OPMA 415 - Fall 2022

Case 1: Landhills Winery

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Group Number:	5
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Executive Summary

We recommend that Landhills Winery (LW) use the following optimal production plan in the upcoming season to achieve the highest possible profit given the objectives, specifications, and government regulations outlined in the case.

Wine Type	2011 Santa Barbara Vintage Cabernet Sauvignon	Non-Vintage Cabernet Sauvignon	Non-vintage Merlot
Quantity (Bottles)	52,631	93,061	121,224

Our goal was to determine production quantities for the three specific production wines in LW's premier Cabernet Sauvignon (CS) product sector to maximize the company's net profit. To do so, we had to calculate the type and quantity of blending grape bottles that were used to produce each wine type. These decisions had to account for winery specifications such as each wine's required acidity level and sugar content, as well as government regulations regarding alcohol content, quantity of named grape types in varietal wine, and the vintage and viticulture of grapes used in vintage-dated wines. Our production plan was also limited to the number of bottles that could be produced using the blending grape quantities available.

We deduced that LW could produce the following five varietal wines: a 2011 Santa Barbara Vintage CS, a 2010 San Luis Obispo Vintage CS, a 2011 San Luis Obispo Vintage CS, a Non-vintage CS, and a Non-vintage Merlot. We ensured that whole bottles of blending grapes were used, rather than part bottles for ease of wine production. Each wine blend was also calculated to meet applicable winery specifications and government regulations such as acidity level, sugar content, and alcohol level. Other conditions included requiring specific percentages of grape types in varietal wine, and grapes from the relevant vintage year and viticulture for vintage-dated wines. We totaled the number of bottles used for each grape type in all the different blends to ensure that the total did not surpass the amount available. By multiplying the quantity produced with the associated wholesale price, we calculated the total revenue. The costs were calculated by multiplying the quantity produced with the associated cost per bottle of each grape type. Linear formulas were used for revenue and costs so the value for every product increased or decreased by a fixed amount. The difference between the revenue and costs provided us with LW's maximized net profit.

Through this solution approach, we decided on the aforementioned optimal production plan with 52,631 bottles of 2011 Santa Barbara Vintage CS, 93,061 bottles of Non-Vintage CS, and 121,224 bottles of Non-Vintage Merlot. This plan results in a maximized net profit of $809,905.50. By using whole bottles, the net profit drops from $809,911.39 to $809,905.50, however, this allows LW to ensure waste is minimized and profit displayed is accurate. We also made the decision to produce these wines with the following wine blending plan as it meets all winery and government specifications.

Blending Grapes Quantities (Bottles)	2011 Santa Barbara Vintage Cabernet Sauvignon	Non-Vintage Cabernet Sauvignon	Non-vintage Merlot
2011 Santa Barbara Cabernet Sauvignon	50,000	0	0
2010 San Luis Obispo Cabernet Sauvignon	0	60,000	0
2011 San Luis Obispo Cabernet Sauvignon	0	9,795	20,204
2010 Santa Barbara Merlot	2,631	23,265	101,020

Beyond our objective, we also recommend that LW use insights from the sensitivity report to determine quantities for its blending grapes. LW has 200,000 bottles of Merlot grapes in its inventory but less than 127,000 bottles are required for the production plan. Thus we suggest that LW reduce its purchased quantity of Merlot in the future by roughly 70,000, staying within the allowable decrease. This will increase LW's net profit to $884,451.28 from $809,905.50. Furthermore, LW should conduct market research to discern demand for its products so it can reduce unnecessary inventory costs.