



Flax Pond Cranberry Company

Teaching Note

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Case Synopsis

The Flax Pond Cranberry Company case highlights a strategic decision situation. Jack Angley, owner of Flax Pond Cranberry Company, has been dry harvesting cranberries for about 40 years. The dry harvest method, while potentially more profitable, is significantly more risky. His dilemma is – should he continue dry harvesting or convert to the more conventional wet harvesting process? Jack has taken pride over the years in perfecting the dry harvest process and is known in the industry for providing nothing but the highest quality fruit. At the same time, any number of factors, many beyond his control, such as weather, pollution, insects and increased regulations could virtually wipe out his entire operation in one season. The wet harvest is much more controllable and most of the neighboring farms switched to that method years ago.

There is a retail use for the whole cranberry which only can be provided through a dry harvest. The wet harvest cranberries are limited in their use to juice or sauce as the flooding destroys the consistency of the berry. Jack believes that because of his good reputation, as long as he continues to dry harvest, there will be a demand for his product. Converting to a wet harvest will put him in greater competition with other growers.

In the past, Jack based his decisions primarily on subjective criteria without much in the way of detailed analysis; however, there are many objective decision criteria that could also be considered before taking a course of action. Additionally, non-financial considerations are important in the analysis. Jack's reputation and way of doing business for these 40 years could be impacted by this decision.

Learning Objectives

This case can be either open-ended or directed through the suggested questions. In completing this case, the students should be able to:

- Complete an analysis of a decision situation (Question 1) (Bloom's Taxonomy learning outcome level 4)
- Recall a knowledge of specific non-financial and non-quantitative facts that could be critical in a decision situation (Questions 2 and 3) (Bloom's Taxonomy learning outcome level 1)
- Demonstrate a comprehension of specific financial and non-financial facts that could be critical in a decision situation (Questions 2 and 3) (Bloom's Taxonomy learning outcome level 2)
- Synthesize and apply knowledge and skills to recommend a course of action for the decision situation. (Question 4) (Bloom's Taxonomy learning outcome levels 3 and 5)

Intended Courses and Levels

The Flax Pond Cranberry Company case can be used in a finance or managerial accounting class at the undergraduate or graduate level that covers the topic of alternative choice decision making. As a small business, this case would also fit in an entrepreneurship class. The information presented is relatively straightforward and there is a clear decision point. There are a sufficient number of extenuating circumstances to make for a good discussion of critical factors in this type of decision analysis.

Teaching Plans/Approaches

This case can be presented open-ended without any specific questions or directed with several recommended questions focusing on both quantitative and non-quantitative issues. Classroom formats can be instructor led or student led discussions of the critical issues and decision in the case. The case may also serve as an exam case if the instructor is using a text with cases and wants to offer a case in a slightly different format and not readily available to students.

This case has been class room tested in a financial and managerial accounting class at the graduate level. It served as a final exam focusing on differential analysis. The computational aspects proved sufficiently challenging and the discussion questions proved to be thorough and comprehensive. The decision dilemma was especially appealing as students generally recommended continuing the dry harvest even though the numbers were not particularly supporting. Non-quantitative issues seemed more important in this decision process. There were also a sufficient number of students recommending the change to wet harvesting with the risk factor and uncertainty of non controllable variables being the predominant justification for the change.

Research Method

This case was a field researched case with two visits to Flax Pond Cranberry Company and interviews with Jack and his wife, Dot. Follow up communication via telephone and e-mail supported various drafts of the case study and accumulation of critical relevant

financial and non-financial data. Some on-line research was done on Ocean Spray and the cranberry industry and appropriate suppliers were contacted for costs estimates of equipment and other items.

Relevant Theory and Literature

Flax Pond Cranberry Company is a direct application of the alternative choice decision theory and processes. There are a large number of popular accounting and finance textbooks that have many references to decision making using both financial and non-financial data. Some texts include cases and some do not. Using supplemental cases, like Flax Pond Cranberry Company, to a required text can offer a different perspective on teaching and applying various financial and accounting concepts to real world situations. A partial list of texts which include alternative choice decision making chapters is as follows:

1. *Accounting for Decision Making and Control*, by Jerold L. Zimmerman, 4th edition, 1999. New York: McGraw-Hill Irwin. Chapters 2 & 3.
2. *Accounting: Text and Cases*, by Robert N. Anthony, Jack F. Hawkins and Kenneth A. Merchant, 10th edition, 1999. New York: McGraw-Hill Irwin. Chapters 24 & 26.
3. *Intermediate Financial Management*, by Eugene F. Brigham and Phillip R. Daves, 8th edition, 2004. Mason, Ohio: Thompson Southwestern. Chapters 11 & 12.
4. *Case Problems in Finance*, by W. Carl Kester, Richard S. Ruback and Peter Tufano, 12th edition, 2005. New York: McGraw-Hill Irwin. Parts 1 & 3.
5. *Corporate Finance*, by Stephen A. Ross, Randolph W. Westerfield and Jeffrey Jaffe, 6th edition, 2002. New York: McGraw-Hill Irwin. Chapters 7 & 26.
6. *Corporate Finance*, by Scott B. Smart, William L. Megginson and Lawrence J. Gitman, 2004. Mason, Ohio: Thompson Southwestern. Chapters 7 – 9.
7. *Management Accounting*, by Anthony A. Atkinson, Rajiv D. Banker, Robert S. Kaplan and S. Mark Young, 3rd edition, 2001. Upper Saddle River, New Jersey: Prentice Hall. Chapters 6 & 7.
8. *Management Accounting*, by Don R. Hanson and Maryanne M. Mowen, 6th edition, 2003. Mason, Ohio: Thompson Southwestern. Chapters 17 & 18.
9. *Management Accounting – A Strategic Approach*, by Wayne J. Morse, James R. Davis and Al L. Hartgraves, 3rd edition, 2003. Mason, Ohio: Thompson Southwestern. Chapters 3, 4, 9 & 10.

10. *Managerial Accounting – An Introduction to Concepts, Methods, and Uses*, by Michael W. Maher, Clyde P. Stickney and Roman L. Weil, 8th edition, 2004. Mason, Ohio: Thompson Southwestern. Chapters 6-9.

Discussion Questions

If the case is presented in a more directed format, the following questions may help to formulate the discussion.

1. Complete an analysis of this decision to determine if Jack should remain a dry harvester or convert to wet harvesting.
2. What other factors should be considered in the decision process?
3. What non-financial or non-quantitative issues should Jack be most concerned about regarding this decision?
4. Should Jack convert to wet harvesting at this time, why or why not, and what factors were most critical in arriving at a decision?

Answers to Discussion Questions

1. Complete an analysis of this decision to determine if Jack should remain a dry harvester or convert to wet harvesting.

Note to instructors: Ideally a student should develop a differential cost and revenue comparison of wet harvesting to dry harvesting. There is sufficient information available such that the student can create various possible scenarios for a best case to a worst case situation regarding the dry harvesting process. It is also possible to construct a most likely scenario; however, what the student assumes to be most likely could vary depending upon how the student interprets the information.

There is a considerable amount of financial information the student must sort through to make a complete evaluation. It might be advisable, particularly at the undergraduate level, for the instructor to provide some templates in the format of the Teacher's Notes Exhibits to assist the student in formulating a procedure to answer this question.

Jack needs to consider the relevant or differential revenues and costs and resulting cash flows when it comes to making this decision. There may be many costs of operations that will be the same regardless of which harvest method is used which would not impact the decision. It is important to distinguish relevant information from irrelevant information.

Many of the costs of operation from immediately after harvest in November until immediately before harvest in October will be the same and do not have to be considered

in the analysis. The case did identify costs areas and other factors that will be different depending upon which harvest method Jack selects. These costs include labor costs related to the actual harvest, helicopter costs for dry harvesting which are not part of wet harvesting, trucking cost, chemical costs, and frost prevention costs. Note: while trucking costs were essentially the same under both harvest methods, there is the possibility that trucking costs would be less with the wet harvest method because there would be greater certainty as to when equipment would be needed and all shipping could be completed in a relatively short period of time. At the same time trucking costs for the wet harvest could be higher because all the product will be ready at one time which could stretch the capacity of the trucking company. Additionally, most of the area farmers use the wet harvest method and that could further increase the amount of product ready at a specific point and increase trucking demand. However, information in the case did not discuss these issues or make a distinction in trucking costs.

Regarding relevant revenue information, there is a premium for dry harvested cranberries. The total potential revenue along with differential expenses were considered for each harvesting method to determine a cash flow for each decision alternative. If only the differential premium for dry harvest had been computed, then the wet harvest alternative would show zero for revenue dollars, only list relevant costs, and end up showing a negative net cash flow. The differential cash flow results would be the same using either total revenue dollars or just differential revenue dollars.

The following tables help to illustrate the computations required to determine the potential cash flow from dry versus wet harvesting and more importantly the incremental difference between the two methods. Cash flow is used as the residual term versus net income because not all of the operating expenses of Flax Pond Cranberry Company have been included in this analysis.

Revenue and cost figures are computed under best, most likely and worse conditions. Best represents the revenue and cost expectations if the harvest were at 125 bushels per acre which occurred about 5 percent of the time. The most likely scenario was when harvest levels were about 100 bushels per acre which happened 90 percent of the time. The worst case situation represents situations when production was at 75 bushels per acre about 5 percent of the time with the associated costs and revenues.

Table TN 1 used the current market price of \$36 per bushel for wet harvest and \$44 per bushel for dry harvest to determine potential revenue under the various scenarios. The \$8 per bushel or \$0.08 per pound premium for dry harvest is what determines the difference in the total revenue figures.

Tables TN 2 and TN 3 identify the relevant costs associated with the production and harvesting of the cranberries using the dry harvest method (Table TN 2) versus the wet harvest method (Table TN 3).

Table TN 1
Revenue Computations

Revenue Computations	Best	Most Likely	Worst
Acres	34	34	34
Barrels per Acre	125	100	75
Pounds per Barrel	100	100	100
Market Price per Pound	0.36	0.36	0.36
Premium Dry Harvest	0.08	0.08	0.08
Revenue Dry Harvest*	187,000	149,600	112,200
Revenue Wet Harvest*	153,000	122,400	91,800

*Revenue equals acres x barrels per acre x pounds per barrel x market price per pound. The dry harvest also includes the premium price per pound.

Labor for harvesting, helicopter, chemicals and frost protection were clearly differential costs for analysis purposes. The trucking costs were considered the same for both the harvest methods, but they could have easily been different under a variety of circumstances; however, none of those were spelled out in the case study.

Helicopter and trucking costs would probably be higher under the best production scenario due to higher volumes of cranberries being harvested and the same rationale could be used for the worst production scenario. The best scenario had a 25 percent higher production level and the worst case scenario had a 25 percent lower production level. Suggested changes in the helicopter and trucking costs were adjusted by slightly less than 25 percent in these situations to add a degree of conservatism to the analysis.

Labor hours for the dry harvest method were listed the same for both the best case and most likely case as the information from the case indicated that was the most likely situation. It appeared that Jack did a pretty good job of getting friends to help in the harvest process to save on labor costs.

Table TN 2
Dry Harvest Production Related Costs

Production Costs Dry	Best	Most Likely	Worst
Labor			
Man Hours	100	100	700
Cost per Hour	20	20	20
Total Labor Cost	2,000	2,000	14,000
Helicopter*			
Hours	20	18	16
Cost per Hour	500	500	500
Total Costs	10,000	9,000	8,000
Trucking*			
Runs	18	15	12
Cost per Run	350	350	350
Total Costs	6,300	5,250	4,200
Chemicals			
Total Costs	20,000	20,000	20,000
Frost Protection			
Hours per Day	6	6	6
Number of Days	3	6	10
Cost Per Hour	50	50	50
Total Cost	900	1,800	3,000
Total Cost Dry			
	Best	Most Likely	Worst
Labor	2,000	2,000	14,000
Helicopter*	10,000	9,000	8,000
Trucking*	6,300	5,250	4,200
Chemicals	20,000	20,000	20,000
Frost Protection	<u>900</u>	<u>1,800</u>	<u>3,000</u>
Total	39,200	38,050	49,200
*Variable component results in higher costs at higher production levels			

Differential costs for the dry harvest method are about \$40,000 for the best and most likely situation and about \$10,000 more for the worst case scenario. There are obviously other costs associated with the operation but these were not considered relevant for this analysis.

Table TN 3
Wet Harvest Production Related Costs

Production Costs Wet	Best	Most Likely	Worst
Labor			
Man Hours	110	110	110
Cost per Hour	20	20	20
Total Labor Cost	2,200	2,200	2,200
Helicopter			
Total Costs	0	0	0
Trucking*			
Runs	18	15	12
Cost per Run	350	350	350
Total Costs	6,300	5,250	4,200
Chemicals			
Total Costs	5,000	5,000	5,000
Frost Protection			
Total Cost	0	0	0
Total Cost Wet			
	Best	Most Likely	Worst
Labor	2,200	2,200	2,200
Helicopter	0	0	0
Trucking*	6,300	5,250	4,200
Chemicals	5,000	5,000	5,000
Frost Protection	<u>0</u>	<u>0</u>	<u>0</u>
Total	13,500	12,450	11,400
*Variable component results in higher costs at higher production levels			

Differential costs for the wet harvest method are about \$12,500 for all the scenarios. There are obviously other costs associated with the operation but these were not considered relevant for this analysis.

Table TN 4
Dry Harvest Incremental Cash Flow

Cash Flow Dry Harvest	Best	Most Likely	Worst
Revenue (Table TN 1)	187,000	149,600	112,200
Costs (Table TN 2)	<u>39,200</u>	<u>38,050</u>	<u>49,200</u>
Cash Flow	147,800	111,550	63,000

Jack can make a reasonable cash flow with the dry harvest production method. However, there is a considerable difference of \$84,800 or a 135% (\$84,800/\$63,000) variation between the cash flow in the worst situation and the cash flow in the best situation. The Most Likely scenario would be considered as the most probable.

Table TN 5
Wet Harvest Incremental Cash Flow

Cash Flow Wet Harvest	Best	Most Likely	Worst
Revenue (Table TN 1)	153,000	122,400	91,800
Costs (Table TN 3)	<u>13,500</u>	<u>12,450</u>	<u>11,400</u>
Cash Flow	139,500	109,950	80,400

Jack can make a reasonable cash flow with the wet harvest production method. However, there is a large difference of \$59,100 or a 75% (\$59,100/\$80,400) variation between the cash flow in the worst situation and the cash flow in the best situation. The Most Likely scenario would be considered as the most probable.

The higher variability in cash flows using the dry harvest method (Table TN 4) versus the wet harvest method (Table TN 5) reflects a greater degree of risk in this case in terms of potential return for the dry harvest method.

Table TN 6
Dry Harvest Versus Wet Harvest Incremental Cash Flow

Marginal Cash Flow Dry versus Wet Harvest	Best	Most Likely	Worst
Cash Flow Dry (Table TN 4)	147,800	111,550	63,000
Cash Flow Wet (Table TN 5)	<u>139,500</u>	<u>109,950</u>	<u>80,400</u>
Marginal Cash Flow	8,300	1,600	-17,400

As shown in Table TN 6 Jack has a marginal increase in cash flow from using a dry harvest method anywhere from \$8,300 to -\$17,400, with the most likely cash flow increase of \$1,600. From a purely numbers perspective, the decision to wet harvest versus dry harvest is indistinguishable. Both harvesting methods bring Jack and Dot a

respectable cash flow, but the added costs associated with the dry harvest essentially offset any premium gained by Jack through the sale of the whole fruit.

Jack needs to compare his annual cash flow against the possibility of a partial to total loss in crop revenue due to many risk factors. Table TN 1 shows that the dry harvest method can give Jack between \$112,200 and \$187,000 in potential revenue. A loss in revenue of that proportion could quickly offset marginal cash flows earned over the years from the dry harvest method. There is also the probability of a loss in crop revenue even if Jack used a wet harvest method; however, the probability of that happening is much less because many of the risk factors in dry harvesting would not be relevant with wet harvesting.

2. What other factors should be considered in the decision process?

Jack would need to consider the initial costs of retooling to a wet harvest method. He would need to purchase over \$83,000 of equipment consisting of water reels and pumps plus other support items. Additionally, much of the equipment he currently has, six Furford machines, for the dry harvest method could become obsolete and the secondary market for this equipment is limited. Even if he were able to get a maximum price of \$5,000 per machine, for a total of \$30,000, that still leaves an initial outlay of over \$50,000.

Table TN 7
Initial Outlay for Wet Harvest Equipment

Equipment	Costs
Two Water Reels @ 22,000	44,000
Loading/Cleaning Pump	35,000
Spray Bar Pump	1,000
500 Feet Corral	<u>3,500</u>
Total Equipment Cost	83,500

The number of farmers using the dry harvest method is limited. This approach also requires more skill. Jack would be giving up something he is very good at, for a much more common and competitive harvesting practice.

Jack should review the competition not only from local farmers, but nationally and internationally. Will it be economical to harvest either wet or dry and which method has the greatest potential to generate positive cash flow.

What is the demand for cranberries in total and in the whole fruit form? If Jack sees overall demand and demand for the whole berry increasing, then Ocean Spray will be even more dependent on farmers like Jack to supply product using a dry harvest method. It is possible that the premium for the whole berry from dry harvesting could be increased.

Jack has gone against the grain for many years as most of the neighboring farmers have converted to wet harvesting. Why change now? If he wanted to change, it probably would have been best to change earlier in the process to gain competitive advantages in wet harvesting. Now he would be a “Johnny come lately,” and may not be as efficient and competitive under the wet harvest methods.

3. What non-financial or non-quantitative issues should Jack be most concerned about regarding this decision?

After being in the business about 40 years, it is not so much about the dollars but more about the love for what Jack is doing. Anyone in farming that is constantly battling the risks and uncertainties, especially those out of their own control like the weather, must have a certain “karma” about their work. If Jack did not like what he was doing and got a sense of satisfaction from producing his product, he probably would have pursued another line of work years ago.

Jack probably needs to look inward to see if the drive is still there versus outward at specific numbers, demand or competition. Does Jack want to continue battling the same elements and risks that he has faced over these last 40 years? The fact that Jack has not thought about a succession plan, indicates that he probably wants to continue doing this work for the foreseeable future. Also, Dot enjoys the farm and related country store activities and with her support, Jack would be more interested in continuing the work.

The historic and unique perspective of dry harvesting on a century old family farm, in a historical area of Massachusetts has a significant drawing power in the tourism industry. The country store operated by Jack and Dot which includes the antique bounceboard separator add to the tourist appeal. Jack probably has a better opportunity to increase the country store component of his business if he remains a dry harvester. It is important that he continue to promote the secondary businesses of the country store and tree farm to help offset the cash flow risk of the harvest process.

Jack is somewhat hostage to the supply and demand components of the cranberry industry and its resulting impact on the market price of berries along with the price premium for dry harvested berries. There is also the impact of the foreign competition to consider with their lower costs and alternate growing seasons. The foreign competition could have both a positive and negative impact on the supply and demand of product.

What are other dry harvest farmers doing? There was a big switch to wet harvesting in the past, are the remaining dry harvest farmers considering a switch? Also, what is the average age of the other dry harvest farmers and how long have they been in this line of work? Are the dry harvesters a dying breed?

4. Should Jack convert to wet harvesting at this time, why or why not, and what factors were most critical in arriving at a decision?

Jack appears to be successful at what he is doing and he has many years of proven experience to back up his claims. While the financial data comparing the dry harvest versus the wet harvest seem to be inconclusive, the intangible factors and non quantitative issues would tend to support a continuation of the dry harvest method regardless of the increased risk.

However, if Jack is growing tired of the dry harvest battle, the financial computations could easily support a switch to wet harvesting. It is also hard to imagine other dry harvest farmers earning enough of a premium to justify that production process. If other farmers switch from dry to wet, the decrease in supply could result in an increase in the premium paid by Ocean Spray for whole fruit.

Epilogue

Jack was able to get another successful harvest to Ocean Spray by the deadline without a significant increase in cost or loss in potential revenue in spite of the weather not cooperating during this harvest season. He continues to be one of the leading dry harvesters of cranberries and one of the most reliable suppliers to Ocean Spray. As a sign of their appreciation to Jack and Dot, Ocean Spray has featured them on some of their promotional materials.

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