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Strawberry Fields Report

Executive Summary

13Consultancy found that there were some significant areas in the organisation of Strawberry Fields, which, if improved, could more than triple its profits from 2021 to 2022.

Primarily, adaptations such as expansion in the number of choices of ice cream, utilisation of freezer space so that the ice cream can be sold all year round, and the use of frozen strawberries to make the ice cream when fresh strawberries are not available, will all allow for a major increase in profit for the coming year.

Results of 2021

2021 was a good year regarding Strawberry Fields' fresh strawberry growth, with over 12,000kg of fresh strawberries grown on the farm. Thus the sales of fresh strawberries in 2021 were able to meet the corresponding demand of 6,000kg, as shown in Figure 1. After accounting for the £10,000 cost associated with growing the strawberries, these sales contributed £20,000 to the farm's profit that year.

Product/Ingredient	Fresh Strawberries
Grown (kg)	12,000
Sold (kg)	6,000
Demand (kg)	6,000
Income (£)	30,000
Cost (£)	10,000
Profit (£)	20,000

Figure 1: Figures for fresh strawberries (2021)

There were three ingredients used to make 'regular' ice cream in 2021. These were fresh strawberries, thin cream and sugar. Roughly 840kg of thin cream, 690kg of sugar and 1,600kg of fresh strawberries were used in the production of the ice cream (Figure 2), with no thin cream or sugar left over. However, taking into account the 6000kg of strawberries sold fresh and 1,600kg of strawberries used in making the ice cream, this meant that 4,400kg of the 12000kg of fresh strawberries grown were wasted.

Ingredient	Fresh Strawberries	Thin Cream	Sugar
Bought (kg)	--	837.7	685.57
Used (kg)	1600	837.7	685.57
Cost (£)	0	921.47	131.71

Figure 2: Figures for ice cream ingredients (2021)

These ingredient quantities allowed Strawberry Fields to make 4,000kg of ice cream, all of which was sold (Figure 3). Nonetheless, this was still 6000kg less ice cream sold than the demand. These sales contributed £2,141 to the farm's profit, once the costs of the ingredients, and making and storing the ice cream were taken into account.

Product	Regular Ice cream
Made (kg)	4,000
Sold (kg)	4,000
Demand (kg)	10,000
Income (£)	5,000
Cost (£)	2,859
Profit (£)	2,141.42

Figure 3: Figures for regular ice cream (2021)

After combining the income from both fresh strawberries and ice cream, the farm made a total profit of £22,141. Due to the higher selling price of fresh strawberries in comparison to ice cream, 90% of this profit came from the sale of fresh strawberries.

Given that all ice cream made was indeed sold, 13Consultancy concludes that the primary way to increase profit in 2022 is by employing methods to make more ice cream, so that more can be sold, and thus the demands of ice cream sales can be met. In particular, methods that incorporate more of the fresh strawberries into the creation of ice cream for 2022 will mean that less of the strawberries grown are wasted. Such methods include the incorporation of more choices of ice cream, such as low fat ice cream and premium/luxury ice cream, as well as the exploitation of freezer space and use of frozen strawberries so that the ice cream can be sold all year round.

Plans for 2022

By selling low fat and premium ice cream in addition to regular ice cream and using the freezer throughout the year, the potential sales for ice cream in 2022 quadruple in size compared to sales in 2021 (17,050kg in 2022 and 4,000kg in 2021). Specifically, given the ingredient supply for 2022, we found that the profit is maximised when the sales are divided into 2,150kg of regular ice cream, 6,800kg of low fat ice cream and 8,100kg of premium ice cream (Figure 4). We note that the amount of regular ice cream sold will decrease by almost half the amount sold in 2021 (2,150kg in 2022 compared to 4,000kg in 2021).

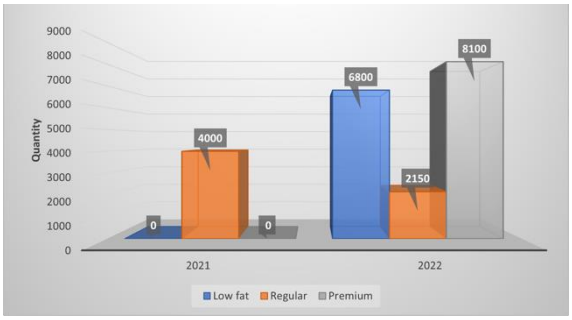

Figure 4: Ice cream sales (2022)

In terms of the sales, production and storage of the ice cream on a monthly basis, ice cream sales will be higher from May to September (Figure 5), as expected, since these are the warmest months of the year and have the highest demand. Due to the capacity of the ice cream maker, Strawberry Fields can only produce 2000kg of ice cream per month. From April to August, the profit is maximised by focusing on producing (and hence selling) solely low fat and premium ice cream, as opposed to regular ice cream. For the remaining seven months the production is mixed in regard to ice cream choices as the demand is mixed throughout the coldest months of the year.

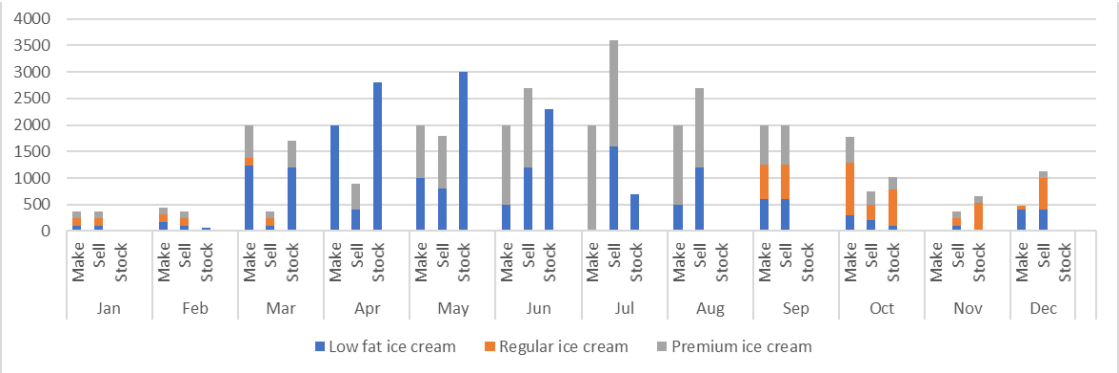

Figure 5: Ice cream production, sales and storage (2022)

Strawberry Fields can further increase its profit from 2021 by storing/stocking ice cream throughout the year in the large freezer provided. We found that of the three ice cream selections, the farm should primarily stock low fat ice cream, and in particular, from April to July it is only the low fat ice cream that needs to be stored (Figure 5). Since no regular ice cream is produced or stored in these months, no regular ice cream is sold in these months.

Regarding the buying and usage of ingredients for 2022, we found that since there is no demand for skimmed milk, sugar and egg yolk, none of these ingredients need to be sold to maximise Strawberry Fields' profit. In particular, no skimmed milk needs to be bought, and sugar and egg yolk should be bought but all of both ingredients should be used in ice cream production in order to maximise profit. Thin cream need not be used, but can be bought then sold to increase profit.

Of the remaining three ingredients, we found that of the thick cream bought, a small proportion should be used in the production of ice cream, and most should be sold, with these respective proportions remaining close to constant over the months of the year (see Figure 6). On the other hand, given that the supply of fresh strawberries is expected to be only in the summer months, we have that most of the fresh strawberries should be used, sold and stored in these months, with most being sold fresh as opposed to used towards ice cream. This follows on from our figures in 2021, given that fresh strawberries have a significantly higher selling price than the ice cream that they are used to make. As in 2021, this plan allows for the monthly demands of fresh strawberries to be met. However, unlike 2021, we note that in 13Consultancy's 2022 plan, there are no fresh strawberries wasted. Finally, we found that frozen strawberries should be used for ice cream making primarily in the winter. This follows given that the production of fresh strawberries is low during this period (aforementioned).

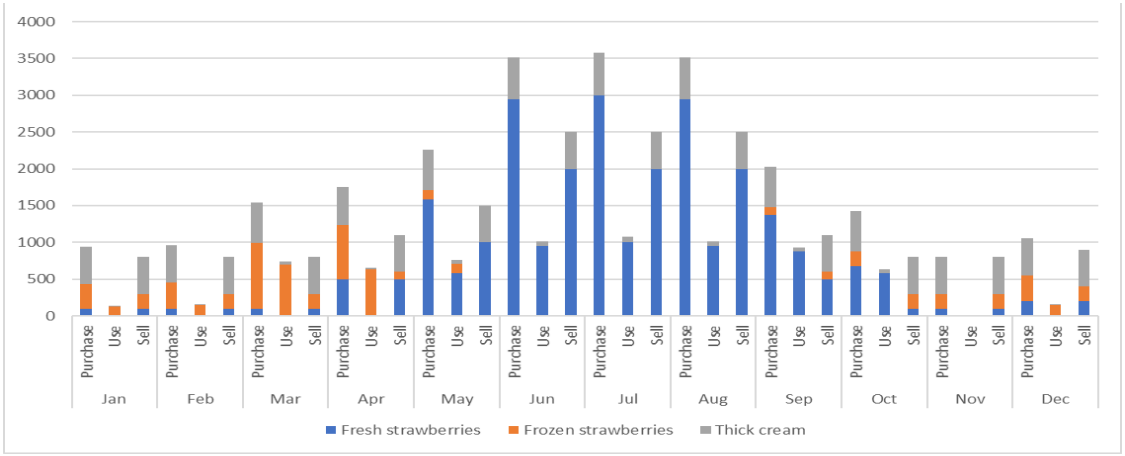

Figure 6: Quantities of ingredients purchased, used in ice cream production, and sold (2022)

In employing the above methods, Strawberry Farms can increase its profit from the £22,000 in 2021 to roughly £70,000 in 2022. This is a £48,000 increase which more than triples the profit of 2021.

Future recommendations

In this section we present the methods in which the profit for Strawberry Fields can be further increased.

For instance, although the amount of ice cream sales has greatly increased, these sales are still roughly 8,000kg lower than the demand in 2022. We note that increasing the storage capacity will have little/no effect on profit since in our current plans the freezer is never full, with an average of 2980kg space left unused per month. However, one method which Strawberry Fields can meet the demand would be to increase the capacity of the ice cream maker, as in doing this, more ice cream can be made and thus sold and/or stored appropriately for later selling. This subsequently allows the farm to get closer to meeting the monthly ice cream demand and hence increase its profit.

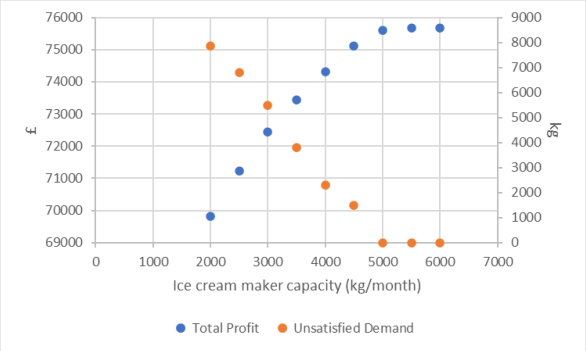

Figure 7: Effect on Strawberry Field's profit as ice cream maker capacity is increased

In particular, 13Consultancy recommends an increase in ice cream maker capacity of 5,000kg per month. As shown in Figure 7, the unsatisfied demand for ice cream at this capacity is zero, and the total profits are estimated to about £75,500. Thus, increasing cream maker capacity by about 5000kg per month will satisfy the entirety of the demand for ice cream whilst increasing the farm's profits by around £5,500 yearly. In terms of financial optimality, if a new ice cream maker machine of an additional capacity of 3000kg per month costs £6000, then the investment will be made back in 1 years' time. After this year, there will be an increase in profit, and during this year, there will be a potential to satisfy more customers through matching demand, and hence a potential to gain popularity and further expand the business in the long term. Any increase in capacity above 5000kg per month is not worthwhile, as it will cost more to do, but will not significantly increase the annual profit, as shown by the flattening gradient of the blue dots in Figure 7 after this capacity value.

Another approach is to allow the demand to remain un-matched, but increase the selling price of the ice cream. Since all ice creams made are ultimately sold, this suggests that customers are willing to pay for Strawberry Fields' ice cream, and thus potentially willing to pay more. If the farm increases the current price of all ice cream choices by £0.50, its profits will increase by £8,500, assuming that the corresponding ice cream demands remain unchanged. We note that if this increase did cause demand to drop by say 2,000kg this corresponds to 10% drop on demand, for each ice cream choice, then the increase in total profits will still be £7600 more than that of 2022. We note that this method provides only £1600 less for the farm than the first method, namely increasing ice cream making capacity.

Of the two options (increasing making capacity and increasing ice cream prices), we suggest that Strawberry Fields employ the former over the latter as the farm is still in its early development process, and so should seek to first consolidate and validate its market before changing its selling prices.