

PROJECT PLAN

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Retardant effectiveness in mulch fuel

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BACKGROUND

Fuels treatment is an important component of community wildland fire prevention plans and mulching is a common method of fuel treatments. Mulching is fuel mastication which converts vertical fuel structure to horizontal fuel bed to reduce fire intensity and fire behaviour.

Studies have shown fuel treatments alone cannot stop fire. Fuel treatments are most effective when combined with wildfire suppression tactics. Using airtankers to layout wildfire suppression chemical on fuel treatments is one of these wildfire suppression tactics.

Wildfire agencies would like to understand retardant effectiveness in mulch fuels to form better suppression plans.

ISSUE/GOAL

How effective is retardant in mulch fuels with different coverage levels?

OBJECTIVE

Set up retardant plots with different coverage levels on a mulch fuel bed and collect fire behaviour data when a wildfire interacts with these plots.

METHODS

Locations

Alberta Agriculture and Forestry (AAF) provides the Pelican Mountain Community Protection Research Site for this project. Retardant plots will be set up on the mulch fuel bed at the centre of the Burn Unit 1 and against the untreated stands which is used as the run up to the treatments.

Plot setup

There will be four different retardant coverage levels: coverage level 2, coverage level 4, coverage level 8 and coverage 0 as the control plot. A 1m burn depth pin grid will be set up in each plot. Each burn depth pin will be marked with a piece of flagging tape for better visuals.

Data Collection

A bottle of retardant will be collected for quality analysis before applying on the plots.

One hour after applying retardant, researcher will record retardant penetration depths in mulch fuel at three random locations within each retardant plot.

Five plastic pans will be set up to monitor the drying process between the time of retardant application and fire ignition. Four of the five pans will contain fixed amounts of mulch fuels taken from the same site. These fuel pans will have retardant applied at coverage levels of zero, 2, 4 and 8. The plastic pan that has no mulch fuel will be filled with 1 liter of retardant. Each retardant pan will be weighted every hour until ignition occurs.

Researchers will collect mulch depth and fuel load data before the prescribed burn.

Before ignition, researchers will sample mulch fuel moisture and record weather conditions and wildfire weather indices.

An in-fire camera will record video footage of the wildfires interaction with the retardant plots. Through the video footage, researchers will gather flame height, rate of spread and spread pattern information.

After the prescribed fire is extinguished, researchers will collect burn depth data and fire breach distance at each retardant plots.

TIMELINE

This study timeline is dependant on the Pelican Mountain Community Protection Research Site Unit 1 prescribed burn. The proposed prescribed burn window is in May 2018. The report will be delivered by December 2018.

PARTICIPATING MEMBERS/COLLABORATORS

Alberta Agriculture and Forestry