

Mechanical Mid-Story Reduction: Alternative to Fire

Issue: Fire exclusion from fire-dependent forest ecosystems leads to the encroachment of hardwood mid-story. This condition increases fire risk, reduces habitat quality for wildlife, and affects the health of the overstory. Management needs a cost-effective tool to treat such stands, either as a prelude to the re-introduction of prescribed fire or as a fire surrogate where the use of fire is unacceptable. Various mechanical methods are available for right-of-way maintenance and land clearing, but these methods have not been fully evaluated for extensive forest management applications.



Study Description: A series of studies have been established to examine the costs and performance of a range of MSR equipment. Machine design parameters such as cutterhead type and prime mover trafficability are being tested. In addition, stand parameters (vol/ha, stem size, residual spacing) are being examined to develop production and cost models. The effect of MSR treatments on fuels reduction, fire behavior, vegetative response, and wildlife habitat are also being analyzed.

Status: A comparison of swing vs. drive-to-tree machines was conducted on the Croatan NF in the winter of 99. Reports are in press. Additional data was collected on the Kisatchie NF in a large-scale production study. New, controlled study plots have been located on the Kisatchie to test tracked vs. rubber-tired machines and examine vegetation and wildlife effects. A similar study has been initiated at Ft. Benning, GA. Finally, a case study using a different type of cutterhead has been planned for the Coconino NF near Flagstaff, AZ. MSR treatments will be installed Spring '00.

Benefits:

- *predictive cost models to aid managers in planning*
- *guidelines for selection of appropriate machine types for specific units*
- *comparison of mechanical treatment and fire on future stand condition*
- *recommendations for combination of MSR and other treatments*

Cooperators: Joint Fire Science Program; National Forests of Region-8; Pacific Southwest Research Station, Rocky Mountain Research Station

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