 1x+Tractor 80hp	87.06	0.00	26.88	113.93	
week 1	Preplant fertilizing	Rot.spreader+Tractor 40hp	12.70	0.00	7.12	19.82	
	Ammonium sulfate (60 lb N/acre)		0.00	65.63	0.00	65.63	
	Pot sulfate (60 lb K2O, 22 lb S/A)		0.00	70.44	0.00	70.44	
	Triple superphosphate (50 lbs P2O)		0.00	47.50	0.00	47.50	
week 2	Preplant fumigation	Fumigation rig	257.30	0.00	40.41	297.71	
	MIDAS 50:50	Tractor 80 hp	74.27	712.80	0.00	787.07	
	Plastic film		0.00	583.20	0.00	583.20	
	Drip tape		0.00	307.20	0.00	307.20	
week 2	Seed Ann. Ryegrass aisles	Rotary spreader	1.90	13.80	0.81	16.51	

Month	Type of operation		Equipment Costs	Material Costs	Labor Costs	Total Costs	Your Value
TRANS-PLANT STAGE							
Sept., cont.							
week3	Pay Balance due for Transplants	Total Cost - 10% Deposit	0.00	2,929.50	0.00	2,929.50	_____
week 4	Transplant plugs	Water wheel	39.18	0.00	237.35	276.53	_____
week 4	Irrigating 3x- plug establishment	Irrigation system	71.80	0.00	2.37	74.17	_____
		Tractor 45 hp	148.91	0.00	94.94	243.85	_____
TOTAL SEPTEMBER			\$702.33	\$4,733.07	\$505.61	\$5,941.01	
October							
week 1-4	Internet service	Monthly fee	0.00	3.00	0.00	3.00	_____
week 1	Replant (2%)	Hand	0.00	0.00	7.91	7.91	_____
week 1	Drip irrigation - 2 hrs	Drip system	9.74	0.00	1.58	11.32	_____
week 2	Drip irrigation - 2 hrs	Drip system	9.74	0.00	1.58	11.32	_____
week 2	Inject Ridomil Gold EC	Drip system	9.74	62.50	16.84	89.07	_____
		Injector	3.17	0.00	0.00	3.17	_____
week 3	Spray mites (Acramite)	Field sprayer+Tractor 55hp	14.27	85.00	6.17	105.44	_____
week 3	Drip irrigation - 2 hrs	Drip system	9.74	0.00	1.58	11.32	_____
week 3	Tissue sample	Hand	0.00	7.00	1.98	8.98	_____
week 4	Winterize drip system	Hand	0.00	0.00	15.82	15.82	_____
TOTAL OCTOBER			\$56.38	\$157.50	\$53.47	\$267.34	
November							
week 1-4	Internet service	Monthly fee	0.00	3.00	0.00	3.00	_____
week 1	Anthracnose Spray (Pristine W6)	Field sprayer+Tractor 55hp	14.27	66.93	6.17	87.37	_____
	Deer control	Field sprayer+Tractor 55hp	14.27	0.00	6.17	20.44	_____
	Spotrete		0.00	100.00	0.00	100.00	_____
	Nu Film		0.00	4.37	0.00	4.37	_____
TOTAL NOVEMBER			\$28.54	\$174.30	\$12.34	\$215.18	
DORMANT STAGE							
December							
week 1-4	Internet service	Monthly fee	0.00	3.00	0.00	3.00	_____
week 1	Clean and weed beds	Hand	0.00	0.00	189.88	189.88	_____
week 1	Remove Runners	Hand	0.00	0.00	158.23	158.23	_____
week 1	Dormant spray - Captan	Field sprayer+Tractor 55hp	14.27	33.00	6.17	53.44	_____
week 2	Apply floating row covers	Hand	0.00	1,185.03	31.65	1,216.68	_____
	Apply row cover hold downs	Wagon+Tractor 45hp.	2.04	50.00	16.76	68.80	_____
TOTAL DECEMBER			\$16.31	\$1,271.03	\$402.70	\$1,690.03	
January							
week 1-4	Internet service	Monthly fee	0.00	3.00	0.00	3.00	_____
week 2	Ordering containers (4 qt basket)		0.00	0.00	4.21	4.21	_____
week 2	Ordering fertilizers and sprays		0.00	0.00	8.42	8.42	_____
week 3	Remove row cover	Hand	0.00	0.00	47.47	47.47	_____
week 4	Remove dead foliage & weed beds	Hand	0.00	0.00	316.47	316.47	_____
TOTAL JANUARY			\$0.00	\$3.00	\$376.57	\$379.57	
February							
week 1-4	Internet service	Monthly fee	0.00	3.00	0.00	3.00	_____
week 1-4	Weather advisory service	Monthly fee	0.00	9.00	0.00	9.00	_____
week 2	Scout for insects, mites		0.00	0.00	16.84	16.84	_____
week 2	Re-apply row cover	Hand	0.00	0.00	47.47	47.47	_____
PRE-HARVEST STAGE							
week 3	Pull plants through plastic		0.00	0.00	118.68	118.68	_____
week 3	Herbicide aisles (Ann. Ryegrass)	Weed sprayer+Tractor 55hp	14.27	0.00	6.17	20.44	_____
	Poast		0.00	15.75	0.00	15.75	_____
	Crop oil concentrate		0.00	3.25	0.00	3.25	_____
week 3	Scout for insects, mites		0.00	0.00	16.84	16.84	_____

Month	Type of operation		Equipment Costs	Material Costs	Labor Costs	Total Costs	Your Value
Feb. cont.							
week 3	Spray mites (Savey)	Field sprayer+Tractor 55hp	14.27	12.48	6.17	32.92	
	Remove row cover	Hand	0.00	0.00	47.47	47.47	
week 3	Deer control	Field sprayer+Tractor 55hp	14.27	0.00	6.17	20.44	
	Spotrete		0.00	100.00	0.00	100.00	
	Nu Film		0.00	4.37	0.00	4.37	
week 4	Connect drip system	Hand	0.00	0.00	47.47	47.47	
week 4	Inject Ridomil Gold EC	Drip system	9.74	62.50	16.84	89.07	
		Injector	3.17	0.00	0.00	3.17	
week 4	Check irrigation system	Hand	0.00	0.00	8.42	8.42	
week 4	Scout for strawberry weevil		0.00	0.00	16.84	16.84	
week 4	Spray weevil (Lorsban 4EC)	Field sprayer+Tract 55hp	14.27	8.50	6.17	28.94	
TOTAL FEBRUARY			\$69.97	\$218.85	\$361.54	\$650.36	
March							
week 1-4	Internet service	Monthly fee	0.00	3.00	0.00	3.00	
week 1-4	Weather advisory service	Monthly fee	0.00	9.00	0.00	9.00	
week 1	Tissue sample	Hand	0.00	7.00	1.98	8.98	
week 1	Pull plants and weed	Hand	0.00	0.00	79.12	79.12	
week 1	Inject fertilizer	Drip system	9.74	0.00	16.84	26.57	
		Injector	3.17	0.00	0.00	3.17	
	Calcium nitrate (0.75 lb N/day)		0.00	2.19	0.00	2.19	
	Sul-Po-Mg		0.00	5.60	0.00	5.60	
	Boron (20% Solubor - 1/8 lb/A)		0.00	0.76	0.00	0.76	
week 1	Re-apply row covers	Hand	0.00	0.00	47.47	47.47	
week 2	Remove row cover	Hand	0.00	0.00	47.47	47.47	
week 2	Scout for insects, mites	Hand	0.00	0.00	16.84	16.84	
week 2	Spray mites (Acramite)	Field sprayer+Tractor 55hp	14.27	85.00	6.17	105.44	
week 2	Freeze protection (OH Irrig)	Irrigation system	135.38	0.00	16.84	152.21	
week 2	Botrytis control - Captan	PTO blast sprayer+Trac55hp	14.98	33.00	6.17	54.15	
week 3	Freeze protection (OH Irrig)	Irrigation system	135.38	0.00	16.84	152.21	
week 3	Re-apply row covers	Hand	0.00	0.00	47.47	47.47	
week 3	Remove row cover	Hand	0.00	0.00	47.47	47.47	
week 3	Pollination with bees	Rental	0.00	144.00	0.00	144.00	
week 3	Tissue sample	Hand	0.00	7.00	1.98	8.98	
week 3	Inject fertilizer	Drip system	9.74	0.00	16.84	26.57	
		Injector	3.17	0.00	0.00	3.17	
	Calcium nitrate (0.75 lb N/day)		0.00	2.19	0.00	2.19	
	Sul-Po-Mg		0.00	5.60	0.00	5.60	
week 4	Scout for fire ants, clipper, mites		0.00	0.00	16.84	16.84	
week 4	Fire ant Control - Esteem	PTO blast sprayer+Trac55hp	14.98	18.40	6.17	39.55	
week 4	Botrytis control - Elevate	PTO blast sprayer+Trac55hp	14.98	135.00	6.17	156.15	
TOTAL MARCH			\$355.75	\$457.74	\$398.66	\$1,212.15	
April							
week 1-4	Internet service	Monthly fee	0.00	3.00	0.00	3.00	
week 1-4	Weather advisory service	Monthly fee	0.00	9.00	0.00	9.00	
week 1	Frost/freeze protection	Irrigation system	56.11	0.00	10.10	66.22	
week 1	Inject fertilizer and drip	Drip system	9.74	0.00	16.84	26.57	
		Injector	3.17	0.00	0.00	3.17	
	Cal. Nitrate - 2 wks (0.75 lb/day)		0.00	27.10	0.00	27.10	
	Sul-Po-Mg		0.00	5.60	0.00	5.60	
week 2	Tissue sample	Hand	0.00	7.00	1.98	8.98	
week 2	Frost/freeze protection	Irrigation system	42.09	0.00	10.10	52.19	
week 2	Spray mites - Kanemite	Field sprayer+Tractor 55hp	14.27	62.00	6.17	82.44	

Month	Type of operation		Equipment Costs	Material Costs	Labor Costs	Total Costs	Your Value
Apr. cont.							
week 2	Botrytis control - Elevate	PTO blast sprayer+Trac55hp	14.98	135.00	6.17	156.15	
	Powdery mildew - Nova		0.00	25.00	0.00	25.00	
week 3	Inject fertilizer and drip	Drip system	9.74	0.00	16.84	26.57	
		Fertilizer Injector	3.17	0.00	0.00	3.17	
	Potassium nitrate - (0.50 N/day)		0.00	48.47	0.00	48.47	
HARVEST STAGE							
week 3	U-pick supervision (30 hrs/wk)		0.00	0.00	47.47	47.47	
week 3	Check-out area (30 hrs/wk)		0.00	85.00	47.47	132.47	
week 3	Pre-pick harvest labor		0.00	0.00	143.75	143.75	
week 4	Drip irrigation	Drip system	9.74	0.00	3.37	13.10	
week 4	Spray mites - Kanemite	Field sprayer+Tractor 55hp	14.27	62.00	6.17	82.44	
week 4	Botrytis control - Captan	PTO blast sprayer+Trac55hp	14.98	33.00	6.17	54.15	
week 4	U-pick supervision (40 hrs/wk)		0.00	0.00	63.29	63.29	
week 4	Check-out area (40 hrs/wk)		0.00	113.56	47.47	161.03	
	Pre-pick harvest labor		0.00	0.00	192.05	192.05	
TOTAL APRIL			\$192.23	\$615.72	\$625.41	\$1,433.36	
May							
week 1-4	Internet service	Monthly fee	0.00	3.00	0.00	3.00	
week 1-4	Weather advisory service	Monthly fee	0.00	9.00	0.00	9.00	
week 1	Tissue sample	Hand	0.00	7.00	1.98	8.98	
week 1	Inject fertilizer and drip	Drip system	9.74	0.00	16.84	26.57	
		Injector	3.17	0.00	0.00	3.17	
	Potassium nitrate - (0.50 N/day)		0.00	48.47	0.00	48.47	
	Drip irrigation	Drip system	9.74	0.00	3.37	13.10	
week 1	Evaporative cooling	Irrigation system	7.01	0.00	8.42	15.43	
week 1	Botrytis control - Elevate	PTO blast sprayer+Trac55hp	14.98	135.00	6.17	156.15	
	Powdery mildew - Nova		0.00	25.00	0.00	25.00	
week 1	U-pick supervision (50 hrs/wk)		0.00	0.00	79.12	79.12	
	Check-out area (50 hrs/wk)		0.00	170.00	47.47	217.47	
	Pre-pick harvest labor		0.00	0.00	287.50	287.50	
week 2	Inject fertilizer and drip	Drip system	9.74	0.00	16.84	26.57	
		Fertilizer Injector	14.03	0.00	0.00	14.03	
	Cal. Nitrate - 2 wks (0.5 lb/day)		0.00	18.06	0.00	18.06	
week 2	Drip irrigation	Drip system	9.74	0.00	3.37	13.10	
week 2	Evaporative cooling	Irrigation system	7.01	0.00	8.42	15.43	
week 2	U-pick supervision (60 hrs/wk)		0.00	0.00	63.29	63.29	
week 2	Check-out area (60 hrs/wk)		0.00	245.48	47.47	292.95	
week 2	Pre-pick harvest labor		0.00	0.00	415.15	415.15	
week 3	Drip irrigation	Drip system	19.47	0.00	3.37	22.84	
week 3	U-pick supervision (50 hrs/wk)		0.00	0.00	63.29	63.29	
week 3	Check-out area (50 hrs/wk)		0.00	170.00	47.47	217.47	
week 3	Pre-pick harvest labor		0.00	0.00	287.50	287.50	
week 3	Botrytis control - Elevate	PTO blast sprayer+Trac55hp	14.98	135.00	6.17	156.15	
week 3	Powdery mildew - Nova		0.00	25.00	0.00	25.00	
week 3	Drip irrigation	Drip system	19.47	0.00	3.37	22.84	
week 4	U-pick supervision (30 hrs/wk)		0.00	0.00	63.29	63.29	
week 4	Check-out area (30 hrs/wk)		0.00	85.00	47.47	132.47	
week 4	Pre-pick harvest labor		0.00	0.00	143.75	143.75	
week 4	Evaporative cooling	Irrigation system	7.01	0.00	8.42	15.43	
week 4	Drip irrigation	Drip system	19.47	0.00	3.37	22.84	
week 4	Disassemble irrigation system	Wagon	2.04	0.00	47.47	49.51	
TOTAL MAY			\$167.58	\$1,076.01	\$1,730.33	\$2,973.92	

Costs and Returns of Producing, Harvesting and Marketing Strawberries in North Carolina

Key Assumptions for Estimating Production and Harvesting Costs

Fuel Prices:

Regular Gas	\$3.50	per gallon
Diesel Fuel	\$4.00	per gallon

Fumigation and Plastic Mulch Bed Costs¹:

Midas 50:50 (88 lb in the bed)	\$9.00	per lb
VIF Plastic Film (1.25 ml, 4 rolls)	\$162.00	per roll (2400')
Drip tape (1.6 rolls)	\$192.00	per roll

¹ The budget builds in a 10% higher use rate per acre for fumigant, plastic film and drip tape than generally recommended. This takes into account the field experiences of commercial applicators in NC who use about 10% more fumigant, plastic film and drip tape per acre when laying plastic.

For example, the budget shows a usage rate of 88 lb/A in-the-bed for Midas 50:50, to reflect the fact that about 10% more product is used than the recommended rate of 80 lb/A (160 lb/A broadcast).

Row cover:

1 ounce per sq yd (Gro-Guard)	\$0.245	per sq yd
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Labor Costs:

Employee:

Base Wage Rate	\$7.00	per hour
Employer Costs ²	\$7.91	per hour

Owner/Supervisor

Base Wage Rate	\$15.00	per hour
Employer Costs ²	\$16.84	per hour

² Employer costs includes estimated SSN, Unemployment Insurance and Workman's Compensation Insurance

Total Investment Costs for the Irrigation Systems:

Drip Irrigation System	\$6,031	for a five acre system
Frost Protection	\$14,712	for a five acre system

Strawberry Plants:

Number of Plants Planted	15,000	per acre
Cost per Plant	\$0.22	each
Total Costs of Plants	\$3,255	per acre

Four Quart Baskets	\$0.68	each
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Estimated Cash Flow for a Five Acre Direct Market Strawberry Operation

(Dollars per Acre)

Cash Flow Summary		
Month	Monthly Total	Cumulative Total
June	\$663	\$663
July	\$478	\$1,142
August	\$293	\$1,435
September	\$5,941	\$7,376
October	\$267	\$7,643
November	\$215	\$7,858
December	\$1,690	\$9,548
January	\$380	\$9,928
February	\$650	\$10,578
March	\$1,212	\$11,790
April	\$1,433	\$13,224
May	\$2,974	\$16,198

Estimated Returns per Acre for a Five Acre Direct Market Strawberry Operation

Key Assumptions for Estimating Strawberry Returns

Marketable Yield (lbs)	18,000
Percent Sold PYO	40.0%
Percent Sold Pre-Pick	60.0%
PYO Price	\$1.00
Pre-Pick Price	\$1.50

Estimated Net Revenues per Acre for Varying Prices and Marketable Yields

Price per Pound		Marketable Yield per Acre (Pounds)				
PYO Berries	Pre-Pick Berries	14,580	16,200	18,000	19,800	21,780
(Dollars per Pound)		Estimated Net Revenues (Dollars per Acre)				
\$0.72	\$1.08	(\$2,503)	(\$982)	\$709	\$2,400	\$4,259
\$0.85	\$1.28	(\$87)	\$1,703	\$3,692	\$5,681	\$7,869
\$1.00	\$1.50	\$2,756	\$4,862	\$7,202	\$9,542	\$12,116
\$1.15	\$1.73	\$5,600	\$8,021	\$10,712	\$13,403	\$16,364
\$1.32	\$1.98	\$8,869	\$11,654	\$14,749	\$17,844	\$21,248

Breakeven Analysis for A Five Acre Direct Market Strawberry Operation in North Carolina

Estimated Marketable Yield per Acre that must be Sold to Breakeven for Varying Direct Market Prices

PYO Prices	Pre-Pick Prices	Marketable Yield per Acre
(Dollars per Pound)		(Pounds)
\$0.72	\$1.08	17,245
\$0.85	\$1.28	14,658
\$1.00	\$1.50	12,460
\$1.15	\$1.73	10,834
\$1.32	\$1.98	9,421

Breakeven Prices for PYO Strawberries for Varying Pre-Pick Berry Prices

Marketable Yield	Varying Pre-Pick Price	Estimated PYO Price
18000	\$1.08	\$0.62
18000	\$1.28	\$0.34
18000	\$1.50	\$0.00
18000	\$1.73	\$0.00
18000	\$1.98	\$0.00

Breakeven Prices for Pre-Pick Strawberries for Varying PYO Berry Prices

Marketable Yield	Varying PYO Price	Estimated Pre-Pick Price
18000	\$0.72	\$1.02
18000	\$0.85	\$0.93
18000	\$1.00	\$0.83
18000	\$1.15	\$0.73
18000	\$1.32	\$0.62

Estimated Number of Customers, or Customer Visits, Needed to Sell the Breakeven Yields for the Assumed Volume of Strawberries Purchased by each Customer

Estimated Average Volume of Strawberries Purchased by:

PYO Customers	10	pounds per visit
Pre-Pick Customers	6	pounds per visit

Marketable Breakeven Yield per Acre (Pounds)	Estimated Sales Volume		Estimated Number of Customers Needed	
	PYO Volume (Pounds)	Pre-Pick Volume (Pounds)	PYO Customers (Number)	Pre-Pick Customers (Number)
17,245	6,898	10,347	690	1,725
14,658	5,863	8,795	586	1,466
12,460	4,984	7,476	498	1,246
10,834	4,334	6,501	433	1,083
9,421	3,769	5,653	377	942

