TechLine

Fuel Treatment Evaluator 3.0

The Fuel Treatment Evaluator (FTE) 3.0 is a web-based tool that simulates uneven-aged and even-aged silvicultural treatments on timberland in 12 western states. This tool simulates treatments to reduce forest fire hazard to specific target levels and identifies the volume of biomass removed, harvesting costs, and estimated biomass revenue.

As the basis for the simulation, FTE 3.0 uses data from approximately 37,000 forest plots surveyed by the USDA Forest Service Forest Inventory and Analysis (FIA) program. The FTE 3.0 tool was prepared by researchers from the Forest Products Laboratory and the North Central, Southern, Rocky Mountain, and Pacific Northwest Research Stations of the Forest Service.

A link to the FTE 3.0 tool can be found at http://ncrs2.fs.fed.us/4801/fiadb/fire_tabler_us/rpa_fuel_reduction_treatment_opp.htm

The following summarizes how to use FTE 3.0 by silvicultural treatment options, fire hazard screens and reduction targets, data entry, outputs, and an example simulation.

Silvicultural Treatment Options
- Two types of treatments can be used to reduce fire hazard on each FIA plot that has high fire hazard.
- One type of treatment takes some trees from all size classes, leaving an *uneven-aged* stand.
- A second type of treatment takes trees starting with the smallest and including progressively larger trees, leaving an *even-aged* stand (thin from below).

Fire Hazard Screens and Reduction Targets
A plot is identified as having high fire hazard if
- crowning index is less than 25 mph or
- torching index is less than 25 mph and crowning index is less than 40 mph.

Each plot is assumed to have surface fuels characterized by Fuel Model 9, and weather is assumed to be "Drought Summer" as defined by Rothermel.

Thinning is individually applied to each FIA plot with the objective of increasing both torching and crowning indexes to above 25 mph or increasing crowning index alone above 40 mph. These objectives are either to keep a crown fire from starting or to prevent a crown fire from spreading if crowns are ignited.

Data Entry
On the first input page, labeled "Retrieval Type," select the geographic area to be treated. For example,
- Several states
- Counties in one or more states
- Area within a circle about a point [also select all the states (or counties) that are included in the circle]
- Area inside a polygon defined by a set of points [also select all states (or counties) that are included in the polygon]

Click on Continue to go to the second input page.

On the second input page are several settings:

Required settings
- Under "Drought Conditions," select "drought summer."
- Under "Crowning and Torching Index," select "Both…" or "One or both…."
- Under "Crowning index before treatment," select "Limit removal…" and enter crowning index limit of 25.
- Under "Torching index before treatment," select "Limit removal…" and enter torching index limit of 25.
- Under "Silvicultural treatments," select one of the treatments: Uneven aged (1A, 1B, 2A, 2B) or Even aged (3A, 3B, 4A, 4B).
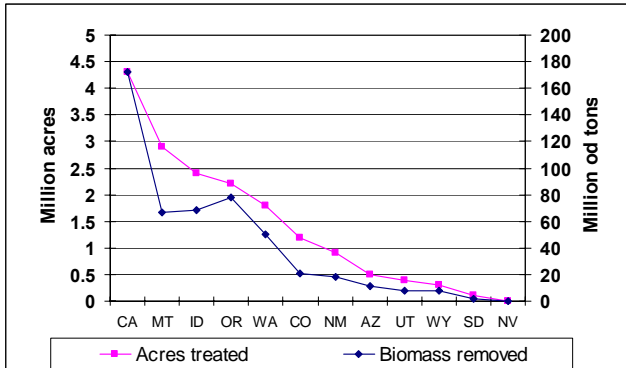
Optional settings
- Under "Selection Criteria," select any limits on plots to be treated, from "Current Fire Condition Class" to "physiographic class."
- Under "User defined filters," you may use the box to enter text to exclude roadless areas; this text is "and p.roadless is null" (exclude the quote marks)
- Under "Valuation," enter dollar values for timber that is removed.
- Under "Forest Vegetation Simulator ready files," select FVS ready files, indicating you want files to be produced that can be used by FVS, and select the FVS variant you will use.

Click on "Continue" to run a simulation. The simulation could take up to 15 minutes to run all 12 states at once; if it takes longer, an internal time limit may have been exceeded. The easiest way to decrease run time is to decrease the geographic area treated.
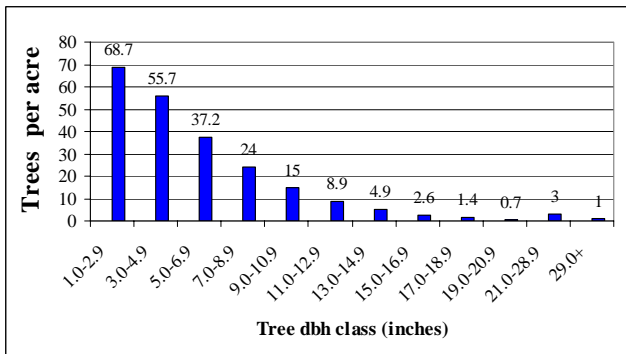
Outputs and Example Simulation
- 37 tables of output indicate effect of treatments of fire hazard, biomass removed, product revenue, and harvesting costs.
- Two text files provide data for each plot, including acres represented by each plot, thinning and crowning indexes, numbers of trees by diameter at breast height (dbh) class before and after treatment, and harvesting costs.
- A tool is provided to produce maps of biomass removed by county or 160,000 acre hexagon.
- Comma delimited files provide data for GIS mapping of area treated and biomass removed by county or 160,000 hexagons.
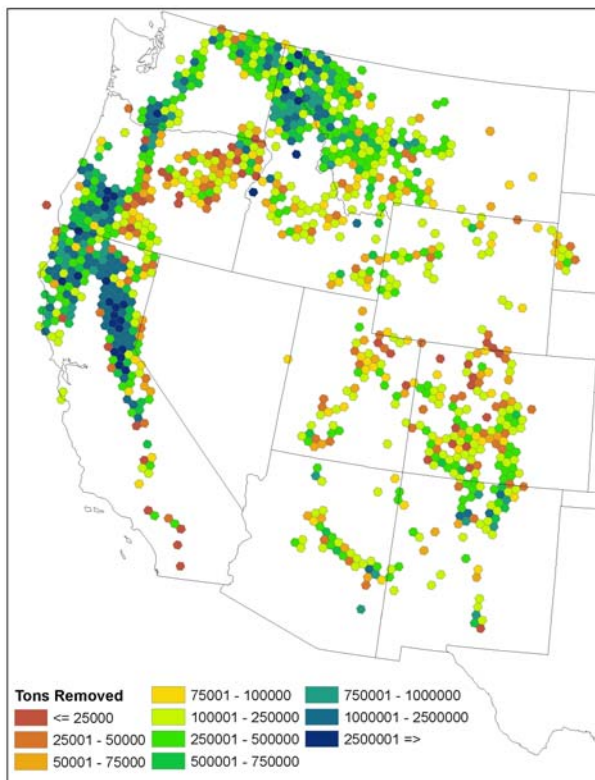
Example: Conduct uneven-aged thinning on all timberland with high fire hazard in 12 Western States, except on high fire severity forest types and in roadless areas. For details on the example, see Treatment 1A in Skog et al. 2006.
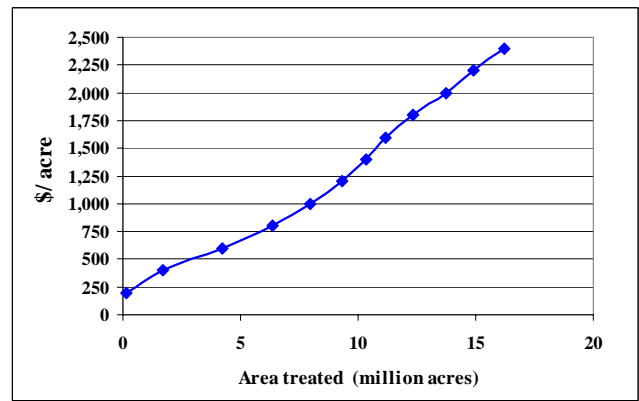

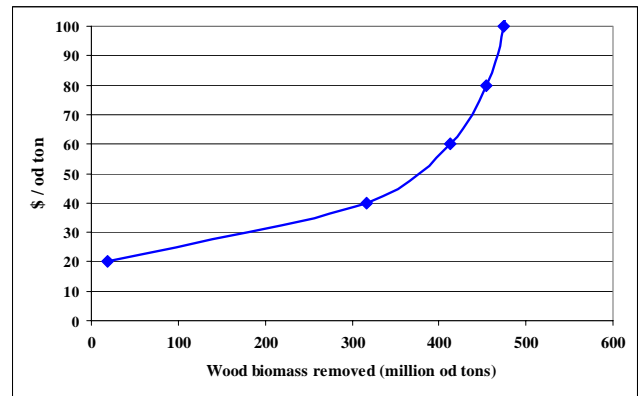*Acres treated and biomass removed by uneven aged treatment 1A*

Trees removed per acre by treatment 1A

Area treated by cost per acre to deliver biomass to roadside

Amount of biomass delivered to roadside by cost per od ton

Reference

Skog, Kenneth E.; Barbour, R. James; Abt, Karen L.; Bilek, E.M. (Ted); Burch, Frank; Fight, Roger D.; Hugget, Robert J.; Miles, Patrick D.; Reinhardt, Elizabeth D.; Shepperd, Wayne D. 2006. Evaluation of silvicultural treatments and biomass use for reducing fire hazard in western states. FPL-RP-634. Madison, WI: USDA Forest Service, Forest Products Laboratory. 29 p. (http://www.fpl.fs.fed.us/documnts/fplrp/fpl_rp634.pdf)

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Biomass removed (od tons) from simulated thinnings by 160,000 acre hexagon for uneven aged treatment 1A