

Mitchell Mine Fuel Break Demonstration

The Amador Fire Safe Council established the Mitchell Mine Fuel Break with Cal Fire grant funding between 2018 and 2022. It spans 10.3 miles, covers 394 acres, and was developed to help protect the community of Pine Grove from wildfire scenarios.

Fuel breaks require maintenance to control vegetation regrowth in the years following their initial installation. The Amador Resource Conservation District, Amador Fire Safe Council, and the University of California Cooperative Extension recognized this as a good opportunity to use a portion of the fuel break to evaluate 33 different treatment methods (listed below). This demonstration will be used to demonstrate to landowners, land managers, agencies, and the general public the most efficient and effective treatment options for managing vegetation regrowth and preserving the fuel break.

Figure 1: Map of the 33 treatment plots and the 2 untreated control plots. The table below describes which treatment method was applied to each plot.



Methods Used

Grazing: Prescribed grazing uses a multitude of animal species including cattle, goats, and sheep for consuming vegetation. Grazing can be accomplished by owning your own animals, collaborating with a neighbor with animals, or hiring a grazing contractor. Goats and sheep have an especially wide preference for many forb, shrub, and tree species and will be the species used in this project.

Flaming: This treatment uses a propane flame torch and liquid propane to apply heat to undesired species without igniting the plant. Instead, swiftly passing the flame over the plant significantly raises its internal temperature, rupturing cells and causing subsequent death to the affected area. Extreme caution must be used when using this method. Only use this treatment during low wildfire hazard periods, immediately after a rain event, and in accordance with safe fire practices.

Lopping: Manual vegetation removal is the least technical but also the most time-consuming method for vegetation control. While it initially delivers effective results, it's important to anticipate resprouting by certain shrub and tree species in the spring from the remaining root system. In this treatment, we utilized loppers and a mattock to remove undesired vegetation and shrub regrowth. Other tools that can be utilized as a mechanical treatment include chainsaws, clippers, brush grubbers, weed wrenches, mastication, or other equipment. Repeated treatments may be required for complete control.

Lopping and Herbicide: This method combines the initial effectiveness of manual removal with better prevention of resprouting by applying herbicide to the exposed cut stumps of the plants.

Foliar Application: Foliar herbicide application involves the use of a sprayer to coat the leaves of the target plant with herbicide. Foliar treatments can be done as a spot treatment (where it is directed to an individual plant) or broadcast treatment (where it is applied at a consistent rate over the entire treatment area). Foliar treatments are often applied at application rates that range from 20-50 gallons of spray solution per acre. All foliar treatments were applied at 25 gallons to the acre with an average treatment time of 1 hour 51 minutes per acre.

Low Volume Drizzle Application: The drizzle application is a modified foliar application that uses a low volume/high concentration method of applying the herbicide solution to a portion of the plant. Instead of spraying the entire plant as in a foliar application, the drizzle method applies a low volume drizzle to the plant. This technique utilizes a spray gun with an orifice disk (#02). All drizzle treatments were applied at 5 gallons per acre with an average treatment time of 25 minutes.

For more information please contact the UC Cooperative Extension.

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Plot	Treatment	Herbicide Application	Treatment Time
1	Untreated Control	N/A	N/A
2	Grazing	N/A	Fall
3	Flaming	N/A	Spring
4	Lopping	N/A	Spring
5	Lopping & Herbicide Accord XRT II 1qt/ac Vista XRT 20 oz/ac Garlon 4 Ultra 1 qt/ac MSO 4pt/ac	Foliar	Spring
6	Accord XRT II 2% v/v Rainer EA 0.5% v/v	Foliar	Spring
7	Accord XRT II 7% v/v Rainer EA 0.5% v/v	Drizzle	Spring
8	Garlon 4 Ultra 2% v/v MSO 1% v/v	Foliar	Spring
9	Garlon 4 Ultra 8% v/v MSO 8% v/v	Drizzle	Summer
10	Vastlan 2% v/v MSO 1% v/v	Foliar	Summer
11	Vastlan 8% v/v MSO 8% v/v	Drizzle	Spring
12	Accord XRT II 1.5% v/v Garlon 4 Ultra 1% v/v Rainer EA 0.5% v/v	Foliar	Spring
13	Capstone 8 pints/acre Rainer EA 0.5% v/v	Foliar	Spring
14	TerreVue 2.8 oz/ac Rainer EA 0.5% v/v	Foliar	Summer
15	RM43 Total Vegetation Killer 4.5% v/v Rainer EA 0.5% v/v	Foliar	Summer
16	RM43 Total Vegetation Killer 4.5% v/v MSO 5% v/v	Drizzle	Summer
17	Imazapyr 4SL 5% v/v MSO 5% v/v	Drizzle	Summer
18	Milestone 0.5% v/v Vastlan 2% v/v MSO 2% v/v	Foliar	Summer
19	Milestone 0.5% v/v Garlon 4 Ultra 2% v/v MSO 2% v/v	Foliar	Spring

20	Milestone 0.5% v/v Vastlan 2% v/v Freelexx 1% v/v MSO 2% v/v	Foliar	Summer
21	TerreVue 2.5 oz/acre Vastlan 2% v/v Freelex 1% v/v MSO 2% v/v	Foliar	Summer
22	Accord XRT II 2% Rainer EA 0.5% v/v	Foliar	Fall
23	Accord XRT II 7% v/v Rainer EA 0.5% v/v	Drizzle	Fall
24	Brushtox 2% MSO 1% v/v	Foliar	Summer
25	Brushtox 8% v/v MSO 8% v/v	Drizzle	Summer
26	Garlon 4 Ultra 2% v/v Imazapyr 4SL 1% v/v Accord XRT II 3% v/v MSO 2% v/v	Foliar	Spring
27	Garlon 4 Ultra 8% v/v Imazapyr 4SL 5% v/v Accord XRT II 7% v/v MSO 5% v/v	Drizzle	Summer
28	Capstone 8 pt/ac Accord XRT II 2 qt/ac Rainer EA 0.5% v/v	Foliar	Fall
29	Garlon 4 Ultra 8% v/v MSO 8% v/v	Drizzle	Fall
30	Vista XRT 20 oz/acre Accord XRT 1qt/acre Rainer EA 0.5% v/v	Foliar	Summer
31	Oust XP 3 oz/ac Accord XRT II 6 qt/ac Rainer EA 0.5% v/v	Foliar	Fall
32	Homeplate (organic) 9% v/v + 4 oz/tank Natural wet 0.8% v/v Mixwell 0.04% v/v	Foliar	Summer
33	Axxe (organic) 20% v/v + Natural wet 0.8% v/v	Foliar	Summer
34	Green Gobbler (organic) Undiluted 20% acetic acid	Foliar	Summer
35	Untreated Control	N/A	N/A