

Auburn Harvesting Analyzer Cost Models

The cost models generate roundwood production costs from stands harvested via the defined harvesting systems. The primary drivers for the models are quadratic mean diameter, tons per acre removed, trees per acre removed, tract size, and average height of dominant trees (in hardwood stands only, if available). These are highlighted in purple. If trees per acre removed are known, that value should be input, but it is currently calculated based on a volume equation (citation available if needed).

Values which can be altered based on the need to adjust conditions for a specific tract are highlighted in green. A document of input assumptions for these cells in each stand type for each harvesting system is attached. Separate values are available for either clearcut or thinning harvests. A macro will need to be written to pull each value from the assumption worksheet and insert it into the necessary model. Each value has the appropriate cell reference labeled beside it.

Input values for machine costs are based on the machine rate equations (citation available if needed). These are calculated on the worksheet labeled "Equipment Costs" in the assumptions file. Included here are average purchase prices for machinery and assumptions about costs to own and operate machines throughout their useful life. These also are estimates based on frequent discussion with contractors and industry personnel. Fuel cost can be adjusted on this page, and is highlighted in green. Other petroleum based lubricants are valued as a ratio of fuel cost, thereby changing as fuel increases or decreases.

At the bottom of the main AHA page, highlighted in yellow, are the three main outputs of the model: loads and tons of wood produced per day from the tract and cost per ton to cut and load this material on a truck for transportation to a facility. The hauling costs are not included in this cost.

Below are sample sensitivity analyses on the FIA input values for the feller buncher/grapple skidder harvesting system on all stand types. The range of potential values is assumed, and the resultant range of costs based on the extremes of those values is shown.

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