CCSIC FUEL EMISSIONS REDUCTION TRAINING

SIC Best Practices Webinar | November 12, 2025

SUSTAINABLE FORESTRY INITIATIVE
CENTRAL CANADA
SFI-01139

OBJECTIVE 9. CLIMATE SMART FORESTRY

Performance Measure 9.2. Certified Organizations shall individually and/or through cooperative efforts involving SFI Implementation Committees or other partners identify and address opportunities to mitigate the effects associated with its forest operations on climate change.

Indicator 9.2.3. Based on best scientific information, Certified Organizations shall develop a program to identify and address greenhouse gas emissions within their operational control.

SUSTAINABLE FORESTRY INITIATIVE CENTRAL CANADA

SFI-01139

FUEL EMISSIONS REDUCTION TRAINING PACKAGE

Partnership with FPInnovations

Training Module

- Share best practices to help contractors and operators improve their performance in terms of fuel efficiency and emissions.
- Powerpoint version – can be delivered by anyone, and a recorded version delivered by Dean Caron of FPInnovations.

Field Bulletins

- One for harvesting operations and one for transportation.
- Designed to be quick tailgate session or a resource to keep in machines.

Section #1: Introduction to Fuel Efficiency and Emissions
Section #2: Fuel and Energy Management
Section #3: Harvesting Operations – Factors Influencing Fuel Consumption and Emissions
Section #4: Transportation – Factors Influencing Fuel Consumption and Emissions
Section #5: Understanding Cost Impacts of Machine Utilization, Productivity, Fuel Costs and Logging Chance
Section #6: Wrap Up and Key Messages

FIELD BULLETINS

Harvesting

SUSTAINABLE FORESTRY INITIATIVE CENTRAL CANADA
SFI-01139

FPInnovations

OPERATIONS

SFI and other forest certification organizations require sound fuel handling, fuel management and emissions strategies. Continued certification with such organizations is key to market access.

Climate change is occurring and modern science points to greenhouse gas (GHG) emissions as being a significant contributing factor. Climate change will continue to create operational and cost challenges for the industry.

The industry has a 'social license' to operate, meaning that industry must operate in a safe, environmentally and socially responsible manner.

HARVESTING

FACTORS INFLUENCING FUEL CONSUMPTION/EMISSIONS – BEST PRACTICES:

- Reduce idle time (feller buncher uses 3 L/hour, chipper 8L/hour while idling).
- Shut off engines while refueling or having lunch breaks.
- Follow cold weather procedures as suggested by manufacturers.
- Plan fueling to coincide with landing time for machine.

- Maximize production (m^3 per productive machine hour).
- Repair any leaks immediately in the fuel delivery system.
- Install fuel meters. Measure, monitor, compare and benchmark.
- Monitor fuel consumption per m^3 produced (monitor energy intensity).

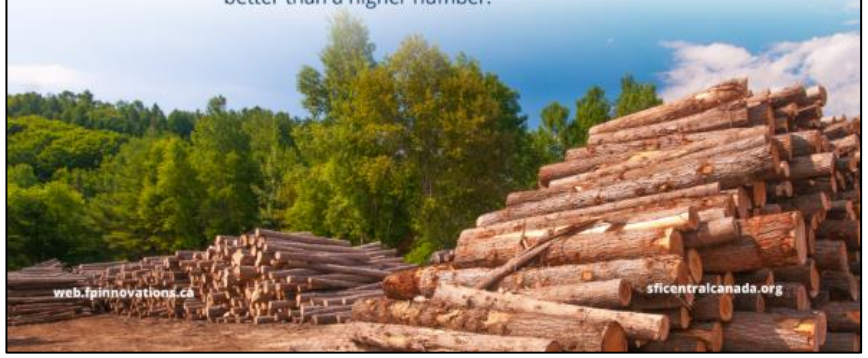
- Use proper viscosity oil and hydraulic fluid.
- Clean cooling system filters.
- Use machine lights only when necessary (saves up to 0.5 L/hour).

- Keep delimbing knives sharp and at correct angles (save up to 0.5 L/hour and increases productivity).
- Keep saw teeth and saw chains in perfect condition.
- Maintain saw heads as per manufacturers' recommendations.

- Keep engines tuned and in good condition.
- Keep tires properly inflated, chains properly tensioned, use chains only when and where required.
- Avoid maximum boom extension (5% less fuel).

- Start empty from the back then load up as you make your way to the landing (8% less fuel).
- Plan loaded travel in downhill direction.
- Locate roads at bottom of hills when possible to minimize uphill forwarding and skidding.

- Avoid abrupt machine movement (banging and clanging).
- Calculate your energy intensity! Here is how:
  - » Energy intensity for operations = Litres per productive machine hour/m^3 produced per productive machine hour.
  - » Example: Feller buncher using 45 L/hr per productive machine hour and producing 50 m^3 per productive machine hour.
  - » 45 L/50 m^3 = 0.9 L/m^3 energy intensity. A lower number is better than a higher number.



SUSTAINABLE FORESTRY INITIATIVE CENTRAL CANADA
SFI-01139

FIELD BULLETINS

Transportation

SUSTAINABLE FORESTRY INITIATIVE CENTRAL CANADA
SFI-01139

FPInnovations

TRANSPORT

SFI and other forest certification organizations require sound fuel handling, fuel management and emissions strategies. Continued certification with such organizations is key to market access.

Climate change is occurring and modern science points to greenhouse gas (GHG) emissions as being a significant contributing factor. Climate change will continue to create operational and cost challenges for the industry.

The industry has a 'social license' to operate, meaning that industry must operate in a safe, environmentally and socially responsible manner.

TRANSPORTATION

FACTORS INFLUENCING FUEL CONSUMPTION/EMISSIONS – BEST PRACTICES:

- Reduce idle time (uses about 2 L/hr).
- Use cab heaters instead of excessive idling.
- Safely maximize your payload, minimize your tare (empty) weight.

- Consider lower weight components (eg: aluminum rims, stakes) in order to maximize loads while reducing your tare weights.
- Consider tire pressure control systems that may be of benefit to your operation (2% to 30% potential savings in fuel consumption in some situations).

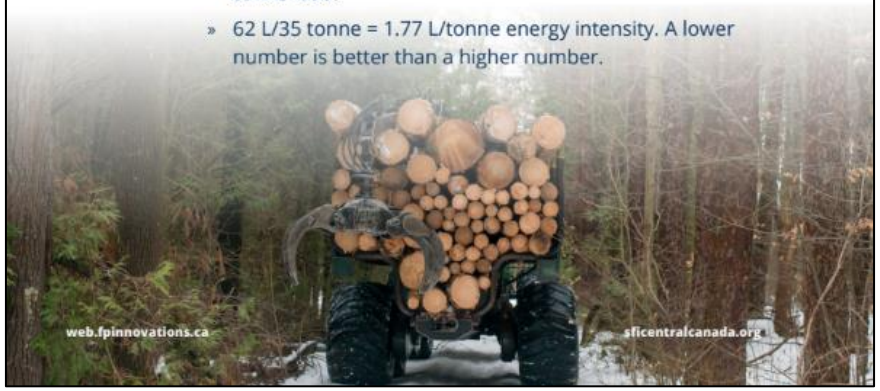
- Choose the best configuration for your circumstances and consider energy intensity in all options.
- Repair any leaks immediately in the fuel delivery system.

- Install fuel meters. Measure, monitor, compare and benchmark!

- Reduce waiting times if possible at mills and in the bush.
- Aerodynamic resistance increases dramatically with speeds greater than 90 km/hour. For each 10 km/hour over 90 km/hour fuel consumption increases by 10%.
- Screen your gravel for your roads when and where possible. Why haul extra boulders that need to be removed from the road and/or covered up? That uses extra fuel which creates more emissions and extra cost.

- Maintain your roads to a standard that allows efficiencies in cycle time, machine wear and tear, safety, overall cost while protecting the enviroment.
- Use onboard computers in your trucks/machines. Make sure the system is easy to use and meets your needs. Talk to your peers – find out what works for them.

- Determine the sweet spot for your truck. Balance between torque, HP, fuel consumption and operate within that range whenever possible.
- Calculate your energy intensity! Here is how:
  - » Energy intensity for transportation = Litres per 100 km/tonne load.
  - » Example: 4 axle standard truck using 62 L/100 km and 35 tonne load.
  - » 62 L/35 tonne = 1.77 L/tonne energy intensity. A lower number is better than a higher number.



SUSTAINABLE FORESTRY INITIATIVE CENTRAL CANADA
SFI-01139

QUESTIONS?

Madelaine.kennedy@weyerhaeuser.com

SUSTAINABLE FORESTRY INITIATIVE CENTRAL CANADA

SFI-01139