

Break-Even Analysis - GroTower Nursery

This B-E analysis is for the growing of leafy greens and herbs in a GroTower nursery. This nursery is a contract nursery where customers local and international book spaces for production. Harvesting and packaging take place in the field where harvesters harvest 200 leaves per GroTower and they make bundles with 20 leaves tied together with an elastic band where the leaves are placed into a plastic bag filled with water so that the stem of the leaves remains hydrated in these packages with the plastic bag being closed around the stems of the leaves and trapping the water inside the bag. These packages are placed into crates standing upright so that the water does not leak. Each harvester should harvest at least 43 GroTowers per day of harvesting, totalling 430 bundles of spinach per harvester. Harvesters come into harvest daily Monday to Saturday. Harvesters arrive before sunrise and should be finished before 3pm. Specifically allocated planters will work from 8 am until 4 pm planting seeds into seedling trays.

This nursery will grow GroTowers per week on a non-stop rotational basis, this will take 4 weeks to reach full production from seedling. The crops that will be grown are low feeders and fast growers(30 days).These crops include all the leafy greens and vegetables. The numbers calculated in this model focus on Spinach.

-Spinach(Each GroTower produces 10 bundles where 5 leaves are produced weekly per hole/plant, with 20 leaves per bundle, 200 leaves produced per GroTower weekly)

Natural environmental changes affect the production of spinach and shade netting will be used to protect the crops during their growing cycle.



Pump	R 1 990
Power used per hour	1,00
Cost per kwh	R 3,85
Hours running per day(20 minutes with a 12000L/hour flow rate upto 4m)	0,33
Power cost weekly	R 9
80mm LDPE Class 3(3 Bar pressure) Pipe 100m	R 4 324
Pipe cost per 1,5m	R 64,86
Growing Medium	R 160
Seedlings	R 34
Fertiliser cost per kg	R 20
Fertiliser in kg	0,2
Fertiliser cost	R 160
5000L Gravity Tank	R 6 102
Solar Borehole Pump(200L/hour 95m Head)	R 16 100
Price for drip line(12 month replacement) per meter	R 2
Mainline water pipe 40mm length in (m)	100
Cost of 40mm pipe per 100m roll Class 3(	R 1 125
Cost of labour per day	R 200
Labour for Building trellis per 100m(4 labourers)	R 800
Galvanised Wire 50kg X 4mm X 500m	R 1 795
Number of lines	4
Wire for trellis and irrigation	R 7 180
Corner Post 1,8m	R 103
Stay 1,8m	R 44
Posts and Stays per 100m	2
Cost of Posts and Stays per 100m	R 294
Dropper Steel 1,8m	R 28
Dropper per 100m	19
Cost of Droppers per 100m trellis	R 532
Installation cost per GroTower with Irrigation for commercial use	R 826
Digging trench for water collection	R 200
Greenhouse plastic for trench 7,5m x 10m converted to 0,5m x 10m	15
Greenhouse plastic for trench 7,5m x 10m converted to 0,5m x 10m	R 1 995
Trench liner Cost per 100m	R 1 330
Cost for trellis system	R 52 150
Irrigation	R 1 000
Net Pots	R 100
Shade net 20% 3m x 50m	R 1 595
Area per roll	150
Shade Net per sqm	R 11
Cost of shade net	R 6 433
Gum Poles 3m	50
Gum poles cost 3m	R 93
Cost of Gum Poles	R 4 611
Tension line Hypotenuse (m)	2,83
Number of hypotenuse	66
Total Length of Hypotenuse summed together	187
X axis poles	30
X axis length	5
Total X axis length	150
Y axis poles	3
Y axis length	100
Total Y axis length	300
Tension line(bracing) total length	637
Cost of bracing	
Tyres	66
Cost per tyre	R 100
Cost of Tyres	R 6 600
Cement	33,00
Cost of cement per 20kg bag	R 43
Cost of Cement	R 1 425
Cost of Steel anchor into concrete tyre and rubble 0,1m steel dropper	R 1,56
Cost of anchors	R 103
Tension line per square meter	1,16
Area Required (sqm)	550
Number of Labourers required for one harvest day/week	17
Number of Labourers required for a 6 day harvest weekly	2
Number of GroTowers harvested by each harvester daily	41,6666666666667
Harvest and packing time per GroTower (min)	12,96
Labour cost per week	R 1 617
GroSpace Property Value	R 2 300 000
Monthly Rent to Buy	R 23 000
Weekly Rent to Buy	R 5 312
Fixed Costs	R 7 250
Number of GroTowers	500
Cost per GroTower	R 500
Installation cost per GroTower with Irrigation for commercial use	R 500
Variable Cost per Unit	
Holes per GroTower	40
Total holes in Nursery	20 000
Income per hole	R 2,50
Income per GroTower weekly	R 100
Weekly Income	R 50 000
Unit Increments	1
BREAK-EVEN POINT	0

UNITS SOLD	WEEK	SALES	TOTAL COSTS	PROFIT/LOSS	ROI	CHANCE OF SUCCESS FACTOR	ROI/DAY	ROI/MONTH	ROI/YEAR
	0	R 0	R 358 069	-R 358 068,79	-100,00%		7,00	4,33	52,00
5 000	1	R 50 000	R 7 250	-R 315 318,68	-4349,29%	94,00%	-28618,32%	-17702,48%	-212593,26%
10 000	2	R 100 000	R 14 500	-R 229 818,46	-1584,98%	94,00%	-212,84%	-6451,18%	-77473,77%
15 000	3	R 150 000	R 21 750	-R 101 568,13	-466,99%	94,00%	-62,71%	-1900,73%	-22826,32%
20 000	4	R 200 000	R 29 000	R 69 432,31	239,43%	94,00%	32,15%	974,51%	11703,11%
25 000	5	R 250 000	R 36 249	R 213 750,55	589,67%	94,00%	79,18%	2400,06%	28822,86%
30 000	6	R 300 000	R 43 499	R 256 500,66	589,67%	94,00%	79,18%	2400,06%	28822,86%
35 000	7	R 350 000	R 50 749	R 299 250,77	589,67%	94,00%	79,18%	2400,06%	28822,86%
40 000	8	R 400 000	R 57 999	R 342 000,88	589,67%	94,00%	79,18%	2400,06%	28822,86%
45 000	9	R 450 000	R 65 249	R 384 750,99	589,67%	94,00%	79,18%	2400,06%	28822,86%
50 000	10	R 500 000	R 72 499	R 427 501,10	589,67%	94,00%	79,18%	2400,06%	28822,86%
55 000	11	R 550 000	R 79 749	R 470 251,21	589,67%	94,00%	79,18%	2400,06%	28822,86%
60 000	12	R 600 000	R 86 999	R 513 001,32	589,67%	94,00%	79,18%	2400,06%	28822,86%
65 000	13	R 650 000	R 94 249	R 555 751,43	589,67%	94,00%	79,18%	2400,06%	28822,86%
70 000	14	R 700 000	R 101 498	R 598 501,54	589,67%	94,00%	79,18%	2400,06%	28822,86%
75 000	15	R 750 000	R 108 748	R 641 251,65	589,67%	94,00%	79,18%	2400,06%	28822,86%
80 000	16	R 800 000	R 115 998	R 684 001,76	589,67%	94,00%	79,18%	2400,06%	28822,86%
85 000	17	R 850 000	R 123 248	R 726 751,87	589,67%	94,00%	79,18%	2400,06%	28822,86%
90 000	18	R 900 000	R 130 498	R 769 501,98	589,67%	94,00%	79,18%	2400,06%	28822,86%
95 000	19	R 950 000	R 137 748	R 812 252,09	589,67%	94,00%	79,18%	2400,06%	28822,86%
100 000	20	R 1 000 000	R 144 998	R 855 002,20	589,67%	94,00%	79,18%	2400,06%	28822,86%
105 000	21	R 1 050 000	R 152 248	R 897 752,31	589,67%	94,00%	79,18%	2400,06%	28822,86%
110 000	22	R 1 100 000	R 159 498	R 940 502,42	589,67%	94,00%	79,18%	2400,06%	28822,86%
115 000	23	R 1 150 000	R 166 747	R 983 252,53	589,67%	94,00%	79,18%	2400,06%	28822,86%
120 000	24	R 1 200 000	R 173 997	R 1 026 002,64	589,67%	94,00%	79,18%	2400,06%	28822,86%
125 000	25	R 1 250 000	R 181 247	R 1 068 752,76	589,67%	94,00%	79,18%	2400,06%	28822,86%
130 000	26	R 1 300 000	R 188 497	R 1 111 502,87	589,67%	94,00%	79,18%	2400,06%	28822,86%
135 000	27	R 1 350 000	R 195 747	R 1 154 252,98	589,67%	94,00%	79,18%	2400,06%	28822,86%
140 000	28	R 1 400 000	R 202 997	R 1 197 003,09	589,67%	94,00%	79,18%	2400,06%	28822,86%
145 000	29	R 1 450 000	R 210 247	R 1 239 753,20	589,67%	94,00%	79,18%	2400,06%	28822,86%
150 000	30	R 1 500 000	R 217 497	R 1 282 503,31	589,67%	94,00%	79,18%	2400,06%	28822,86%
155 000	31	R 1 550 000	R 224 747	R 1 325 253,42	589,67%	94,00%	79,18%	2400,06%	28822,86%
160 000	32	R 1 600 000	R 231 996	R 1 368 003,53	589,67%	94,00%	79,18%	2400,06%	28822,86%
165 000	33	R 1 650 000	R 239 246	R 1 410 753,64	589,67%	94,00%	79,18%	2400,06%	28822,86%
170 000	34	R 1 700 000	R 246 496	R 1 453 503,75	589,67%	94,00%	79,18%	2400,06%	28822,86%
175 000	35	R 1 750 000	R 253 746	R 1 496 253,86	589,67%	94,00%	79,18%	2400,06%	28822,86%
180 000	36	R 1 800 000	R 260 996	R 1 539 003,97	589,67%	94,00%	79,18%	2400,06%	28822,86%
185 000	37	R 1 850 000	R 268 246	R 1 581 754,08	589,67%	94,00%	79,18%	2400,06%	28822,86%
190 000	38	R 1 900 000	R 275 496	R 1 624 504,19	589,67%	94,00%	79,18%	2400,06%	28822,86%
195 000	39	R 1 950 000	R 282 746	R 1 667 254,30	589,67%	94,00%	79,18%	2400,06%	28822,86%
200 000	40	R 2 000 000	R 289 996	R 1 710 004,41	589,67%	94,00%	79,18%	2400,06%	28822,86%
205 000	41	R 2 050 000	R 297 245	R 1 752 754,52	589,67%	94,00%	79,18%	2400,06%	28822,86%
210 000	42	R 2 100 000	R 304 495	R 1 795 504,63	589,67%	94,00%	79,18%	2400,06%	28822,86%
215 000	43	R 2 150 000	R 311 745	R 1 838 254,74	589,67%	94,00%	79,18%	2400,06%	28822,86%
220 000	44	R 2 200 000	R 318 995	R 1 881 004,85	589,67%	94,00%	79,18%	2400,06%	28822,86%
225 000	45	R 2 250 000	R 326 245	R 1 923 754,96	589,67%	94,00%	79,18%	2400,06%	28822,86%
230 000	46	R 2 300 000	R 333 495	R 1 966 505,07	589,67%	94,00%	79,18%	2400,06%	28822,86%
235 000	47	R 2 350 000	R 340 745	R 2 009 255,18	589,67%	94,00%	79,18%	2400,06%	28822,86%
240 000	48	R 2 400 000	R 347 995	R 2 052 005,29	589,67%	94,00%	79,18%	2400,06%	28822,86%
245 000	49	R 2 450 000	R 355 245	R 2 094 755,40	589,67%	94,00%	79,18%	2400,06%	28822,86%
250 000	50	R 2 500 000	R 362 494	R 2 137 505,51	589,67%	94,00%	79,18%	2400,06%	28822,86%
255 000	51	R 2 550 000	R 369 744	R 2 180 255,62	589,67%	94,00%	79,18%	2400,06%	28822,86%
260 000	52	R 2 600 000	R 376 994	R 2 223 005,73	589,67%	94,00%	79,18%	2400,06%	28822,86%

