TIMBER MARKING GUIDELINES TO MINIMIZE CHAINSAW FELLING ACCIDENTS

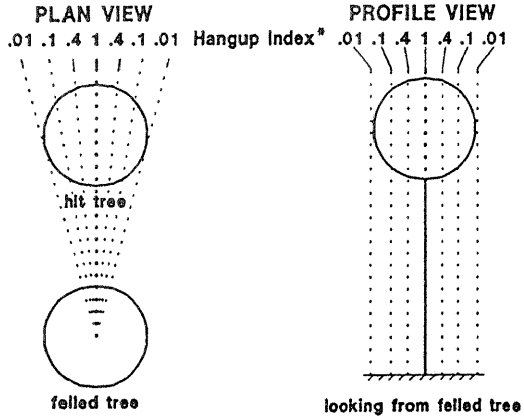
Penn A. Peters[1], Michael D. Erickson[2], and Curt D. Hassler[2]

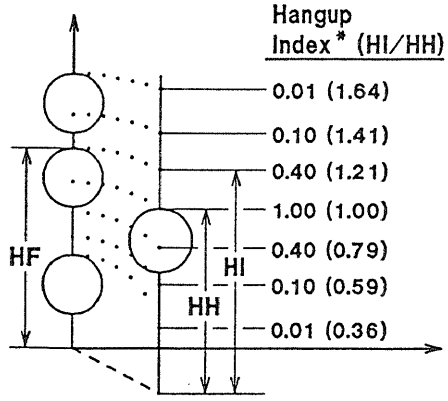
Abstract: Trees are marked by foresters for retention or harvest to satisfy landowner objectives for timber sale revenues, stand improvement, wildlife habitat, water quality, and aesthetics. Another consideration when marking trees is the safety of the chainsaw feller. Can the tree that has been marked for harvest be felled safely? Will the feller be able to select and control a direction of fall such that the felled tree does not produce a hazardous reaction?

When marking timber, the following will have a positive effect on chainsaw feller safety: 1. mark trees to be cut on two sides (for example, uphill-downhill), so the feller can easily see the trees to be cut and can make a safe selection of the felling order. 2. when selecting one cut tree from a pair of trees -- mark the tree that can be felled safely, 3. assume a heavily leaning tree will fall in the direction of lean and assess for hazards, and 4. learn the three factors that affect the likelihood of a hangup, viz., lateral offset, impact height (HI), and felled tree to hit tree dbh ratio. The lateral offset is the perpendicular distance from the direction of fall plane to the centerline of the hit tree. The impact height (HI) is the vertical distance from the base of the hit tree to the top of the falling tree as the falling tree intersects the lateral plane containing the hit tree (see figure). Felled tree height (HF) and hit tree height (HH) are defined in the figure also.

Effect of diameter

Hangup Index*	dbh of hit tree/ dbh of felled tree
0.9	2.07
0.7	1.29
0.5	.99
0.3	.80
0.1	.62
0.01	.48





*A tree with a hangup index of 0.4 is four times as likely to hang up as one with a hangup index of 0.1.

[1]Research Engineer, Northeastern Forest Experiment Station, USDA Forest Service, 180 Canfield Street, Morgantown, WV 26505-3101.

[2]Research Associate and Associate Professor, Appalachian Hardwood Center, West Virginia University, Morgantown, WV 26506.