

Assessing Risks of Arson in Biomass Piles

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Abstract

Wildfires are prevalent across the nation and have been shown to negatively affect communities, valuable resources, and precious habitat. Several thousand wildfires nationwide are responsible for millions of dollars in damages and suppression costs, along with putting people's lives in danger. The source of most wildfires is attributed to human related activities such as campfires, cigarettes, fireworks, but also by arsonist and naturally occurring events.

Background

Biomass piles can be created from various types of activities and environments. The focus of this research is biomass piles that are created from logging residuals from harvesting/thinning operations that consist of non-merchantable material (tops, limbs, small logs, etc.)

Depending on the objectives of the landowner, machine availability and tree species, the biomass piles can be created in various sizes, shapes, texture, and composition.

Biomass piles are usually left in the field to air dry to increase the value of the material to be chipped or grinded and sent to local energy plants. Typically energy plants are willing to pay for materials that have lower moisture content because of the higher energy output (BTUs) and the lower amount of energy necessary to dry the material.

Most piles are left near roads for easy access for chip trucks when transporting materials to the mills. Roads in which recreationalist and ordinary citizens use when accessing the property. To prevent unauthorized access, landowners use locked gates which are effective against motor vehicles but futile against pedestrians and bicyclist.



Typical Biomass piles found in Central Oregon (Bend, Sisters, La Pine area)
*Photos courtesy of Francisca Belart from Oregon State University

Methods and Procedures

Methods used to complete these objectives will be done by reviewing published literature on accredited websites and within relevant journals found in the Oregon State Valley Library.

Interviews are also planned with Fire Prevention and Investigation officers in Oregon, Washington, and Idaho to determine the risks and different preventative measures that are associated with different geographical areas.

Objectives

- Assess the risks and factors affecting arson that are related to leaving biomass piles in the field for air drying.
- Assess the economic impacts of arson for landowners
- Identify potential methods to reduce/prevent landowners from being targets of an arsonist

Data Analysis

Benefits for landowners to air dry biomass piles in the field:

- Increase in market value of material to the mill
- Fewer environmental emissions
- Utilization of materials to increase income

Risks involved with leaving biomass piles in the field include:

- Potential loss of property and income
- Incurring higher costs
- Having the biomass pile burn out of control and create a crown fire or large wildfire

There are many factors involved with analyzing risks of arson in biomass piles. Shown below are the more statically significant factors attributed to arson.

Time/season	Moisture content	Accessibility
Topography	Demographics	Isolation
Size	Shape	Composition
Restrictions	Ignition source	Material Availability
Socio Economics		

Reasons to committing arson:

- concealing other crimes Financial gain Grudges
- Retaliation Reducing understory Recreational uses

The economic loss for a fire due to arson can vary from case to case depending on extent of damage and how large of an area was affected. Most arson fires are small and cause minimal damage, whereas some can become large wildfires. Not only can the fire be costly for the landowner but also the state/city that is affected.

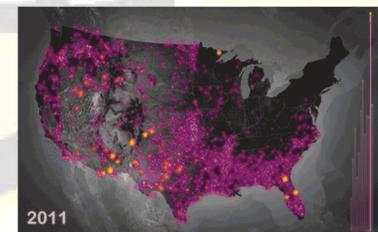
Preventative Techniques and Methods

- Restrict access to public when biomass piles are present
- Increase patrol in areas of concern
- Decrease fuel load and surrounding trees/foilage
- Silvicultural prescription to reduce the susceptibility of the piles
- Post signs of possible fines and convictions - Increase fines and sentences for arson related activities

Discussion

Studies have shown that arson is committed for various reasons and can be committed by anyone. There have been many cases of professionals intentionally lighting fires to provide work for their company to cases of teenagers and even little kids deliberately lighting fires have been reported.

Leaving biomass piles to dry in field can prove to be beneficial to the landowner because of the financial gain that comes from selling the material. That also means that they are more at risk of losing money because they are making themselves an easier target for arsonist to cause damage



The image shown above is a map of the United States with the major wildfires in the year 2011
*Photo courtesy of GRIST.org

Conclusion

Although the risks and factors of arson in biomass piles can be identified, it may be hard to predict when an arsonist will strike. Information found in this study can be helpful for forest landowners to acknowledge the risks of leaving biomass piles in the field to dry. By knowing the risks, landowners can reassess management schemes to deter arsonists and protect their investments.

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