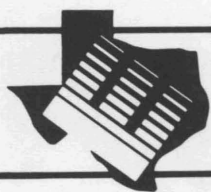# Texas Agricultural Extension Service

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HOW TO VALUE TREES PRODUCING ANNUAL CROPS

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Estimating the value of a single tree is often necessary for groves and orchards producing fruits and nuts. When trees are destroyed during natural disasters or as a result of condemnation for lakes, parks, mineral development for pipelines or drilling sites, chemical damage, or other such common occurrences in Texas, establishing value is important. It is difficult to value trees because they are fixed assets with an annual production that may extend across many years. Replacement of most annual crop trees is not possible in one year. Tree loss interrupts a flow of income in many circumstances without reducing the cost per acre of the remaining production units. Owners of groves or orchards can estimate the economic value of the individual trees by several methods.

Comparison Method

The simplest method is the comparison method. The comparison is between the fair market values (FMV) of grove or orchard lands and open-land acreage in the same general locale that have the same basic characteristics of soil type, irrigation, drainage, access to roads and urban areas, or other similarities. The difference in value between grove or orchard land and open land is divided by the number of trees per acre to determine the value of individual trees of similar age, condition and production.

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An example is an area where citrus groves sell for $6000 per acre and open land in the vicinity having similar soil characteristics and drainage sells for $2000 per acre. The $4000 difference is divided by 116, which is the typical number of citrus trees planted per acre. The resulting $34.48 is the estimated value each tree adds to the total value of the land in the grove. An example for pecans is an orchard planted with 35 trees per acre on land that sells for $3000 per acre versus open land of similar potential productiveness selling for $1000 per acre. The $2000 difference divided by 35 gives a value of $57.14 per tree. Older pecan orchards should have fewer trees; thus, each tree would have a higher estimated value.

The comparison approach is simple to compute and easy to understand. Adjustments may be necessary for differences in the tracts being compared. Also, this method usually results in the smallest valuation when compared with other methods of value estimation.

Replacement Cost Method

The second approach is the replacement cost approach. This method determines the cost of planting a replacement tree and the cost of maintaining this tree until it reaches the same productive stage as the lost tree. Recent figures for establishing a citrus grove indicate an annual cost of approximately $800 per acre for the first 5 years or until the new grove reaches its prime productive years. This is approximately $7 per tree per year for 5 years or around $35 to raise the young tree to maturity. In addition, lost production should be estimated and

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included. Assuming a grapefruit grove producing 25 tons of fruit per year and selling fruit for $100 a ton, the 5 years of lost income is around $108. That brings the tree value in terms of replacement cost plus lost income up to $143 per tree.

For pecans, recent estimates indicate total establishment and development costs of $1600 per acre to reach an economic production stage, usually 10 years. This is about $45 per tree. Lost production during the replacement period can also be estimated. Assuming 1500 pounds per acre nut production annually for the orchard at a price of 80 cents per pound, the lost production would be worth about $35 gross per tree per year. Production costs of $25 per tree would result in a net estimated loss of $10 per year per tree. Thus, the 10 years of lost income adds $100 to the development cost of $45 per tree for a total estimated value of $145 per tree.

The replacement cost method clearly results in higher estimated tree values. The major drawback to this method is estimating future prices. Records can determine historical grove yields, but estimating future prices with accuracy is difficult. Historical price averages covering multi-year periods may be appropriate figures.

Income Lost Method

A third approach is the income lost method. The destroyed tree interrupts the flow of income from the grove or orchard. The income lost method determines the expected years of remaining productive life of the tree multiplied by its expected contribution to income annually. For example: assume a 15-year-old Ruby Red grapefruit tree was lost. If the tree had an expected productive life of thirty years, the number of productive years lost to the grower is 15. Using figures from the previous example, the annual revenues foregone would be about $22 per tree. The annual loss of $22 for 15 years represents $330 in revenues lost from the destruction of each tree. This amount would compensate the owner for the income lost if that tree had remained in production.

A similar computation can be made for pecans. Pecan trees have an expected useful life of about 40 years. Thus, the loss of a 15-year-old tree means 25 years of potential income is lost. Annual production

of 70 pounds of nuts times an estimated price of 80 cents per pound would earn gross income of $56.00 per tree. Estimated production costs of $42 a year per tree leaves a net loss annually of $14 per tree. The 25 years of lost income would total $350.

The income lost method requires accurate projections of future fruit prices and production costs. Loss of trees with many years of remaining productive life magnify this difficulty. Further, some groves or orchards decline in production earlier than others, while superbly managed properties produce longer than those receiving average management.

Income Approach Method

Another method is the income approach method. This approach bases value on the net income produced by the acreage or tree being capitalized. The net income is divided by a capitalization rate to provide a capitalized value. Using previously assumed figures, a gross per acre income of $2500 in a grapefruit grove with an annual production cost of $800 per acre results in a net income of $1700 per acre. This equals about $15 net per tree. If the capitalization rate is 11 percent, the value of the tree, based on its productive value, is $136.

A pecan tree with net income of $14 per year and 11 percent capitalization would have an estimated value of $127 per year for the remaining useful life. Trees producing more income would have higher values. This method cannot be used for non-producing trees.

The capitalization rate can be a current interest rate or an annual rate established as of a given date. Open space land taxation in Texas uses the Federal Land Bank rate as of a specific annual date.

The income approach should average the net income over a multi-year period. Significant price variations are common from year to year in both fruit and nut production and a single year may reflect an extreme.

These four methods of determining tree value are not comprehensive. Other methods may be available or may be developed. Some of these methods may be combined. There is no one "best" method of valuation. The best method suits the specific situation and is agreeable to all the negotiating parties.