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Determining the Value of an Orchard Tree[1]

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Introduction

Determining the value of an orchard tree that has been destroyed by natural or unnatural causes is required for tax and insurance purposes and for Federal/State agricultural assistance programs. Coming up with reliable estimates is not simple and can be very expensive when hiring consultants. The purpose of this article is to provide step-by-step instructions for using the agecon-trec software program to estimate the value of a tree that has been destroyed.

Software and Basis of Calculation

This article explains how to use the agecon-trec software, which is found online at http://agecon-trec.ifas.ufl.edu/InteractiveTools.htm. Selecting the *Tree Value Analysis* icon from the set of interactive tools allows the user to input certain information to derive the estimated value of lost trees. Calculations are based on the present value of the net costs of replacing lost trees and nurturing replacement trees to the production equivalent of lost trees (Klonsky, 2004). Net costs include: (1) the cost of replacing trees (stump removal, land preparation, purchasing and planting new trees); (2) new tree cultivation costs (fertilizer, pruning, weeding) during replacement period; and (3) lost revenue from non-bearing trees. Stream-of-net-costs for bringing replacement trees up to the production equivalent of lost trees are discounted (discussed below) to determine the present value of a tree.

Steps for Calculating Tree Value

Step 1: Choose the Type of Tree

After accessing the TREC website, the first thing to do is to select the type of tree. Using the agecon-trec software, click on the drop-down menu and choose from the list of trees provided. For example, assume that you want to calculate the value of an 8-year-old avocado tree that was destroyed (lost). Selecting *avocado* from the drop-down menu opens up a screen with the default values for avocado trees (Figure 1). Total value of a lost tree is shown in the blue box. The pre-determined value is based on assumptions made from information obtained from

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IFAS personnel and selected growers. Assumptions are shown in the yellow boxes and can be changed at this stage to more accurately reflect an individual user's situation. The value in the blue box will automatically recalculate each time the value in any of the yellow boxes changes. For example, if the farm gate price were 25 cents instead of 36 cents, changing this value by typing in 0.25 would change the value of the lost tree from $128 to $80. This value uses median prices to compensate for fluctuations due to exceptionally high or low price years.

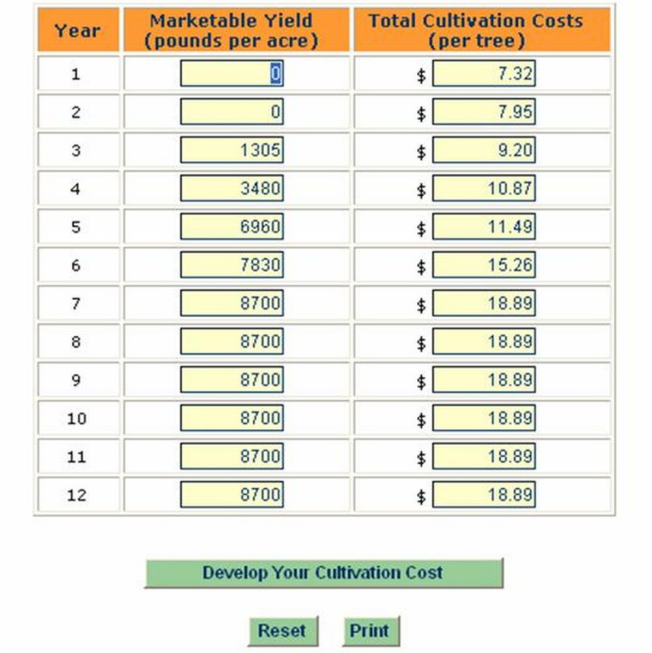
Figure 1. Tree costs analysis

While most of the entries are self-explanatory, three categories deserve an explanation: *Interest rate*, *Farm Gate Price*, and *Cost to plant new tree*. The interest-rate reflects the time value of money (i.e., money today is worth more than money in the future). The value provided is used to convert the stream-of-net-costs incurred over the years (i.e., the time it takes to bring a replacement tree to the productive equivalent of the lost tree when it was destroyed) into the current cost. The interest rate, for example, could be based on the value of a fixed-rate account at a bank or a 10-year U.S. treasury note yield (http://www.neatideas.com/10yrT.htm). The farm-gate-price is the actual price the grower receives after taking out marketing and harvesting costs. The cost-to-plant-new-tree is what it costs to dig a hole and set a new tree and any materials used to do so, such as stakes and twine.

Step 2: Change Yields and Costs Assumptions

As noted previously, tree value estimates are based on the assumptions made in Step 1. The agecon-trec software allows you to change the assumptions to suit your particular needs. Step 2 allows you to calculate tree values using your own estimated yields and costs by clicking on the *Change Yields and Costs Assumptions* button. This button opens up a screen which shows the IFAS assumptions for annual yields and costs per tree (Figure 2). Using

this screen, you can now replace all or some of the IFAS information in the yellow boxes with your own information. The value of the tree shown in the blue box will be automatically updated after you finish making your changes.



Year	Marketable Yield (pounds per acre)	Total Cultivation Costs (per tree)
1	0	$ 7.32
2	0	$ 7.95
3	1305	$ 9.20
4	3480	$ 10.87
5	6960	$ 11.49
6	7830	$ 15.26
7	8700	$ 18.89
8	8700	$ 18.89
9	8700	$ 18.89
10	8700	$ 18.89
11	8700	$ 18.89
12	8700	$ 18.89

Figure 2. Estimating total cultivation costs

Step 3: Change Cultivation Costs Assumptions

Step 3 helps you estimate annual cultivation costs. Clicking on the *Develop Your Cultivation Cost* button opens up a spreadsheet showing a detailed breakdown of the IFAS assumptions used to calculate annual cultivation costs per tree (Figure 3). Using this screen, you can now change the values provided in the yellow boxes. Opening this screen causes the the values in *Total Cultivation Costs* (Figure 2) to become blue since they will be automatically updated as you enter new data. Please note that none of the information you provide is saved. To keep a copy of the information you enter, click the *Print* button.

Concluding Remarks

Estimating the value of a tree is not straightforward, and replacing a tree can be very expensive. If a tree was bearing when it was replaced, consideration has to be given to the income lost and the net cost of nurturing a replacement tree to the equivalent production level of the lost tree. This article demonstrates only one of the ways that growers can assess tree value. The method used in this article is based on the current value of stream-of-net-costs in replacing lost trees with new trees that are productively equivalent. A tree cost analysis tool allows the choice of either built-in or individual assumptions.

References

Klonsky, K. 2004. Tree and Vine Loss Value. Department of Agricultural and Resource Economics, University of California, Davis, CA.

Agecon-trec software. Tropical Research and Education Center, University of Florida, Homestead. http://agecon-trec.ifas.ufl.edu/InteractiveTools.htm.

Cultivation Costs ($/tree)								
Year	Fertilizer	Fungicide	Herbicide	Insecticide	Pruning	Irrigation	Mowing	Others
1	2.00	0.50	2.00	0.12	0.50	0.40	1.80	0
2	2.50	0.50	2.00	0.25	0.50	0.40	1.80	0
3	3.00	1.50	2.00	0.50	0.70	0.40	1.10	0
4	3.50	1.50	1.72	0.75	2.00	0.40	1.00	0
5	4.00	1.50	1.72	1.00	2.00	0.57	0.70	0
6	6.50	2.52	1.72	1.25	2.00	0.57	0.70	0
7	8.00	3.00	1.72	1.50	3.40	0.57	0.70	0
8	8.00	3.00	1.72	1.50	3.40	0.57	0.70	0
9	8.00	3.00	1.72	1.50	3.40	0.57	0.70	0
10	8.00	3.00	1.72	1.50	3.40	0.57	0.70	0
11	8.00	3.00	1.72	1.50	3.40	0.57	0.70	0
12	8.00	3.00	1.72	1.50	3.40	0.57	0.70	0

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Figure 3. Estimating individual cultivation costs