Problem statement

* Perform Break even analysis under various scenarios
* Determine the company’s profitability based on pre-defined assumptions

Quantitative analysis

* Exhibit 1 shows revenues and costs per anticipated sales mix, as well as contribution margins. Clearly the margins for residential are much better than for commercial
* Exhibit 2 shows the number of hectares and customers that will need to be services in order to break even. These numbers are only valid assuming that costs scale in a linear way as quantities increase.
* Exhibit 3: Shows the number of labor days worked required to break even, as well as the total number of hectares that can be treated before requiring a new employee. This assumes that the addition of a new employee will not impact productivity, nor increase supervision/management costs.
* Exhibit 3 re-assesses the BE analysis using the assumption that only 40% of residential customers receive all 4 treatments. Customer that only receive the first treatment are actually generating an operating loss
* Exhibit 4 shows the net income incurred if 2 employees work full time for the whole season. If that is the case, the company does not generate all that much revenues.

Qualitative Analysis

* It is unlikely that doubling direct labor will not have an impact on overhead costs, and that productivity will remain the same
* For every residential contract that only go for a single treatment, the company is losing money

Recommendation

* The company should increase its price for the first treatments and reduce the price of subsequent treatments. Besides covering variable costs to avoid operating at loss for non-repeat customers, discounting subsequent treatments might motivate customers to purchse more treatments

Exhibit 1: Revenues and costs per sales mix



Exhibit 2: Number of hectares that need to be treated in order to break even



Exhibit 3: Number of labor days required to break even



* Assuming max 140 days in a season, we can perform Break Even Quantity of lawns 140 / 27.03 = 5.18 times.
* Since, as per exhibit 2, to break even we required a total of 29.5 residential hectares and 59.07 hectares of commercial, we can service (29.5 + 59.07) x 5.18 = 152.8 (R) + 306 (C) Hectares before requiring a new employee

Exhibit 3: Break even analysis using the assumption that only 40% of residential customers only receive the first application.



|  |  |  |
| --- | --- | --- |
| Fixed cost to cover | $ 39,709 |  |
| CM per sales mix | $ 78 |  |
| # Sales Mix to cover fixed costs | 507.79 |  |
|  |  |  |
|  | Res. | Com. |
| # Hectars / Sales Mix | 2 | 1 |
| # Hectars Serviced to BE | 253.89 | 507.79 |
| # Customers | 2538.9 | 507.8 |

Exhibit 4: NI using the assumption that 2 staff are working at full capacity for 140 days



With 2 x 140 days = 280 days of labor available, the company can sell 280 / (29.4/8) = 79.19 Sales Mix

This will generate 79.19 \* $627.20 = $47,787 in net revenues.

After fixed costs of $39,709; EBT = $8,078