BCWS Fuel Management Guidance:
Mastication as a Fuel Management Method in BC
March 2024

Introduction

Due to fire behaviour concerns, the distribution of masticated material within treatment units has not been a fundable activity within either stream of Community Resiliency Investment (CRI) Program funding.

Recently, the BC Wildfire Service collaborated with FPInnovations to commission an extensive scientific literature review on all aspects of mastication. The literature review results were synthesized into a Mastication Best Management Practices (BMP) document. While the distribution of masticated material onto treatment units is still not preferred, the Mastication BMP (and its cited literature) now provides options to land managers and professionals who write prescriptions and increased awareness for managing this activity.

This guidance document is intended to supplement the mastication literature review and Mastication BMP, specifically as it pertains to the Community Resiliency Investment (CRI) program. It may also be applied to other funding initiatives and general mastication practices in British Columbia. All professionals practicing fuel management in British Columbia should read the literature review and BMP and apply their principles to prescriptions that include mastication dispersal activities.

General Guidance

- Dispersal of masticated woody material should only be considered after all other treatment alternatives have been explored and ruled out, including - utilization, pile and burn, off-site disposal, etc.

- Dispersal of masticated material can result in elevated short-term fire risks. Site plans (or prescriptions) need to assess and mitigate these risks (i.e., signage, access control, etc.).

- Masticated material should not be dispersed within 100 meters (priority zones 1, 2 and 3) of residential structures or critical infrastructure.

- According to the Mastication BMP and associated literature review, dispersion of masticated material must be prescribed. Prescriptions must resolve or comprehensively address all risks associated with mastication dispersal.

- Adaptive management and applied research principles will be used to advance practice related to dispersing masticated material in CRI-funded treatments.

  When mastication BMPs and scientific literature are unclear about site conditions, a monitoring plan must be prescribed to evaluate and address questions and concerns.

- Coarse mastication and distribution as part of a treatment that includes prescribed fire are inherently risky beyond fire safety and smoke management concerns. If burning does not occur before snow press and gravity compacts the masticated fuel bed, altering favourable fuel continuity, the opportunity to burn and meet prescribed objectives may be lost.

  This can result in many unwanted outcomes for the treatment unit, including short/medium-term elevated fire risk (in particular, fire severity concerns) and other environmental concerns. If prescribed fire is part of the treatment plan and required to meet objectives, a high degree of certainty must be present regarding the application of resource management open fire in a timely manner.

- While wet and dry site indexes may alter the prescribed masticated material distribution depth, a maximum average depth of 7.5 cm should generally be adhered to. The masticated material should be dispersed with breaks in the horizontal continuity (unless burning is prescribed) and kept off remaining tree stems.

- Dispersal of masticated material should not increase fire behaviour intensities above 2,000 kilowatts per metre (up to the 90th percentile).

Summary

Land managers should be clear and well-informed when approving mastication dispersal related to fuel management treatments. Generally speaking, fuel management intends to remove fuel from the treatment site to lower potential fire behaviour intensity.

When mastication dispersal is prescribed, vegetative material will be reconstituted and strategically located back into the treatment unit. This changes the range of risks and concerns that the land manager must understand and remedied by the prescribing professional. If prescribed and implemented correctly, mastication dispersal should not excessively increase fire behaviour intensity, while other fire-related risks, such as fire severity associated with residence time, may increase.

Fire risks associated with this fuel hazard will subside over time, pending site index, masticated material chip size, distribution patterns, etc. Prevention measures not typically considered may need to be implemented until the risk naturally abates through compaction and organic decomposition. Additionally, mastication dispersal will potentially elevate other risk(s) not associated with fire behaviour - such as invasive species, native species suppression, leachate, etc. These risks will need to be addressed in the prescription before approval.

In cases where risk is elevated or not well understood, a monitoring plan should be prescribed and applied research techniques initiated. Dispersal of masticated material is a treatment option that addresses open fire/burning issues (air quality), utilization challenges and vegetation removal cost(s).

Mastication dispersal should never be the first course of action and should never impede innovation or utilization considerations. An efficacy review of mastication practice will be initiated after enough sample treatment units exist to gather a baseline set of data that supports an initial scientific assessment of this practice in British Columbia.

Dispersal of masticated material changes the range and type of risks that land managers and prescribing professionals must consider and remediate. If done correctly, it may lower the fire risk but does not remove all the risk; it only changes it.