Salvaging fire-damaged timber

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The value of dead or damaged timber salvageable from fire sites is typically included when appraising the economic impacts of wildfire, but there is not a standardized method for estimating salvage value. In this study, researchers consulted national forest and state fire officials, and representatives of forest industries, seeking to (1) estimate the amount, type, and value of wildfire-damaged timber that is salvaged in Michigan and the characteristics of areas where salvage occurs, (2) determine the characteristics of buyers of wildfire-damaged timber and identify the uses to which the damaged timber is put, (3) identify the problems and potentials associated with marketing fire-damaged timber, (4) evaluate the importance of salvage in the economic appraisal of wildfire effects, and (5) provide guidelines for wildfire effects appraisers to use in estimating salvage values after fires.

Acreage and volume of timber burned and salvaged

Fires for which salvage occurred were much larger than the average fire that burned commercial timber (1,538 acres versus 22 acres). Only three of the 19 salvage fires were less than 100 acres. About 31% of the acres included in the salvage burns were actually harvested.

End uses of salvaged timber

About 80% of the total volume salvaged was used for boiler fuel and firewood. The salvage potential for boiler fuel depends on the proximity of facilities that use large volumes of wood for energy and on the availability of sufficient volumes of damaged timber to encourage a large-scale salvage operation. Boiler fuel does not produce large profits, but it is often the only potential salvage market for extensive volumes of severely damaged pole-sized conifers. The firewood market largely depends on the availability of hardwood species.

Pulpwood accounted for 9% of the total volume salvaged, but marketability is severely reduced by significant char or scorch.

MANAGEMENT IMPLICATIONS

1. Local circumstances strongly determine salvage potential in fire-damaged stands.

2. Managers should consider the volume and extent of damage for each type of potential product, as well as site accessibility and whether or not a local market exists.

3. Future research should be focused on investigating or developing markets for fire-damaged forest products.

Want to learn more?

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Sawlogs accounted for 8% of the volume salvaged and usually occurred as occasional trees scattered through younger stands. Most Michigan fires are not intense enough to kill or severely injure large sawlog size trees. The extent of tree damage, and whether or not producers and retail dealers were nearby influenced the market for posts, poles, bolts, and landscape timber.

Salvage potential and fire severity

A fire must be severe enough to kill or severely injure trees before salvage is considered. Large, high-quality sawtimber is one of the easiest products to market, and is only damaged by severe fires. Large burns with high volumes are needed to justify a boiler fuel harvest. Dead trees must be harvested within two years of the fire to prevent serious insect and disease damage. Although the stand must be sufficiently damaged to justify a salvage cut, timber is more marketable with less char and scorch.

Problems associated with salvage

Because Michigan's growing stock is 72% pulpwood, and there was no market for moderately scorched pulpwood trees at the time of this survey (1980-1983), salvage harvest typically was considered economically not viable. Additionally, Michigan typically does not experience large fires that affect large amounts of merchantable timber. Managers indicated that at least 40 acres of merchantable timber must be severely burned before salvage is warranted. Finally, because wood is abundant in Michigan, difficult and dangerous salvage operations were limited to the tracts considered to be "exceptional" by buyers and loggers.

Salvage and future management

Salvage opportunities can contribute to future management of burned stands in several ways, such as by preparing sites, promoting natural regeneration, preventing re-burn and insect or disease infestations, improving site aesthetics, and improving the safety of recreational activities. Fire-damaged timber can be given away or sold at low prices to achieve future management objectives, but loggers usually are not paid to harvest damaged timber in the interest of the future stand.

Special circumstances and salvage

The presence or absence of a buyer for boiler fuel has the greatest influence on salvage potential. However, site accessibility, local demand for firewood, and the size of a typical burn also influence salvage potential.

Guidelines for fire effects appraisal

Salvage does not need to be considered in the vast majority of fires in the Lake States region when appraising fire effects because the size and severity of fires do not warrant salvage cuts, fire-damaged timber is too small and of too low quality, and markets are difficult to find. However, most of the acreage burned by wildfires in Michigan is the result of a few large fires, and salvage harvest in these cases may be justified if a market is available. In Michigan, fires must be greater than 40 acres before salvage is considered economically feasible. The development of current or new uses for fire-damaged timber will likely improve the interest in – and opportunities for – salvage harvests in burned sites.

Important topics for managers to consider when deciding whether to salvage a fire-damaged stand include: the amounts of severely damaged sawtimber, hardwood firewood, and boiler fuel; the demand for specialty products like posts, poles, landscape timbers, and cabin logs; and accessibility to a site with sufficient harvestable volume to warrant a salvage operation.

Reference

Baumgartner DC (1987) Salvaging fire-damaged timber in Michigan. North J Appl For 4:149–152.