Project Work Plan (Revised)

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FPInnovations
Wildfire Operations Research
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Wildland Fire Sprinkler Design

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Introduction

Sprinkler systems are commonly used in wildland firefighting for structural protection and fireline re-enforcement with the objective of wetting fuels in the path of an on-coming fire. The sprinklers used in wildland firefighting are generally those which can be purchased at the local hardware store; and sprinklers are typically mounted on the ground or they are elevated using simple mounting methods e.g. pole or direct attachment.

Although current sprinkler design meet many deployment scenario objectives, in some instances the wetting of fuels is sometimes restricted by the design of the sprinkler e.g. angle height to reach further into tree canopy along a fireline. During a prescribed burn firefighters were observed altering sprinkler orientation using a homemade apparatus (see Figure 1). Their objective was to adjust sprinkler arc and propel water higher into the tree canopy to increase the wetting action along the fire guard.

This study is geared towards sprinkler design improvements to allow for increased vertical spray, which is thought to allow for more overall deployment flexibility in both wildland firefighting and prescribed fire.

Figure 1

Objectives

1. Develop and field test a new sprinkler prototype that will provide wildland firefighters with greater sprinkler deployment versatility i.e. vertical spray as noted above.

Methods

Product Search

Conduct preliminary research to establish market availability of sprinklers, which may meet study needs.

Engineering

Engage the University of Alberta Mechanical Engineering Department to engineer a sprinkler design and prototype which provides for greater vertical sprinkler adjustment.

Testing

Testing will occur in conjunction with FPInnovations on-going project work, including the Northwest Territories Canadian Boreal Community FireSmart Project and or during agency hazard reduction and prescribed burn operations. Depending on initial results, a number of prototypes may be constructed and assigned to fire crews for further feedback.

Reports / Video / Pictures

A final report with associated video and pictures will be posted on the FPInnovations Website at the conclusion of the project.

Safety

FPInnovations staff will utilize the HomeSafe check-in system during travel and, or project assignments in isolated areas (unless there are specific project plans set in place).

Project safety plans will be followed at all times e.g. standing project work plans and, or Incident Action Plans.

If cell phone coverage is unavailable at project site, a satellite phone will be used to ensure sustained communications.

All FPInnovations personnel will meet First Aid certification needs as per policy direction.

Personnel will wear personal protective equipment at all times when engaged in work activities as per FPInnovations policy.

Proper training is to be completed prior to operation of equipment as per company policy.

Timeline

Spring of 2011 – Research sprinkler market and design

Summer, 2011 – Conduct field observations, looking at sprinkler deployment on the fireline

Fall, 2011 – Prepare & submit University of Alberta MEC 460 proposal

Winter, 2012 – Meet with U of A Mechanical Engineering Group to establish project parameters

Spring, 2012 – Design completed and prototype built

Summer, 2012 – Test prototype

Winter, 2012 – Complete final report

Deliverables

1. Sprinkler Prototype
2. Report c/w video and pictures

Participating Members/Collaborators

FPInnovations; Alberta Sustainable Resource Development; University of Alberta