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## IS THE TEXAS PECAN CHECKOFF PROGRAM WORKING?

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The Texas Pecan Board (TPB) was established under the Texas Commodity Referendum Law (Texas Agricultural Code Chapter 41) in August of 1998 to administer the Texas Pecan Checkoff Program. The law authorizes TPB to promote pecans in an attempt to increase the welfare of Texas pecan growers. This study statistically analyzes the promotion program and addresses the general question of whether or not the program is working as intended to increase sales of Texas pecans. More specifically, the study focuses on the answers to two key questions:

- What have been the effects of the Texas Pecan Promotion Program on sales of Texas pecans?
- What has been the return on investment made by Texas pecan growers on the promotion of sales of Texas pecans?

The pecan industry functions in a market relatively free of government intervention and supplies a perishable, perennial commodity with a natural tendency for yields to fluctuate widely from year to year. The alternate bearing nature of the pecan creates a pattern of high production in one year followed by low production in the next, often referred to as the “on” and “off” years, respectively. Besides the “on” and “off” year behavior of production which affects annual availability of pecans for sale, many other forces affect the sales of pecans each year, among the most important of which is the price of pecans. Because the pecan market is relatively free of government intervention, the price of pecans is determined primarily by the forces of supply and demand. There are hundreds of pecan varieties throughout the world, classified as either native or improved varieties. Trees that have not been grafted or budded are referred to as native or seedling. On the other hand, improved varieties are those that have been genetically altered through selection and controlled crossing to yield desirable characteristics such as high kernel percentage, low yield variation, and resistance to diseases and insects.

Improved varieties sell at a premium to native varieties. Quality tends to be a major factor in the differentiation of pecan prices and is a function of certain physical characteristics, including meat yield, color, size, minimal foreign material, and shell-out ratio. Research has determined that the shell-out ratio has the most significant impact on pecan prices. Research has also found that growers who achieve higher yields also tend to achieve higher quality in their crop. Thus, because higher quality nuts sell for higher prices, growers with higher yields tend to receive higher prices.

The United States produces more than 80% of the world’s supply of pecans. The pecan is grown throughout the southern United States from California to Florida. The volume and value of pecan production has been growing steadily for the past thirty years with improved varieties accounting for the majority of the growth. Although pecans are grown statewide, the principal producing counties in Texas are Comanche, El Paso, and San Saba. Although the Texas harvest

begins in mid-September and ends in late January, most of the harvesting activity takes place between mid-October and mid-December.

The “on and off” year behavior of pecan yields which affects what is available for sale tends to be more apparent in native/seedling varieties than is the case for improved pecans. Because Texas has historically produced an above average percentage of native/seedling varieties, the “on” and “off” year phenomenon is more apparent in Texas pecan production and sales data than is the case for many other states. Texas sales of improved varieties have been increasing over the past thirty years just as sales for native/seedling varieties have been on the decline.

The Pecan Promotion and Research Act of 1990 established a national pecan checkoff program that was implemented in 1992. A producer referendum on the continuation of the program in 1994 required by the Act failed and the program was terminated on March 15, 1994. The Texas Pecan Board (TPB) was established in 1998 with its first year of promotion occurring in crop year 1999/2000. Revenues to support the TPB promotion efforts come from a one-half cent per pound assessment on all pecans sold from growers to a first handler. Under the Texas Pecan Checkoff Program, growers with 500 pecan trees or more and at least 15 acres are required to pay the assessment. The assessment is due when the pecans are first processed or shelled. Because the checkoff program is mandatory, the first handler is required by law to collect the assessment from the grower and then report and submit it to the Texas Pecan Board.

Because there is little or no enforcement of the mandatory provision of the checkoff program, only about 44% of the available funds are collected on average each year which effectively limits the potential impact of the Texas Pecan Checkoff Program and suggests that there may be a free rider problem. Assessment revenue has varied between \$85,500 and \$167,600 per crop year since the program was established. Revenues were at their highest during the 1999/2000 crop year but have been on the decline ever since. Total TPB crop year expenses have varied between \$70,100 and \$161,600. Expenses on promotional activities have ranged from \$58,700 to \$145,200 per crop year with an average of \$90,600. For analyzing the effectiveness of the pecan promotion program, TPB promotion expenditures were divided into seven categories: (1) the ambassador program, (2) festivals and conferences, (3) clipping service, (4) research, (5) website, (6) media, and (7) other promotion. Media has been the largest expense category accounting for more than 60% of total promotion expenditures.

Because a growing proportion of U.S. pecans are exported (from 2% in 1980/81 to 41% in 2006/07), past research on pecan promotion has focused primarily on export expansion programs rather than on domestic demand expansion efforts. There have not been any previous analyses of the effectiveness of either the national or Texas pecan promotion programs. For this analysis, three statistical models were developed and used to explain the effect of promotion expenditures on: (1) Texas sales of all pecans; (2) Texas sales of only improved varieties of pecans; and (3) Texas sales of only native and seedling varieties of pecans. In essence, the analysis isolates and measures the specific effects of the main factors, including promotion, that influence annual sales of Texas pecans over the 1999/00 through 2006/07 marketing years. Salient results from the statistical analysis include the following:

- *Sales of improved varieties of pecans are sensitive to changes in their price while those of native pecans are not.*

Price was found to be a statistically significant determinant of the sales of improved varieties of pecans but not sales of native varieties. The own-price elasticity of improved pecan variety sales was estimated to be -0.3231 indicating that a 10% increase in price leads to a 3.2% decline in sales of improved varieties. The statistical insignificance of price as a determinant of native pecans sales does not mean that consumers do not consider price when making their purchasing decisions. Rather, the results suggest that changes in price do not result in large changes in purchases of native pecans because purchases are more sensitive to changes in other variables like the availability of supplies for purchase.

- *TPB promotion expenditures have a statistically significant albeit lagged effect on the sales of Texas pecans measured in the aggregate.*

The analysis found that TPB promotion affects pecan sales with a one period lag. The promotion elasticity of Texas pecan sales over the period of analysis (that is, the responsiveness of sales to a change in promotion expenditures) was estimated to be 0.03114 meaning that doubling promotion expenditures (a 100% increase) in one year leads to about a 3.1% increase in pecan sales in the next year, a result consistent with the calculated promotion elasticities reported for other commodity promotion programs.

- *Promotion expenditures are a statistically significant determinant of the sales of only improved varieties and not those of native varieties of pecans.*

When aggregate pecan sales were decomposed into sales of improved varieties and sales of native varieties and analyzed separately, promotion expenditures were found to be a statistically significant determinant of the sales of improved varieties but not of native varieties. The promotion elasticity of improved variety pecan sales (the responsiveness of sales to promotion expenditures) was estimated to be 0.042 meaning that a doubling of expenditures would result in a 4.2% increase in sales of improved pecans in the next period. For native pecans, promotion expenditures were found to have no statistically discernible effect on sales.

- *The availability of pecans for sale each year and the on-going shift in composition of sales from native to improved varieties are major determinants of annual sales of Texas pecans.*

The availability of pecans for sale each year was found to be a highly significant determinant of the sales of both improved and native varieties of pecans. Perhaps the most important determinant of pecan sales in most years is yield variation which constrains the availability of pecans for sale in some years and allows greater market responsiveness in other years. At the same time, the shift in the composition of sales from native to improved varieties was also found to be statistically significant in explaining the changes in Texas pecan sales over time.

- *Texas pecan sales are not affected by changes in the prices of competing nuts or of consumer income.*

The statistical analysis found no statistical relationship between changes in sales of Texas pecans and changes in the market prices of almonds or walnuts or changes in consumer income. Again, these results do not mean that buyers are not concerned about changes in these variables as they make their buying decisions but rather that other market forces such as availability are of primary importance in their purchases of Texas pecans.

The results of the statistical analysis were used to determine answers to the two key questions that are the specific focus of this study. The analysis of the first question focused on whether the expenditures of pecan checkoff assessment revenues by the TPB to promote Texas pecan sales have effectively and consistently increased the sales of Texas pecans over the eight-year period of 1999/00 to 2006/07. A benefit-cost approach was used to analyze the second question regarding the return to Texas pecan promotion activities. In general, the study concludes that pecan promotion and advertising expenditures by the Texas Pecan Board and funded by the Texas Pecan Checkoff Program since its inception in 1998 have been effective in augmenting Texas pecan sales. More specifically, the study finds the following:

- *The TPB promotion program has effectively “moved the needle” for pecan sales.*

Promotion expenditures since the inception of the Texas Pecan Checkoff Program have added an average of nearly 2.7 million lbs annually to Texas pecan sales for a total of 21.5 million lbs (4.9% of actual sales) from 1999/00 through 2006/07 that would have not been sold without the promotion program. In terms of industry revenue, the promotion program added an average of nearly \$3.7 million annually for a total of over \$29.4 million in additional sales of pecans over the period that would not have occurred without the promotion program.

- *Sales of improved pecan varieties have been the main beneficiary of the promotion program.*

The promotion-led increase in sales experienced by the Texas pecan industry has been composed primarily of improved variety pecans rather than native pecans. Since its inception, the Texas Pecan Board has focused on increasing the visibility of pecans for home consumption and, by doing so, may have unintentionally promoted sales of improved varieties of pecans rather than sales of native pecans since improved varieties tend to be used for home consumption while native pecans tend to be used for food and candy production.

- *TPB pecan promotion program has generated a net industry revenue of \$36 for every pecan checkoff dollar spent on promotion or \$30.5 on a discounted, present value basis.*
- *In terms of sales, the TPB promotion program has generated 26.4 lbs in additional sales of improved varieties of pecans per dollar spent on promotion.*

The analysis presented in this study also provides some important insights for management of the pecan promotion program:

- *The Texas Pecan Promotion Program is greatly under-funded.*

The BCR calculated for the Texas Pecan Promotion Program seems high relative to those generally reported for the larger commodity promotion programs. Given the low level of promotion expenditures for Texas pecans compared to those of the major checkoff commodities like cotton, soybeans, beef, and pork, however, the somewhat higher BCR found for Texas pecans is not unreasonable. The higher BCR implies that while Texas pecan promotion efforts have been successful, the promotion activities also are greatly under-funded. Both experience and the theory of advertising suggest strongly that a substantial increase in funding over time would likely reduce the Texas pecan BCR to levels more in line with those of the better-funded commodity promotion programs.

- *Free riders are limiting the funds available for promotion and industry revenues.*

Less than half of the required assessment revenues are actually paid and remitted to TPB each year which effectively limits the potential impact of the Texas Pecan Checkoff Program. The consequence is that a large portion of the additional industry revenues generated by the pecan promotion program is being earned by those who have chosen not to contribute to the cost of the promotion. The current assessment rate is too low to fund promotion programs and, at the same time, pay the necessary cost of a collections program. The result is that free riders are allowed to enjoy the benefits of the program without being required to pay the cost.

- *A high BCR does not imply a large impact of the program on sales.*

The high estimated BCR should not be mistaken to imply large absolute impacts of the pecan checkoff program on Texas pecan sales. A BCR of 36:1 results by dividing a \$36 billion industry profit benefit by a \$1 billion checkoff investment or by dividing a \$36 benefit by a \$1 investment. In fact, the high BCR found for the pecan promotion program is the result of dividing a small increase in industry revenue from the promotion program by an even smaller expenditure on promotion. The high estimated BCR means that the Board has accomplished a lot with very little funds. In an effort to encourage compliance with the assessment requirement or to sell the program during a referendum, however, the temptation is for the Board to imply that the high BCR found for the promotion program means that the program has been a major factor influencing Texas pecan sales. This misinterpretation of the BCR is a common occurrence among commodity checkoff programs and leads contributors to expect large impacts on their sales and revenues. When such impacts do not occur, support for the program among contributors begins to wane. A more prudent message to contributors is that the per unit return is large but on a very few dollars available for investment implying the need for more investment to achieve more meaningful returns. The promotion program could be better sold to contributors as a *producer controlled tool* that pays more than it costs to help reduce downside pressure on sales in bad years and contribute to sales in good years rather than as a panacea to the financial problems they may face.

- *Not all contributors receive the same benefits.*

The positive BCR calculated for the pecan promotion program indicates that contributors gain “on average” from the program. Research has shown, however, that the benefits of a checkoff program may not be evenly distributed among contributors with some gaining more than others. The research suggests that more of the benefits accrue to larger producers although smaller producers benefit more in terms of the net revenues accrued *per unit of assessed checkoff*. If the smaller producers tend to be the higher cost producers and the large producers tend to be the lower cost producers, then the high cost producers benefit the most and the low cost producers benefit the least. That is, those that pay the most receive the least per dollar that they pay in checkoff assessment. Thus, a checkoff program works as a mechanism to redistribute income from large, low cost producers to small, high cost producers. If this is the case and the differences in benefits are substantial, larger producers may begin to feel somewhat disenfranchised over time and to be less supportive of the checkoff program. Several checkoff programs (for example, beef and cotton) have experienced such problems which has led to protracted court cases related to the mandatory nature of the program.