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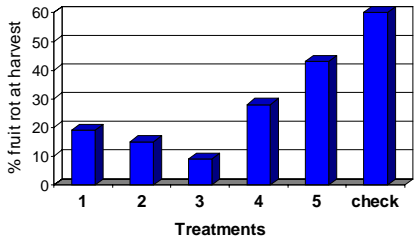
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A newsletter for the cranberry growers of Clement Pappas & Co.

Timing Fungicide Applications for Fruit Rot

*From informatin submitted by Dr. Patty McManus,
UW- Plant Pathology Department*

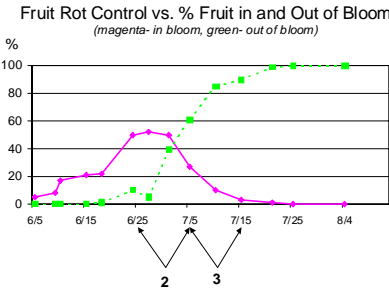
In remarks to Wisconsin cranberry growers at the Wisconsin Cranberry School, Dr. Patty McManus stressed that timing of fungicides should be from bloom to early fruit set. That timing is based primarily on the research of Dr. Peter Oudemans at Rutgers University and Dr. Frank Caruso at the University of Massachusetts.



Dr. McManus had the following considerations for growers for 2004: If rot was less than 10% in 2003, take your chances in 2004 - fungicides are not likely to pay for themselves. If rot was greater than 15%-20%, and pathogens were identified in rotten fruit, then fungicides are probably justified. Bravo has the proven track record *if sprays are started during*

full to late bloom. Abound is as good as Bravo in some but not all trials. It is safe to apply during bloom.

Unfortunately, pathologists are unclear on which species of fungi are releasing spores when. Consequently, spray programs are not fine-tuned for controlling specific pathogens (e.g., no specific program is available to control *Colletotrichum*). Assume that pathogens are present and apply broad-spectrum fungicides when plants are most susceptible to infection: bloom through early fruit set stages.



Response to Dr. Tillotson's Letter to Cranberry Growers

By Peter Pappas

Dr. Tillotson is, without a doubt, a highly intelligent if not brilliant individual. His education and academic standing is impeccable. While I do not possess his credentials, I do take issue with some of his observations and conclusions in the January 5th letter that he published on the "Cranberry Stressline" to growers. I would like to share some of my thoughts with you as well as my optimism long term for the continued growth of cranberry beverages as well as other cranberry products. My optimism also extends to growers large and small who manage their operations well and maintain high levels of productivity.

Health Issues

First, I do agree with Dr. Tillotson and ABC that obesity, dietary patterns
(Continued on page 4)

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Dean Pappas Elected Chairman, National Food Processors' Association

Dean Pappas, CEO of Clement Pappas & Co., Inc., has been elected Chairman of the National Food Processors Association (NFPA). The NFPA is the voice of the \$500 billion food processing industry on scientific and public policy issues involving food safety, nutrition, technical and regulatory matters and consumer affairs. It is the principal scientific and technical trade association for the food industry and has more than 300 food processor members.

Dean Pappas is a 30-year member of the Association and has previously served on the board of directors and executive committee. As chairman, Dean recently outlined objectives for the association including insuring that the association members continue to lead industry efforts in strengthening the nation's food security and compliance with security regulations. Another goal is to increase the involvement in NFPA by small and medium sized companies.

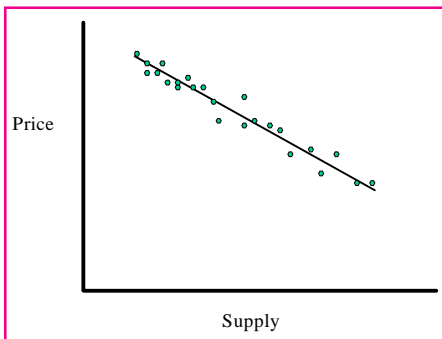
Statistical, Mathematical, and Common Sense Analysis of Cranberry Pricing

By Brooke Peterson

Confused about cranberry pricing? Do you know what the average price of the 2004 crop is likely to be? Most people working in cranberries will admit that estimating a price is no simple task. Cranberry pricing is not 'supply and demand' economics in its most simple form.

Cranberries *are*, however, like most other commodities- the price *generally* follows the law of supply and demand. According to this law, the larger the supply, the lower the price and the smaller the supply, the higher the price. This supply and demand relationship can be mathematically and statistically measured to better understand cranberry price changes. With enough history (yearly price and supply data points), it should even be possible to reasonably predict the price, given a known supply. Every cranberry grower knows that the supply/demand model, when used to predict price, hasn't worked too well. This article takes a closer look at the cranberry supply/price model and suggests some reasons why the fit isn't perfect.

Predicting the cranberry price, in any given year, is not a simple thing. None of us can go to a chart hanging on our office wall and say, "Because the production of cranberries this year is projected to be X million barrels, the price will be \$X per barrel." As alluded to earlier, the cranberry price is not satisfactorily explained by a classic supply/price curve. The following comments attempt to explain why this is so:

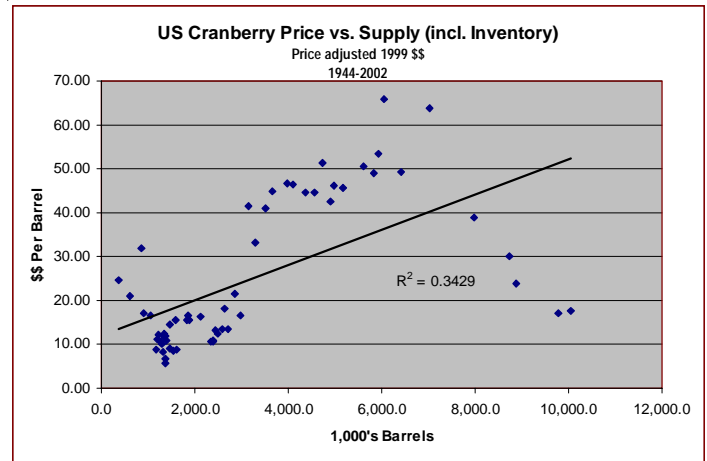


Graph 1

historically, have not conformed to the classic supply demand curve depicted in Graph 1. Graphing the supply and price for cranberries, for the period from 1944 to 2002 shows that, as the supply grew over many years, so did the demand (we know that this is so because the price¹, even excluding inflation, continued to increase as much or more than the supply. See Graph 2). Both supply and price increased until 1998, when the inevitable happened. Supply finally caught up with, and passed, the demand.

In a perfect world, there would be a clearer relationship between price and supply. The relationship could be graphed and the results would look something like Graph 1.

Cranberries,



Graph 2

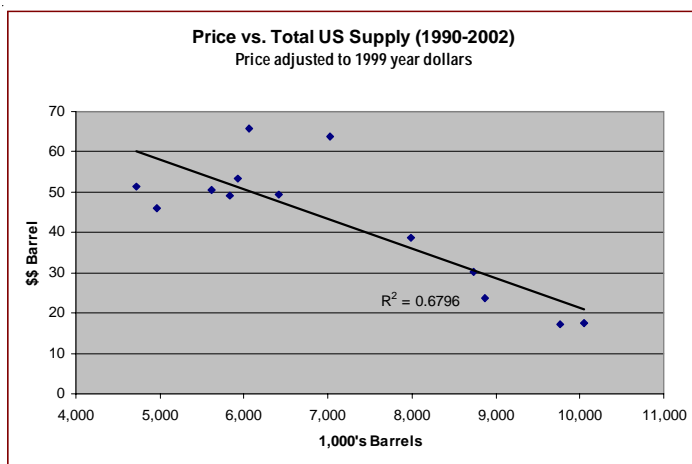
The price crashed. No cranberry grower needs a detailed review of this period.

What's important, for the purposes of this discussion, is that there was a very long history in cranberries (1944-1998) with a shifting demand curve. The supply and demand principal was still working, but this relatively long history of increasing supply *and* demand means that, for purposes of developing a solid price prediction tool, we don't have one. Look more closely at Graph 2. There are a couple of things "weird" about Graph 2. First of all, the slope of the trend line is in the *wrong* direction. A classic supply/demand line is supposed to be sloped from the upper left to the lower right. The line is sloped in the "wrong" direction because of the shifting demand.

There is another number on Graph 2 that is worth looking at, and that doesn't bode well for having a good price prediction tool based on long-term supply and price data. It is the R^2 value, which is the correlation coefficient. In statistics, the correlation coefficient is a value, from 0 to 1, that describes the degree to which one factor (e.g. price) can be accounted for by the value of the second factor (e.g. total supply). If a one-barrel change in supply always resulted in exactly the same unit change in the price, and if this number never varied, we would have a correlation coefficient of 1 (a perfect correlation). Statisticians feel there is a pretty good correlation when the R^2 value is 0.8, or larger. The R^2 value (correlation coefficient) in Graph 2 is 0.342. That is a lousy correlation. This low correlation is apparent when you look at the data points scattered around Graph 2. The data points in Graph 2 look like they were applied with a 20-gauge shotgun at a not-too-close range. If all the data points were closer to the line, the correlation coefficient would be higher. Bottom line: Price and supply history from 1944-2002 isn't going to be useful

(Footnote)

¹The historical price and volume information for this article came from Dr. Ed Jesse, University of Wisconsin. Dr. Jesse is an invaluable source of information, (particularly price modeling and forecasting) on the U.S. Cranberry Industry.



Graph 3

in predicting the future cranberry price. What about more recent history (post 1989), when we know that, in at least some years, supply exceeded demand? This time period, although relatively short (e.g. not providing too many data points - the more the better), may provide a better price and volume history. At least 1990 - 2002 is the recent past.

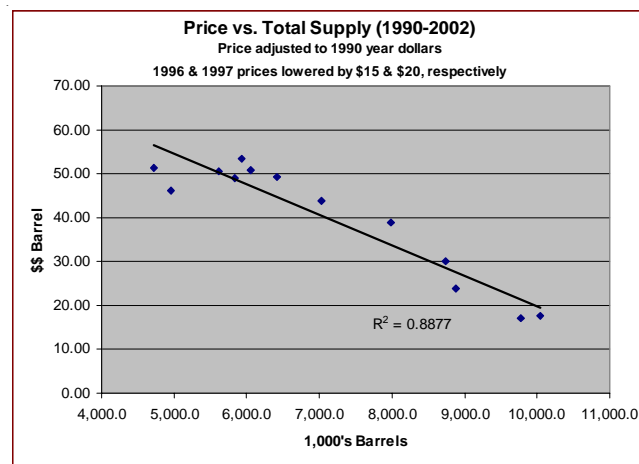
Graph 3 shows the supply/ price curve for cranberries for the period from 1990 to 2002. This graph looks more like a typical graph showing supply vs. price. The line is sloped in a logical direction and the correlation (statistical relationship between supply and price) is a vast improvement over the same graph for the 1944-2002 time period. Looking closely at Graph 3, you can see two data points that are quite a ways above the line. These two points represent the years 1996 and 1997, when the price was exceedingly high. Graph 4 is the same as Graph 3, except that the 1996 and 1997 prices were arbitrarily lowered by \$15 and \$20 below the actual prices. Notice that the correlation improves from 0.6796 in Graph 3 to 0.8877. Because the correlation is acceptably high, this graph could be a good indicator of future cranberry prices. Why wouldn't this graph work? That's where we have to consider some things that are simply not on the graph

Conclusions:

Long term cranberry pricing history does not provide a very good model to predict prices. More recent pricing history (1990 to Present) does a better job of capturing recent history affecting price and is a much better fit in a classic supply / price model. The correlation between price and total supply during the 1990-2002 period may be a good indicator of prices to expect in the future, with a given supply.

Added thoughts:

Industry infrastructure can influence pricing and ultimately supply. When there is one buyer who controls the majority of the market, the other buyers will tend to



Graph 4

follow the major buyer in order to be competitive. Supply and demand will dictate that if one buyer or group of buyers continuously offers a better price to growers, sellers will shift to those buyers. If this happens, the influence of the major buyer is eventually diminished.

Five major handlers purchase about 98% of US Cranberries. All of these handlers compete in the same competitive markets and can't afford to pay a price vastly different from the others. The varying efficiencies and management skill of different cranberry buyers will affect their ability to pay a price different from other handlers. Ultimately, the laws of supply and demand will dictate price. How the laws of supply and demand can be managed and its affect on the short and long term health of the industry is the subject of future article.

(Footnote)

² The price, as shown in Graphs 1 - 4, is the USDA weighted average price for fresh and processed cranberries and normalized to a 1999 value.

Peg Brehm Joins Clement Pappas



This fall, Peg Brehm, Vesper, WI, joined Dale Johnson, Wisconsin cranberry grower and consultant for Clement Pappas, and Brooke Peterson, Director of Grower Relations, in serving Wisconsin Cranberry Growers. Peg is a Partner in Highlander Cranberry Company in Vesper. Most Wisconsin

growers had a chance to meet with Peg last summer, when she visited each of their marshes while doing a statistical crop forecast. She is now available as a Clement Pappas contact person for existing or perspective Wisconsin growers. Wisconsin growers can contact Peg on her cell phone, 715-213-4793 or home phone, 715 569-4517.

Response to Dr. Tillotson's Letter to Cranberry Growers

By Peter Pappas

Continued from page 1

and lifestyle issues in our country as well as in other evolving societies have and will continue to be a major issue. We have a healthcare crisis in this country that is eating up an increasing share of our income and detracting from the quality of our lives. The government and our institutions will place a greater focus on diet and its relationship to health and wellness. This is an evolving process that will indeed have a growing impact on our food and beverage industry. However, he and ABC are picking on the wrong culprit and candidate for being the loser in this evolving process. Cranberries and cranberry products have a special place in our society and are providing real healthful value to consumers.

Cranberries are a unique fruit in our American culture. They are tied to our nation's very beginning and to our folklore that we rekindle each Thanksgiving. We have a warm, good feeling about cranberries which over the past decade has been reinforced through some very positive research about their healthful properties.

In fact, the health benefits of many of the fruits and vegetables we traditionally consume have been revealed through modern science. Recent medical studies have demonstrated that fruits and vegetables play a far greater role than just providing vitamins and conventional nutrients. These include a broad spectrum of benefits to our mental and physical processes by promoting health and fighting disease (cardiovascular, cancer, Alzheimer's, antibacterial, etc).

To date, medical research has indicated that some of these benefits are very specifically linked to a

particular fruit or vegetable or to just a few. Cranberries very much fit into this situation and do provide one unique protective property that one cannot obtain from virtually any alternative source. While there is good reason to believe that cranberries have additional health benefits, adequate scientific research has not been completed to establish these.

Dr. Tillotson's comparison of the calories between traditional cranberry juice beverages and sodas is totally unfair because he fails to compare their healthful properties. While sodas contain empty calories cranberry juice beverages do not, as I noted above.

Dr. Tillotson also is off base when he blames the food industry and Ocean Spray for failing to respond to the obesity issue. In fact, the amazing thing about cranberries is their ability to deliver unique benefits in a diluted form (25-30% single strength). This has allowed the industry to combine healthful cranberry juice with non-nutritive sweeteners that are now pleasant tasting and offer consumers an 8oz. serving with less than 10 grams of carbohydrates and less than 40 calories in addition to an added 100% RDA of Vitamin C. For my money, this makes for a pretty good dietary choice even if one does not consider how unique, flavorful and refreshing an ice-cold glass of cranberry juice cocktail can be!

Keeping Ahead of the Game

The juice industry and more particularly the cranberry industry has to do a lot more research and in turn educate the public on the healthfulness of our products. In fact, a look at the grape juice industry provides a great example and lesson for our industry and refutes Dr. Tillotson's



observations. Through continuous research and promotion of the health benefits of grape juice, (which is substantially higher in calories and carbohydrates than cranberry juice cocktail) unit sales have increased in conventional food stores by over 8% over the past 4 years and by a whopping 11% during the height of the Atkins craze over the past 52 weeks. These results did not happen overnight. Welch has spent more than a decade in underwriting research and becoming involved in a whole host of public relations, promotional and advertising activities to create this positive result.

The challenge to our cranberry industry is to create the same kind of success story that Welch has. I am heartened to note that the Cranberry Institute has begun this process. It is in the long-term interest of every grower, handler, and processor to support this health research and promotion activity. This is not necessarily going to be a quick fix but more likely a process of slowly building credible research and then expending the necessary resources to strategically publicize this information.

Is it a good or bad situation that Welch has managed to motivate the average American to consume more grape juice? I am not positive, but do know that my doctor tells me to drink around 10 glasses of red wine per week. The reality is that what is a



healthy diet and lifestyle is not a simple question to answer and is not even the same for each of us. The most important issue with obesity and health relates to having an educated public that knows the relationship between food and their nutritional needs, understands the importance of exercise and matches their caloric intake to the energy they expend. With the cranberry products in the market today consumers have an ability to access their healthful benefits in a number of forms that should not interfere with any dietary issue. The challenge of our industry is to get this message across like Welch has and is continuing to do so successfully.

Cranberries are Unique

While I agree with Dr. Tillotson that we are moving rapidly toward a more competitive and consolidated global agricultural landscape, I do not believe it is so true of cranberries. There are several reasons for this.

First, cranberries are a relatively low labor input farm commodity where labor cost differences between here and third world economies are not the major factor that they are for tree fruits or small fragile bush berries. Second, cranberries are a small, specialized crop. There is almost no fresh fruit market and the processing market is thin and fragile with a very limited number of buyers that typically have close long-term relationships with their growers. Third, I don't see where there are very significant economies of scale between relative small and very large

growers. We see fifty-acre growers that are more efficient than 500-acre growers in the same region. Fourth, cranberries and cranberry products require refrigerated storage and transportation, which adds cost the further they have to be transported.

Lastly, cranberries grow well in unique habitats that do not exist in abundance throughout the world and require very specialized technology and local knowledge to produce efficiently.

Working Harder & Smarter

The real concern for cranberry growers should be to improve productivity, to keep up with best industry practices, and to stay competitive with alternative fruits. We are living in a world where there is tremendous downward pressure on prices and where the opportunities for better returns lie in taking cost out of operations. Consumers are being provided with increasing options in what is available for them to eat and

drink. They are and will become better educated on what is good for them and its relative value. As an industry we all must work harder and smarter to drive the value of what we sell up while driving down its cost.

The Cranberry Connection

A newsletter for the cranberry growers of
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Fun in Wisconsin:

August in Wisconsin brings warm weather, picnics and parades. Emily and Katie Steward along with Christa Brehm dress up like the famous Warrens Cranberry Princesses for the annual Vesper Fireman's Picnic Parade. The girls are daughters of Cranberry Growers Norb & Reina Steward and Dave and Peg Brehm.

Cranberry Juice, Cocktail, and Sauce Sales

By Brooke Peterson

Two doors down the hallway from my office is Shawn O'Connell's office. His title is Marketing Manager and an important part of his job is to track and understand how cranberry categories are performing and how the individual companies that make up the categories are performing. Shawn is a good source of information on sales and sales trends in cranberry. Shawn recently shared information with me from the 52-week sales period ending November 30, 2003. The data he shared was gleaned from IRI InfoScan. Industry sales of cranberry sauce, cocktail and juice to the supermarket trade are a little less than flat versus the previous period



[cranberry sauce, (-4.07%), cranberry juice cocktail, (-3.89%), cranberry juice blend, (+1.39%)]. Private label sales for cranberry cocktail and juice are out-performing the brands sales (Cranberry Cocktail (-0.4%) & Cranberry Juice (+2.4%)). Cranberry sauce is slightly under performing the brands (-5.0%). Within the cranberry cocktail category, sales of light cranberry cocktail products are up significantly. We (and likely everyone else) are re-emphasizing our light style juices to capture sales from the low-carbohydrate craze. Where that craze takes the cranberry industry is only a guess at this point, but a trend worth watching.

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