

# TIMBER PRODUCT VALUE LOSS DUE TO PRESCRIBED FIRE CAUSED INJURIES IN RED OAK TREES

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## ABSTRACT

Prescribed fire is used for a variety of land management tasks in sites containing merchantable sized red oak trees with sparse information on how it affects lumber product values. We analyzed how fire related injuries affect lumber volume and value in 88 red oak (*Quercus velutina*, *Q. rubra*, and *Q. coccinea*) lowest logs harvested from three sites in southern Missouri. Trees with varying degrees of external fire damage, time since fire, and diameter were harvested and milled into dimensional lumber. Lumber grade changes and volume losses due to fire related injuries were tracked on individual boards (n=1298, 18.3 cubic meters (7754 board feet)) and analyzed using the individual log as the unit of study. Observed volume and grade per board were compared to expected volume and grade (ignoring fire damage). Threshold values were identified regarding scar height and percent basal circumference injured, beyond which significant value losses occur. Annual percent value loss for different fire scar sizes was determined for the first fourteen years after fire damage occurred. Overall, value and volume losses due to fire damage were surprising low. If fire damage is less than 50 cm tall and/or 20 percent basal circumference injured, little value loss is expected. If these thresholds are exceeded, value loss is likely. Value loss is very low if trees are harvested within five after fire damage, regardless of scar size. These findings are applicable under these constraints: Time between fire damage and tree harvest is not greater than fourteen years, and trees are at least 20 cm diameter at breast height at time of fire damage.