UNIVERSITY OF CALIFORNIA
Agriculture and Natural Resources

Fact Sheet: Fuel Treatment Methods

Fuel Treatment Methods

Fuel treatment methods are actions strategically taken to reduce forest fuels in order to reduce the risk of ignition and the severity and extent of fires that do ignite. These methods include burning, thinning, pruning, chipping, and more. Fuel treatment methods are typically used in dry forests that experience fires of low to moderate severity. As wildfires increase, fuel reduction treatments are an essential part of living with fire.

Over the last several years, there has been an increased number of fuel treatment methods utilized. Individuals can treat fuel around their homes and properties to help further protect themselves from the risk of fire.

Image: Prescribed burn at UC Berkley's Blodgett Forest.

Importance of Fuel Treatment

Fuel treatments are important for managing potential future wildfires and maintaining the health of forests. Goals of fuel treatments, include to:

- Reduce the combustible materials in an area, known as fuel
- Reduce the likelihood of a high-severity wildfire in forest types that did not historically experience high-severity wildfires
- Reduce the intensity and severity of wildfires that do occur
- Create fire-resilient landscapes to promote healthy forests
- Create fire-adapted communities to protect property, homes, etc.
- Aid effective wildfire response
- Increase firefighter safety

What are Forest Fuels?

Forest fuels are the combustible materials found in forests. There are several types of fuel found in the forest.

- **Crown fuels:** tree canopies; green needles, and fine branches
- **Larger fuels:** shrubs, branches on the ground, downed trees, and logs
- **Fine fuels:** needles, grasses, and small twigs
- **Ladder fuels:** vertically arranged fuels

Homes and other structures are a form of manmade fuels.

Types of Fuel Treatments

There are a variety of different fuel treatment methods. Each method varies in feasibility, cost, length of effectiveness, and what fuels they are able to treat. Using a combination of multiple strategies is the best way to reduce the risk of fire.

Visit https://ucanr.edu/sites/fire/Prepare/Treatment/ for details regarding cost/acre, treatment effectiveness, and treatment role.

Prescribed Fire (Burning): Burning specific hazardous wood piles or fuels areas in order to reduce risk factors.

- This should not be done individually or without careful planning. It may require local agency approval.

Grazing: Animal herds are released into an area to graze to reduce the accumulation of fuels and suppress the growth of fuels.

- This method works best with grasses and other fine fuels.

Herbicide: Chemicals are applied to limit the growth of fuels.

- Herbicide application will not remove fuels in an area, but instead will reduce growth of plants forming fuels as well as invasive species

Manual (Hand): Utilizes hand tools (chainsaws, axes, etc.) in order to remove and separate fuels often piling them for later burning. This is often the preferred method when slopes are too steep to use heavy equipment.

Mechanical: Utilizes power tools and large machinery to remove or stack fuels in piles with the goal of breaking up fuel continuity. Piles are then burned.

- Mechanical methods are able to treat large areas, but are limited by terrain.

Mastication: Excavators are used with attachments that allow for large vegetation including small trees and shrubs to be chopped into smaller pieces making them less flammable and burn less severely during a wildfire.

Combining tools for Success

Its most effective to treat fuels using an integrated approach with different methods implemented over mutliple years. This includes mechanical thinning followed by prescribed fire and livestock grazing.

Maintenance

Maintenance plays an important role in the effectivess of fuel treatments, which lose effectiveness over time. Different methods may last between 1-7 years, depending on the forest type and growth rates. To remain effective, fuel treatments need to be maintained or repeated over time. A common sequence is removal of larger and ladder fuels using manual or mechanical methods and then maintenance over time with prescribed fire, herbicide and/ or grazing.

References

Cal Fire. (2021*). Fuels reduction guide.* https://bof.fire.ca.gov/media/hw3lmvd2/7-cal-fire-fuels-reduction-guide-final-2021_ada.pdf

Eriksson, M., Safeeq, M., Pathak, T., Egoh, B. and Bales, R. (2022), *Using stakeholder-based fuzzy cognitive mapping to assess benefits of restoration in wildfire-vulnerable forests*. Restor Ecol. Accepted Author Manuscript e13766. https://doi.org/10.1111/rec.13766

Leavell, D., Berger , C., & Fitzgerald , S. A. (2019, January 1). *Fire faqs-what is forest fuel, and what are fuel treatments?* OSU Extension Catalog | Oregon State University. https://catalog.extension.oregonstate.edu/em9230/html

University of California, Agriculture and Natural Resources. (n.d.). *Reucing Forest Fuels.* https://ucanr.edu/sites/fire/Prepare/Treatment/

York, R. (2014). *BFP* [Photograph]. ANR Repository. https://ucanr.edu/repository/a/?get=135741

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