

Key Economic Issues in Commodity Tree-Pull Programs

by Matt A. Andersen and Richard J. Sexton

An important trend in California agriculture during the 1990s was the shift of agricultural land from annual crops, such as grains and cotton, into perennial tree fruit and nut and vine crops. This trend was caused by superior profitability of these crops relative to most annuals during this time period. See the lead article in this issue of *ARE Update* for further discussion of this and other key trends in California agriculture.

A not surprising outcome of the increased plantings in perennials is that supply has now increased relative to demand for most of these commodities, causing low prices and profitability. Oversupply problems are especially troublesome for perennials because the up-front costs of establishing the orchard represent a large percentage of the total production costs. These costs are “sunk” in the sense that they are not recoverable even if production of the crop is halted. As a result, supply of perennial crops tends to be very unresponsive or inelastic to price changes, meaning that oversupply problems are not readily corrected by price signals emanating from the market.

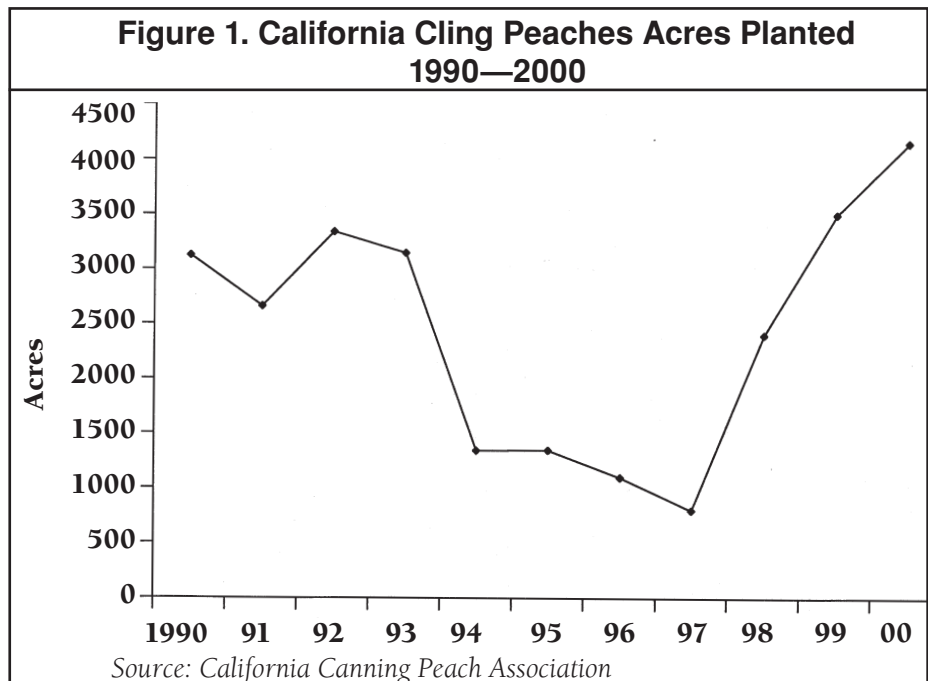
Tree/vine removal programs are being considered presently by several California perennial crop industries as a way to address the oversupply problem, and increase prices and profitability. The California pear and canning peach industries established tree-pull programs during the 2000 crop year. These industries have been buffeted by slow growth in the canned fruit sector and the bankruptcy of Tri-Valley Growers, one of the major pear and peach processors in the state. The California dried plum (prune) industry is planning to operate a tree-pull program to be effective for the 2001 crop year. Several other

commodities, including apples, raisins, and apricots, are also in various stages of discussion regarding programs. This article examines the key economic issues pertaining to tree/vine-removal programs.

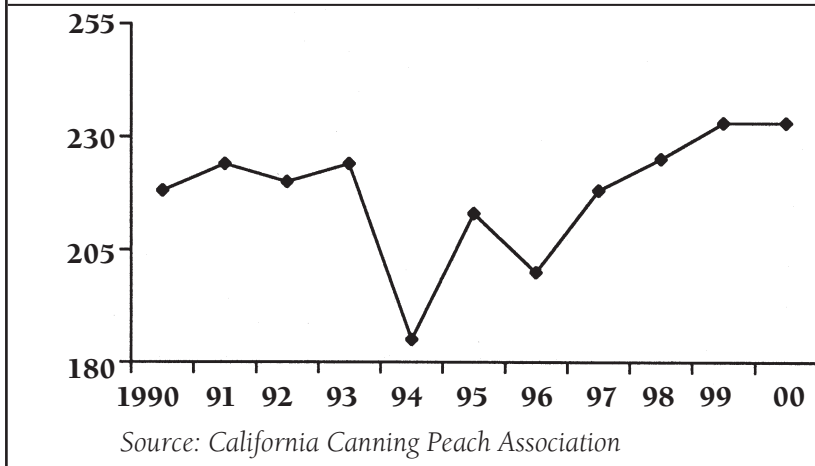
Figures 1 and 2 focus on the cling peach industry to illustrate some typical trends for California perennial crops. Figure 1 shows that a sharp upturn in plantings of peach acreage occurred at the end of the 1990s, while Figure 2 depicts price trends over the past decade for cling peaches. For the most part, prices have been stagnant in nominal terms over the past decade, meaning that real prices and profitability have been declining. However, as the large 1998–2000 plantings begin to bear, significant price decreases are likely in the offing, unless the industry takes action.

Supply and Price Impacts

A first issue in designing and evaluating a tree/vine-pull program is the supply impact that will result from a program. The impact on supply will almost always be proportionally less than the amount of acreage removed because growers will elect to remove less productive acreage. Thus, a 10



**Figure 2. California Cling Peach Prices
1990—2000**



percent reduction in acreage will result in less than a 10 percent reduction in supplies. In some cases, growers may be compensated under a removal plan for marginal acreage that was targeted for removal in any event. Imposing a minimum yield threshold for eligibility helps address this problem. A second supply-side issue concerns replanting of the affected acreage. If growers are allowed to replant pulled acreage, the programs can have the perverse effect of actually increasing supply over the long-run because newly planted acreage is inevitably more productive than old acreage. A common feature among programs under discussion now is a five-year moratorium on replanting. This provides the industry some protection against replanting, but also means that a monitoring and enforcement mechanism must remain in effect well past the actual period of implementation of the program.

The price impact from the reduction generated by a tree/vine-pull program depends upon the price responsiveness, or elasticity, of demand for the commodity. The more inelastic the demand, the greater the impact on price for a given percentage reduction in supply. Figure 3 depicts two alternative farm-level demand curves. D_1 is more inelastic relative to D_2 . H^* is the commodity harvest in the absence of a tree-pull program, and H' is the harvest if a program is implemented. P_0 is the grower price in the absence of a program under either demand, but price rises to P_1 with a tree-pull program under the inelastic demand, D_1 , but the same supply reduction only raises price to P_2 under the more elastic demand, D_2 . Quite simply, tree pulls are more effective for commodities that face relatively inelastic demands.

UC Davis agricultural economists have studied the elasticity of demand for a number of the commodities. A recent estimate of the elasticity of demand for dried plums is -0.6 . This means that a 10 percent crop reduction for dried plums might be expected to increase price by about 16.7 percent. Conversely, the demand for canned pears is considerably more elastic, perhaps as high as -2.0 . The demand for pears for fresh consumption is likely to be less elastic than the processing demand, but the likelihood is that a tree-pull program for pears will have less of a price impact than an

equivalent program for dried plums.

The immediate price impacts from a tree/vine-removal program also depends upon the amount of commodity in inventory. Most fruits are readily storable in processed or semi-processed form. Rising stocks of inventories are a sign that a commodity is in oversupply relative to demand. The first impact from a reduction in harvests will be a reduction in inventories towards the desired levels. Little price impact at the grower level will be experienced, regardless of the underlying elasticity of demand, until inventories reach the desired levels.

Organizing and Paying for a Program

The structure of a tree/vine-removal program is a crucial dimension in its ultimate success or failure. Most of the industries contemplating removal programs operate under the auspices of federal or state marketing orders. These orders allow the industry to self-regulate in various areas such as promotion, research, grading and volume regulation, if they can agree to do so. Volume regulation is the most controversial function allowed under marketing orders, and it is the least utilized. The raisin industry is presently the only industry authorized to conduct a removal program under its marketing order. Other industries could seek approval from the California Department of Food and Agriculture (for a state order) or from the U.S. Department of Agriculture (for a federal order) to add a removal feature to their order. However, approval is not certain (the state in particular has been very reluctant to approve volume controls) and is a time-consuming process, likely requiring

at least two years from the time of initial request to ultimate approval. An advantage of conducting a removal program through a marketing order is that participation in the program is mandatory if the industry agrees on a program and the relevant state or federal authorities approve it. Mandatory participation need not mean that everyone must remove trees or vines. Rather, it means that everyone must contribute to funding the program.

One alternative route to the market-order process is a voluntary program operated under the auspices of a cooperative association. Involvement of a cooperative in a voluntary program is critical because the Capper-Volstead Act grants producers who act jointly in a cooperative limited protection from prosecution under federal or state antitrust laws. Without this protection, agreement to remove trees or vines could be construed as illegal collusion under the antitrust laws. A cooperative bargaining association is in place in most of the industries involved in removal plans.

Under a voluntary program, such as the one being contemplated by the dried plum industry through the Prune Bargaining Association, funds are collected through contributions by members of the cooperative and, possibly, processor and handlers, and utilized to induce members to remove trees/vines. Free riding is a key limitation on this type of program. Everyone in the industry will benefit from the higher prices and reduced inventories caused by a removal program, but only those who belong to

the cooperative association can be assessed to fund the program. Thus, growers who don't participate in the effort by remaining outside the cooperative benefit proportionally more than those who do participate. Although these growers cannot obtain payment to remove trees/vines, they incur no costs from the program, are able to harvest their entire acreage, and benefit from any higher prices generated through the program.

A second alternative is to secure U.S. Department of Agriculture (USDA) funds to operate a program. USDA has funding under a program called Section 32 to make commodity purchases to support industries experiencing severe problems due to oversupply and low prices. The conventional use of these funds is to purchase product from inventories and dispose of it through uses that do not compete with normal market channels such as prisons, school lunches, and food closets. Discussions center on whether such funds might be used to support tree/vine removal. From the perspective of the affected industries, this route is preferable because it leads to semi-permanent removal of supplies, as opposed to a one-time removal when product is purchased from inventories. If the USDA is willing to get involved in this manner, it surmounts the free-rider problem from a voluntary program because the costs of operating the program are effectively transferred to taxpayers.

In conclusion, high inventories and low prices are an unfortunate fact for many California perennial crops. Tree/vine removal programs are one way to attack the problem, but several issues need to be addressed. Will the acreage reduction be only temporary and lead to replanting with higher-yielding varieties? How will the program be funded? Voluntary programs are vulnerable to free-rider concerns, but provisions for mandatory programs don't exist in most industries. How much will price be affected? This answer hinges on the percentage of the potential harvest that is removed, the elasticity of demand for the product, and the movement of product from inventories.

Matt A. Andersen is a graduate student in the ARE department at UC Davis. He can be reached by e-mail at: andersen@primal.ucdavis.edu or by telephone at (530)752-6768. Richard J. Sexton is a professor in ARE who can be reached by e-mail at: sexton@primal.ucdavis.edu or by telephone at (530)752-4428.

