

MECHANICAL MID-STORY REDUCTION TREATMENTS FOR FOREST FUEL MANAGEMENT. B. Rummer¹, K. Outcalt², and D. Brockway¹; USDA Forest Service, Southern Research Station, ¹Auburn, AL, ²Athens, GA.

ABSTRACT

There are many forest stands where exclusion of fire or lack of management has led to dense understories and fuel accumulation. Generally, the least expensive treatment is to introduce a regime of prescribed fire as a surrogate for natural forest fire processes in these stands. However, in some cases prescribed fire is not an option. For example, heavy fuel loadings may require some kind of pre-treatment before prescribed fire can be safely introduced. Restrictions on burning and smoke in the urban interface may preclude the use of prescribed fire in any condition. In these situations, mechanical methods to reduce understory materials are an option for resource managers.

There are a wide variety of machines that can be adapted for use in forest fuel treatment. They vary in size, cutter type, type of prime mover, and the attachment of the cutterhead. These differences affect the cost of the treatment, impact on the residual stand, degree of fuel reduction and the need for subsequent treatments. Two study sites were installed to examine some of these effects. On the Kisatchie National Forest, a rubber-tracked mulching machine was compared to a rubber-tired mulching machine utilizing the same cutterhead. At Ft. Benning, GA, a high-horsepower rubber-tired mulching machine was used to treat two blocks in mixed pine-hardwood. Vegetative surveys were conducted before and after treatment on all plots. The Ft. Benning site was divided into subplots to examine the effect of varying intervals before the reintroduction of prescribed fire.

Treatment costs with the three different machines ranged from \$120 to \$350 per acre. Terrain limitations affected the machine requirements with soft soils and steep slopes resulting in delays and reduced productivity. Vegetative assessment on the Kisatchie found hardwood density was reduced by 33% in the midstory and 64% in the understory. Herbaceous cover did not increase in the treated areas, although there was a small increase in understory species richness. It appears the readjustment of understory composition to a more herbaceous-dominated layer will take more time and/or additional treatments to accomplish.

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