



Removal of Invasive Fire Prone Grasses to Increase Training Lands in the Pacific

Project # 07-362

Background:

Invasive fire prone grasses like guinea grass (*Panicum maximum*) have become the dominant cover on several training areas in the Pacific including Marine Corps Training Area Bellows (MCTAB), Hawaii. Dense stands of guinea grass provide fuel for fast moving, high intensity fires thereby aggravating fire risk to weapons firing training and threatening wildlife and their habitats. Military installations have spent millions of dollars to mitigate risk from such fire prone grasses. Traditionally, mechanical removal and prescribed fire have been used to reduce guinea grass fuel loads in Hawaii. But since MCTAB shares its borders with urban landscapes; smoke, air quality restrictions and liability associated with prescribed burns are major concerns. Limited burn windows and the lack of trained fire fighters on staff make prescribed burning efforts a challenge. Given such limitations, MCTAB personnel and land managers in the Pacific seek alternative fuel reduction treatments such as mechanical, herbicide and grazing to reduce guinea grass fuel loads; however, very little information is available.



An experimental plot prior to (L), and after (R) cattle grazing on MCTAB.

Objective:

The objectives of this study were:

- 1) To quantify the amount of surface fuel loads at MCTAB.
- 2) To investigate which of the following 3 fuel treatments is most effective in reducing fuel loads of guinea grass on MCTAB;
 - a. Mechanical removal
 - b. Herbicide application
 - c. Cattle grazing

Summary of Approach:

Twelve, 2500 m² (0.6 acre) plots were set up in guinea grass dominated training areas on MCTAB, to which the following four treatments were applied in replicates of three: mechanical removal, herbicide, cattle grazing

and control. Parameter measured included: amount of live herbaceous fuels, 1 hr, 10 hr and 100 hr fuels, and fuel and litter bed depths. Data was collected prior (Sep 2007) to and then twice (Jan and May 2008) after application of the treatments in December 2007. A cost analysis was done to determine the cost of applying the three treatments on an annual and 10-year cycle at a large scale of 500 acres on MCTAB.

Benefit:

The results of this research will help DoD resource managers make effective fuel treatment decisions to reduce guinea grass fuel loads and thereby reduce the risk of wildland fires. In general, benefits to the military include: 1) substantial reduction in expenditures to control wildfire, 2) proactive stewardship and public relations, and 3) maximize military training capacity on DoD installations in the Pacific.

Accomplishments:

Surface fuel loads on MCTAB averaged 6 tons/ acre. Results indicate that grazing is the most effective in lowering the fuel bed depths of guinea grass on MCTAB. Effect of treatment on reduction of guinea grass fuels varied with time. Mechanical treatment was the most effective in reducing the guinea grass fuels; however, the grazing treatment was most effective in maintaining low fuel loads over 5 months post application of treatment. At the end of the experiment fuels in the grazing plots also appeared to be less continuous than other treatments and therefore not expected to carry fast moving fires. Grazing treatment also appears to be most effective in maintaining lower total fine fuel loads five months post-treatment. Although initial cost of setting up perimeter fences to employ grazing at a large scale is expensive on MCTAB, adopting an agricultural out-lease program for cattle grazing would help recover these costs in 6.3 years and there after realize an annual income in the range of \$72,000 to \$161,000.

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