# Case Analysis: Analyses of the National Cranberry Cooperative—2. Environmental Changes and Implementation

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**This second part presents further analyses of the National Cranberry Cooperative Case, published in the November-December 1989 issue of *Interfaces*. The first part focused on tactical options, assuming a fixed environment for Receiving Plant 1 (RP1). The base case recommended, among other things, purchasing two new dryers and fully staffing the plant starting early each morning of the peak season. Part 2 asks whether better solutions can be found by making technological changes (Analysis 4), managing demand (Analysis 5), or altering the economic environment (Analysis 6). I also discuss implementation.**

### Analysis 4.1: Holding Pool

Doyle et al. [1990] recommend that RP1 start planning for future years when nearly all incoming berries may be wet. RP1 should consider constructing a holding pool filled with water to replace the current receiving system. A scale would weigh each incoming truck and its load, and a sample of berries would be taken. Up to five trucks could be simultaneously driven onto a grate over the holding pool to dump their berries. A current generated by a circulation water pump would float the cranberries to one side of the pool where a grated wall would prevent them from exiting. A conveyor belt would then sweep the garnered berries up to the temporary holding bins where they would be fed into the current processing system.

Since all berries processed at the plant would go through the holding pool, the plant would no longer need the destoning units. It could sell them and the Kiwanee dumpers to help finance this project. Doyle et al. [1990] estimate a holding pool would cost $54,000, consisting of $36,000 for excavation and foundation, $10,000 for housing, grating, and conveyor belts, and $8,000 for piping, circulation pump, scales, and water.


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Regardless of the backlog within the plant, all incoming trucks should be able to be weighed, unload, and leave the plant within 10 to 15 minutes, eliminating the troublesome truck waiting of the past. The holding pool would allow a larger volume of berries to be safely stored overnight in the water. Excess berries delivered on peak days could be stored and processed on nonpeak days. The plant could therefore be scheduled to operate a fixed number of hours each day, which would eliminate overtime and create a smooth operating plant. However, based on the estimates in Analysis 2.1, the average daily delivery over the peak season will be 19,600 barrels, and since all berries would now require drying, even a drying capacity of 1,000 bbl/hr (barrels per hour) would require 19.6 hours of processing each day. Furthermore, berries destined for bagging require more drying, reducing the output rate of the dryers, so the requirement to bag some of the berries would reduce the capacity of five dryers below 1,000 bbl/hr. Although this option appears to be more expensive than simply adding two dryers, it may still be worth considering as it prepares RP1 for the future.

**Analysis 4.2: Dewatering Conveyor System**

Anuff et al. [1990] first consider not only adding two new dryers, but a new separator line as well, for a total estimated cost of $70,000. The processing capacity would be 1,000 bbl/hr for wet berries and 600 bbl/hr for dry. Only on days with volumes of 18,000 or more would there be any buildup. For example, on a 22,000 day, wet berries would build up at a rate of 283.33 bbl/hr to 3,400 at 7:00 PM and would be cleared out 3.4 hours later.

Installing a dewatering conveyor system is a serious alternative. Such a system would eliminate the need for all dryers, and all berries, wet or dry, could be processed with it. Its capacity would exceed that of the separators, so, with the additional separator line, berries could be processed at 1,600 bbl/hr, meaning that minimal staffing would be required. Even on a 22,000 day, berries would build up at only 233.33 bbl/hr to 2,800 at 7:00 PM, which would be cleared out by 8:45 PM. If such a system, including the additional separator, can be installed more cheaply than two new driers, taking into account sale of the existing dryers and implementation and plant restructuring costs, Anuff et al. [1990] recommend that it be selected.

**Analysis 4.3: Additional Possible Technological Improvements**

Alexander et al. [1990] submitted the analyses in this section. One approach is to explore ways to improve the drying process. A first option is to rearrange the process sequence, separating the berries earlier in the process, after destoning and dechaffing but before drying, so that the dryers need not dry the berries that are destined for the waste flumes. However, this modification is likely to be expensive, and it is not clear that the volume of unacceptable berries is high enough to warrant the expense of the change. A second option is to purchase or modify trucks to partially dry berries during transport to the processing plant, decreasing drying time at RP1. However, it is not clear that such technology was available in 1971, and it would probably be more expensive than buying an additional dryer. A third option is to install centrifugal dryers in the temporary holding bins to partially or fully dry wet berries. However, these changes would probably be more expensive than other alternatives available.

Another approach is to eliminate truck buildup at RP1 by converting to container shipping. However, this conversion would be too expensive relative to the benefits provided. The plant would have to purchase containers, find a supplier from which the growers could lease trucks, purchase loading and unloading equipment, and redesign the receiving area to accommodate the new system.

Ethylene gas is a mild asphyxiant and is explosive.

Another approach is to reduce effectively the peaks and extend the length of the peak season by cultivating alternative berry varieties that ripen at different times. However, Alexander et al. [1990] conclude that such varieties are not feasible, as current varieties are of the best quality for consumption. Changing the variety grown would be a burden to the growers and would adversely affect berry taste and color. Cultivation of a new variety might take years, leaving the short-run problem still unresolved.

A final approach is to improve berry color by treating berries with ethylene gas or special lighting or both. Ethylene gas is a mild asphyxiant and is explosive as well. Any improvement in berry color does not justify endangering workers' health or increasing the risk of a class action suit by employees in the future. The cost of building safety-approved gas chambers is also uncertain. However, this option might be reconsidered in the future if technologies improve.

**Analysis 5.1: Scheduling**

Alexander et al. [1990] suggest scheduling truck arrivals for different times of the day to smooth intraday arrivals, possibly with penalties for early or late arrivals. This option would not eliminate the need for additional dryer capacity but would help reduce truck waiting on days when substantial variability in arrivals takes place over a peak day. RP1 might be able to staff one fewer receiving crew using this approach.

Lariviere [1990] suggests scheduling to smooth both intraday and interday arrivals. Growers could be permitted to reserve a time slot, truck size, and berry type up to a week in advance. They might adjust their reservation times after hearing when peak loads have already been scheduled, leading to smooth arrivals over the day (including early morning) and less truck waiting. Although RP1 would still face the problem of no-shows, it might be able to predict impending peak days better and plan accordingly.

It is possible that the economics of truck leasing lead growers to use a truck for virtually all of a day or not at all. If so, each truck would deliver its loads over a day in a somewhat smooth pattern, leading to a natural smoothing of intraday arrivals and lessening the value of scheduling arrivals at different time slots during the day. However, scheduling arrivals over the different days of the peak season might still play an important role. For example, if RP1 buys two new dryers, it may still want to limit the number of berries per day to 22,000 barrels (70 percent wet), to protect against a surge that would cause excessive truck waiting. Or RP1 can limit the peak-day volume to a level below the anticipated maximum. For example, suppose RP1 accepts reservations for up to the projected average of 19,600 barrels per day (70 percent wet), while still planning to buy two new dryers. Using the model of Analysis 2.2, wet berries would arrive at the rate of 1143.33 bbl/hr, building up at a rate of 193.33 bbl/hr to 2,320 at 7:00 PM. Trucks would not have to wait, and wet berries would be cleared out at 9:27 PM. Dry berries would arrive at a rate of 490 bbl/hr, building up at a rate of 240 bbl/hr to 2,880 at 7:00 PM. At 9:27 PM, the level would drop to 2,270, at which point only dry berries would be processed It would take until 11:20 to clear out the dry berries, which would mean 16.33 operating hours per day. Excluding the possible benefit of reducing the staffing of the dumpers to four crews, I estimate a reduction of 531 labor hours over the peak season, worth $1,792, which, when added to the $1,210 savings in truck-waiting costs, amounts to a total savings of about $3,000.

Are greater benefits possible if RP1 buys only one dryer? Wet berries would now build up at 343.33 bbl/hr to 4,120 at 7:00 PM. Trucks carrying wet berries would start lining up at 4:19 PM and the line would disappear at 8:09 PM, amounting to 23.4 truck hours of waiting each day, costing $4,680 over the peak season, which is $3,470 more than the base case. The plant would finish processing wet berries at 12:09 AM. Dry berries would build up at a rate of 90 bbl/hr to 1,080 at 7:00 PM and be cleared out at 9:42 PM. Thus, the plant would operate for 17.15 hours per day. I estimate an increase of 247.5 labor hours over the peak season, worth $835, which, when added to the additional truck-waiting costs, amounts to an increase of about $4,305. This figure may be high, as there could also be some additional savings: crews devoted to processing dry berries, such as the baggers and one of the separating crews, could be let off work earlier than others. If one third of the $25,000 cost of a new dryer is charged for the year, the savings compared to the base case amount to around $4,000, which is more than the savings from this plan when buying two dryers.

> Idling acreage represents a notably costly form of supply control.

One important disadvantage of any plan that reduces peak-day volume is that it may induce growers to harvest berries on days when they are not at their peak in quality. Unless these consequences are taken into account, any anticipated benefits could be wiped out by losses due to lower quality berries. The case does not provide enough information to adequately assess these consequences. Presumably, harvesting early means more berries are not fully ripe and will be of lower quality. Harvesting late probably means a higher percentage of overripe, unacceptable berries. It is possible that several passes through a field can be made with dry harvesting, while wet harvesting may require one harvesting. It may be possible to build a model to determine the consequences of various harvesting strategies. We could then attempt to identify an optimal harvesting schedule, which is likely to depend on the weather and structural properties of the plan, such as availability of delivery slots.

**Analysis 5.2: Voucher Plan**

This option has the same objective as scheduling, which is to limit the number and type of berries delivered at various time periods over the peak season. Instead of letting high-value time slots be allocated on some arbitrary basis, such as first come first served, or favoritism, this approach establishes a market for such time slots, so growers who ascribe higher value to certain time slots can obtain them from growers who value those slots less, leading to gains in efficiency.

I focus on a plan to smooth the interday arrivals, although a plan to smooth intraday arrivals is also possible. RP1 would establish delivery authorization certificates, in such denominations as 10 barrels, authorizing the bearer to deliver that many barrels of that berry type (wet or dry) on the day stated on the certificate. RP1 could issue appropriate numbers of certificates for each type of berry to each grower prior to the beginning of the season. A committee of growers, including some potentially dissident growers, could design the allocation process so that the plan would not be dropped like a bomb on the growers. A (futures) market for the certificates would be established, letting growers buy and sell them as their needs changed. Rather than issuing the certificates to growers, RP1 could participate in the market directly. On the days of actual deliveries, the chief berry receiver would collect the required number and kind of authorization certificates from each driver of each arriving truck. It would be important to eliminate as much market friction as possible. For example, RP1 would want to insure that on nonpeak days, when the certificates are nearly worthless, unused certificates are readily available to incoming truck drivers needing them.

Another disadvantage of the plan is that care must go into operating the market and keeping transaction costs down. Who will make the market in the vouchers and who will be allowed to speculate in it must be decided. The market must be regulated (at some cost) to prevent an outsider from cornering the market and gathering all potential gains from establishing it.

This plan would likely face strong resistance from the growers because of the inconvenience costs they would have to bear: Growers would have to obtain authorization certificates for every delivery. If they tried to obtain them in advance, they would lose flexibility in delivery volumes for those days. If they waited until delivery days, they might have to pay high market prices on peak days. If berries must be harvested on days on which they ripen, market prices for delivery on days on which huge numbers ripen might skyrocket above the marginal cost of processing those berries. Everyone would be better off if RP1 processed enough berries on such days to reduce the market price on those days to marginal cost, which consists, in decreasing significance, of new dryer investment costs, truck-waiting costs, and direct labor costs. In section 5.4, I discuss a mechanism whereby growers can deliver more wet berries than the planned daily level by paying a per-barrel premium. I will first apply the general concept of peak-load pricing.

**Analysis 5.3: Peak-Load Pricing**

RP1 could implement peak-load pricing (see Steiner [1957] and Williamson [1966]) to influence its arrival volumes. For example, a single premium could be charged for all wet berries delivered during the peak season. This plan would encourage growers to shift deliveries of wet berries from peak season to off season, which could reduce congestion and labor costs. However, it might primarily shift volume from non-peak days, which would benefit RP1 very little and possibly reduce both the yields and the quality of berries. And nothing prevents peak-day volumes from increasing. Determining what price to charge and whether to purchase another dryer or two would again require having a grower harvesting model.

A variation of this plan would be plausible if RP1 were able to predict when peak days were likely to occur. Under this plan, peak-load prices would be charged only on peak days. Different prices could be charged depending on the projected severity of the day and on the type of harvesting (wet or dry). RP1 would need to work closely with growers to predict peak days and to inform them of impending peaks. This plan is similar to the voucher plan except that it shifts the information-processing challenge from the growers to plant management. It is unclear whether this kind of centralization is warranted in that growers are better able to predict their own needs and costs. However, this plan avoids the potential abuses of a voucher market.

A variant of peak-load pricing can be used in conjunction with the voucher plan to make growers who cause the purchase of new dryers pay for them: If no new dryers are purchased, then the plant has a capacity to process 600 bbl/hr of wet berries during the 12 hours that trucks are arriving, and to hold 3,200 barrels, without causing truck-waiting costs, for a total of 10,400 barrels. It can also handle 600(12) + 4,000 = 11,200 barrels of dry berries per day without creating any truck-waiting. If one new dryer is purchased, then RP1 can handle 800(12) + 3,200 = 12,800 barrels of wet and 8,800 barrels of dry, transforming 2,400 bbl/day dry capacity into wet capacity. Similarly, if two new dryers are purchased, RP1 can handle 950(12) + 3,200 = 14,600 wet and 7,000 dry, transforming an additional 1,800 dry capacity into wet. Suppose that certificates are issued for 10,400 barrels of wet berries per peak season day and 11,200 barrels for dry berries. In addition, RP1 will allow 2,400 bbl/day of dry berry certificates to be converted to wet at a certain cost per barrel, and an additional 1,800 bbl/day to be converted at a higher rate. These rates would tend to shift the cost burden of purchasing a new dryer onto those growers who require the additional capacity.

It is very difficult to implement surprises.

Assuming that the distribution of delivery volumes estimated in Analysis 2.1 is accurate and unaffected by this pricing scheme, all 2,400 allowable conversions at the lower price would be made on 22,000 and 20,000 days, 2,200 barrels would be converted on 18,000 days, and 800 on 16,000 days, for an expected total of 41,600 over the peak season. Furthermore, 19,800 conversions would be made at the higher price. If RP1 required each $25,000 new dryer to be paid off in equal hunks in three years, then it could charge 25,000/ [3(41,600)] ≅ $0.20 per barrel converted at the lower price to pay for the first dryer, and $0.42 per barrel converted at the higher price to pay for the second one.

These conversion prices are high enough that they might influence the distribution of daily delivery volumes over the peak season. In particular, if RP1 could confidently predict that few if any of the higher priced conversions would be exercised, it wouldn't need to purchase the second new dryer. If the harvesting model described in section 5.2 could be developed, it could be used to help decide whether to buy zero, one, or two new dryers.

This proposal should be discussed with a group of growers to determine its feasibility. If it does appear to be workable, refinements that account for truck waiting and direct labor costs should be considered. For example, on a 22,000 day, only 21,600 barrels are authorized to be processed. It would be possible to sell an additional 400 barrels of wet delivery rights for $0.42 per barrel, and that would cover the additional truck waiting and direct labor costs created.

**Analysis 5.4: Contingent Set Asides**

The Cranberry Marketing Order of 1970 specifies that 10 percent of the crop should be set aside (discarded). The author of the case does not specify how this amount is to be set aside. So why not set aside wet berries on peak days, rather than in some other way that might affect peak-day volumes less? Thus, I multiply all the nominal daily volumes over the peak season by 1/ 0.9 to estimate the raw daily volumes. For example, a 22,000 day would become a 24,444 day. Using the projection of Analysis 2.1, I estimate that the total process fruit crop in 1971 will be 1.2(678,000) = 813,600, so RP1 should set aside 81,360 barrels over the season. RP1 could do so (Table 6) by accepting at most 11,200 barrels of wet berries per day and setting aside the rest. If this plan could be made to work, RP1 might be able to get away with buying no new dryers: On each of the 19 heaviest days of the 20-day peak season, trucks would accumulate about 20 hours of waiting and the plant would operate

| Original Daily Volume (000s): | 22 | 20 | 18 | 16 | 14 | Total |
|---|---|---|---|---|---|---|
| New Daily Volume (000s): | 24.4 | 22.2 | 20 | 17.8 | 15.6 | |
| Number of Days | 7 | 6 | 4 | 2 | 1 | 20 |
| Arriving Wet Volume (000s): | 17.1 | 15.6 | 14.0 | 12.4 | 10.9 | |
| Processed Wet Volume (000s): | 11.2 | 11.2 | 11.2 | 11.2 | 10.9 | |
| Season Set Aside (000s): | 41.4 | 26.1 | 11.2 | 2.5 | 0 | 81.2 |

**Table 6: About the right annual amount of cranberries will be set aside if RP1 accepts at most 11,200 barrels of wet cranberries per day during the peak season and discards the rest.**

18.67 hours.

Implementation would pose challenges: If RP1 determined set asides, growers would need to incur the additional harvesting and trucking expense of getting berries there, which would undoubtedly prove to be unacceptable. If RP1 could accurately forecast peak days in advance, it could attempt to get the set-aside team (committee of growers and representatives of the Department of Agriculture) to appear at the right harvesting sites in advance and set aside the right amount for each day.

Another option arises if RP1 could establish and staff several convenient set aside locations. At 9:00, 10:00 and 11:00 AM of each day of the peak season, RP1 would assess the severity of the peak that day and would post signs showing the estimated number of barrels of wet berries that must be set aside for each barrel of wet berries delivered after 2:00 PM that day. The sign posted at 11:00 AM would be final for the day. A driver delivering wet berries to RP1 that day would be given an appropriate number of set-aside authorization slips. Upon delivery at a set-aside location, those slips could be endorsed and a delivery receipt issued. The driver would return to the harvesting location, allowing the grower to send additional wet berries to RP1 after 2:00 PM that day. The set-aside locations might need to judge berry quality and weigh the loads the way RP1 does, so that growers could bear the brunt of the set aside program equitably. A number of wrinkles would still need to be worked out, such as how to prevent setting aside RP1's best berries of the season, which are likely to arrive on peak days. It is also unlikely that RP1 could get away without buying one new dryer under this plan.

**Analysis 5.5: Assess Cranberry Grower Plans**

No discussion in the case is devoted to the calamitous price drop in 1970. In particular, it is possible that many growers will question the profitability of their business after the 1970 season and that some are planning to grow and harvest cranberries less intensely in the near future. Some may even be planning to abandon cranberry acreage. An assessment of cranberry grower plans for 1971 could be very useful. RP1 may find that projected volumes will drop for 1971 and that there is little or no need for additional drying capacity. In any event, RP1 would have a better basis for predicting peak-day volumes.

**Analysis 5.6: Coordinating Quota Attainment**

The Cranberry Marketing Order of 1968 limits the acreage devoted to cranberries and limits the output for each existing grower for post-1973 years to the average of their best two years from 1968 through 1973. To the extent that the increased productivity of cranberry acreage witnessed over the past several years is due to the growers' desire to establish their quotas for the post-1973 era, the growers could establish a system in which they coordinated their planned peak years. Those growers who had already achieved two good years or were confident of achieving a good year or two in the future might be willing to sign contracts limiting their acreage for payments equal to their estimated lost profits. Since total acreage was already limited by the marketing order, abuse by pretended growers would be avoided. The advantage is that peak-season volume would go down, allowing for less investment in new dryers, less truck waiting, and so forth. Furthermore, the average market price might rebound from the catastrophic plummet of 1970. Questions of the legality of this scheme must first be addressed.

**Analysis 6.1: Establish a Futures Market for Process Berries**

Cranberry growers would benefit if they could predict the ultimate market price for their product at the time they commit themselves to irreversible costs of growing and harvesting. Establishing a futures market for process berries, like that existing in frozen orange juice concentrate, sugar, soybeans, and other commodities, would help in this regard. For example, the volumes of fresh sales and process berries in 1970 were not much higher than 1969 levels, yet the price dropped dramatically. Perhaps large inventory levels of frozen berries or other unsold berries from 1969 influenced this drop. In any event, the futures market would reflect people's perceptions of all such influences. This market would also help RP1 determine the plans of its growers, which would help it to forecast future volumes and enable it to make more informed capacity expansion decisions.

**Analysis 6.2: Develop New Cranberry Products**

Another way to deal with the recent gains in cranberry productivity is to increase the demand for cranberries, rather than to limit the supply. In particular, the industry association should create a task force to look into developing new products, such as mixtures of cranberry juice with other juices and blends of fruit cocktails. This approach not only stabilizes the economic base for cranberry growers but can increase consumer welfare by expanding their set of choices.

**Analysis 6.3: Amend the Marketing Order of 1968**

Growers may be rushing to attain high production to establish high quotas for the post-1973 era and may be losing lots of money in the process. For instance, it is possible that growers would profit more by harvesting berries dry yet are harvesting more berries wet recently just to increase their production levels. If so, any investment in new dryers would be unnecessary without the Marketing Order of 1968 and may be worthless in the post-1973 era. And, with all the recent gains in productivity, it is not clear that the post-1973 quotas will be low enough to bring the price stability the growers seek.

Many problems exist with supply controls in general, and these are nicely explicated by Hertel [1990], who says, "From a societal perspective, idling acreage represents a notably costly form of supply control" (p. 165), and "Any effort to raise prices by restricting supplies is at best a countercyclical policy" (p. 153). It may well be that the cranberry growers would be better off without the marketing order, especially in the longer run, and should work to rescind it.

**Implementation**

In contrast to the usual interpretation of implementation in MS/OR circles, implementation here refers to the entire process of identifying problems, building models, developing insights, gathering more data, building new models, reaching tentative conclusions, and instituting changes.

Not surprisingly, I recommend that those carrying out the analyses work closely with RP1 management and with the growers. Several of the analyses presented in this article have conclusions that are very sensitive to certain assumptions, such as the cost of truck waiting and the anticipated 20 percent surge in 1971 peak-season deliveries. In practice, one should not proceed as far with analyses as was done for this article before clarifying the validity of assumptions, determining whether superior relevant data are available directly from the cooperative, and resolving questions that arise. Not only will clarification of important assumptions lead to better analyses and better conclusions, but possibly to serendipity, with creative new options popping up that never otherwise would have been considered. For example, over a third of the process berries in 1970 were delivered after October 10 (case Exhibit 2), yet only a small portion of all berries are delivered during that period (case Figure 1). In addition, the 400 bbl/hr capacity of each separator may be measured in output units, not input units, in which case the separators can process berries faster than assumed in the analyses described in this article. Or perhaps berries held in temporary holding bins for long periods during peak days require little additional drying. Indeed, according to Bohn [1989], the actual resolution of this problem was that wet berries were found not to need drying to the extent suggested in the case. (Perhaps the existing dryers would continue to be used, but berries would be processed through them as fast as needed to prevent slowing down any other part of the process, especially separating and shipping.) Obviously, finding that out early in the process would prevent the analyst from carrying out extensive work based on inappropriate assumptions.

It is important to recognize that the object of publishing these analyses is not to illustrate the most effective process of reaching the best managerial decisions in this particular case, but to illustrate the model-building process, which is a dynamic, evolutionary process through multiple perspectives, models, insights, questions and reexaminations of the data, tentative conclusions, clarifications of assumptions, and so on. Thus, while many of the analyses in this article may have no direct payoff to RP1, they do help illustrate the variety of analyses that can be carried out in practice.

> Students who become expert at case analyses may in practice make recommendations based on scanty information.

Incidentally, even if wet berries need no drying, there are still some useful recommendations that emerge from the analyses presented here: Processing berries should start early in the day during the peak season. On a 22,000 peak day, starting at 7:00 AM and processing at 1,200 bbl/hr puts 14,400 barrels out of the plant by 7:00 PM. Only 7,200 of the 7,600 difference can be stored in the holding bins, so there will be some trucks waiting on such days. Starting any later in the morning creates longer lines and should be avoided. Establishing two shifts for the entire plant is still a good idea. There are still benefits to reducing the interday arrival variability over the peak season and to reducing peak season average daily volume.

It is important that analysts and managers maintain close communication throughout the entire implementation process: It is very difficult to implement surprises, so this constant communication will lead to better acceptance of the emerging recommendations.

**Conclusion**

Some expressed concern that publishing analyses of this famous case would render it unusable in class, in that students might read this article and then either (1) not wrestle with an analysis of their own, or (2) claim personal credit for some of its analyses. I have never heard of many of the analyses presented here being generated by students in a case discussion. Reading these analyses might inspire students to seek more depth or breadth in their analyses of subsequent cases they are assigned. It might be worth assigning this article as part of the assignment for this case for that reason.

The analyses here illustrate one of the well-known weaknesses of case studies: The important practical process of (1) determining what data are readily available, (2) doing an analysis with those data that guides the research team to either seek new data or conduct more refined processing of existing data, and (3) repeating the process appropriately many times is missing. The risk is that students who become expert at case analyses may be inclined in practice to make recommendations based only on scanty information, never appreciating the trade-off between spending more time and money to gather more data versus possibly implementing a poor decision. The classical MS/OR methodology of sensitivity analysis can be used to guard against this problem by determining the range of parameter values over which certain options outperform others. Obvious candidates are (1) the truck-waiting cost and (2) the distribution of daily volumes over the peak season. While sensitivity analyses should not be conducted in practice when just a little additional digging would reveal the true parameter values, they can play a valuable role when extensive time and effort would be required to nail those parameter values down. However, few MS/OR analysts would carry out a sensitivity analysis over the extent to which wet berries need drying. That is, sensitivity analysis should never be used as an excuse for not communicating.

Although this article is exhausting, it is not exhaustive. One could conduct other possible analyses and apply other relevant perspectives. For example, it is notable that little in the way of sensitivity analysis, as just described, has been conducted. One might develop one or more grower harvesting models, to meet needs expressed in this article. Another might address redesigning the incentive contracts so that truck waiting and other grower consequences are direct concerns of the RP1 plant manager and others. One might analyze the possibility, and consequences, of the growers being risk averse. Some of the options discussed in this article require substantial organizational change, and one might take a behavioral perspective to address the process by which that change might be successfully implemented. Another might take a game theoretic approach that seeks equilibrium solutions when taking the competing interests and decision-making options of the different parties in the enterprise into account. Yet another might take a political economy approach and address the design of the decision-making process (for example, growers vote on the option of their choice, with majority ruling, revote with the lowest vote getter removed if no majority is obtained). I encourage authors with new analyses leading to important new insights to submit them for possible publication in *Interfaces*. I also encourage authors to submit new cases and their analyses to me for possible publication in the Case Analysis section of *Interfaces* (see Part 1 of this article).

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