



The Muirburn Code 2017 – Supplementary Information 10

Leaf Blowers for Firefighting

Practices in this guidance, which are backed up by legislation and/or regulation, contain the word '**MUST**' in bold, letters. Failure to adopt these practices could lead to prosecution.

Parts of the guidance contain the word '**should**' in bold, lowercase letters. The actions identified in this way are not covered by legislation but land managers are expected to follow these parts of the guidance, as they represent sound, acceptable practices, which aim to achieve effective management.

The word '**could**' in bold, lowercase letters indicates an action that is desirable but not a requirement. The action could improve the quality of the activity or provide greater user satisfaction. Typically, the action will only be carried out if time and resources permit.

Acknowledgements

The guidance has been prepared for Scotland's Moorland Forum by representatives of: The Scottish Gamekeepers Association (SGA), and it has incorporated risk assessment information provided by South Wales Fire & Rescue Service, based on their extensive experience of using leaf blowers for firefighting.

The member organisations of Scotland's Moorland Forum are listed in Appendix 1.

Revision Table

Date	Reference	Details

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Figure 1: Leaf Blower in operation

1 Introduction

- 1.1 This guidance has been prepared for moorland managers to highlight the potential of leaf blowers to provide an additional fire control tool for use during muirburn operations and to assist the control of wildfires.
- 1.2 Leaf blowers were developed as a gardening tool to move debris such as leaves and grass cuttings using air propelled out of a nozzle.
- 1.3 Most gardening models are hand held and relatively low powered, with a choice of electric or petrol (2-stroke or 4-stroke) engines.
- 1.4 With the success of the early models, larger models were developed for commercial applications, and these are often back-pack mounted with a handheld wand.

2 Power of leaf blower

- 2.1 The power rating of a leaf blower can be measured in several ways:
 - 2.1.1 Cubic feet per minute or CFM - the volume of air that a blower expels through its nozzle in a minute. A leaf blower with a high CFM rating can move more leaves and debris than one with a lower CFM rating.
 - 2.1.2 Air speed in miles per hour (MPH), or metres / sec. This is the speed at which the air exits the nozzle. The higher the air speed, the more powerful the blower.
- 2.2 The more powerful models are required for firefighting purposes, typically such models are able to supply at a rate >400 CFM.

3 Choice of leaf blower

- 3.1 Light, battery-powered leaf blowers are not suitable for the arduous conditions associated with firefighting.
- 3.2 A suitable model for firefighting will be powered by either a two-stroke or a four-stroke petrol engine. The four stroke versions are a good choice, as they produce less hydrocarbons in the exhaust and have a lower fuel consumption.
- 3.3 Also, four-stroke models do not require oil adding to the petrol, which makes them easier to refuel.
- 3.4 The Stihl Magnum BR600 is in use with some fire and rescue services in the UK.
 - 3.4.1 The South Wales Fire and Rescue Service has provided their Appliance and Equipment Note for this machine and this can be viewed on [this link](#).
 - 3.4.2 Other manufacturers offer equivalent machines. Links to websites are in the Further Information section.

4 Using a Leaf Blower for Firefighting

4.1 A leaf blower works in three ways:

- 4.1.1 The forced air cools the surrounding flammable gases to prevent them igniting,
- 4.1.2 The forced air dilutes the flammable gases, and
- 4.1.3 The speed of the air forces other flammable gases away.

5 Safe Systems of Work

5.1 Only personnel trained and currently qualified in the equipment's use **should** operate the leaf blower.

5.2 Leaf Blowers **should** not be used on flame length above 0.5m height.

5.3 Personnel **should** not stand directly in front of a running blower, as they are at risk from projected debris. The blower **should** never be pointed at anyone.

5.4 The blower **should** not be refuelled when the engine is running. Refuelling **should** be carried out in a ventilated area using a funnel or pourer to reduce the risk of accidental fuel ignition from spillage.

5.5 The leaf blower **should** be operated by a team of two firefighters:

- 5.5.1 One wears the leaf blower (as a back pack) and walks along the edge of the fire blowing it out.
- 5.5.2 The second firefighter follows the blower operator at a safe distance with a beater to extinguish any reignitions. If there are constant re-ignitions, the blower operator is trying to extinguish the fire too fast.
- 5.5.3 The second firefighter also acts as a look-out for the leaf blower operator, whose focus of attention will be on the fire and who will not be able to hear anything above the noise of the leaf blower.

5.6 After carrying out a risk assessment, the leaf blower operator will determine the best way to attack the fire. This will either be walking in the unburnt vegetation and blowing the fire into burnt areas, or walking on the burnt area and blowing the fire out into the unburnt vegetation,

- 5.6.1 Generally walking on the burnt areas is safer, but both methods will prove successful.
- 5.6.2 Due to wind direction, smoke and slope it is not always possible to move in the burnt areas safely.

6 Advantages of Using a Leaf Blower

6.1 When compared with using a fire beater, less user fatigue, especially when dealing with grass fires.

6.2 Excellent results, when used in conjunction with water sprayers.

6.3 Cost effective, as fewer brushes and shovels need to be purchased.

- 6.4 Long term savings, as only servicing and petrol costs are incurred.
- 6.5 Easily transported and stored.

7 Limitations and Safety Factors

- 7.1 Wind speed and levels of moisture in vegetation **should** be considered when leaf blowers are to be used.
- 7.2 Operators **should** take care that hot embers are not blown into adjacent vegetation, as these have the potential to ignite unwanted fires, in dry conditions.
- 7.3 When operating the blower, firefighting personal protective equipment (PPE) **MUST** be worn as per manufacturers recommendations, including: goggles, hearing protection, dust mask, gloves and coveralls.
- 7.4 The Operator's Manual **should** always be consulted, especially when refuelling and operating the hot device. All blowers **MUST** be serviced as per the manufacturers recommended schedule.
- 7.5 A Risk Assessment **MUST** be carried out before a leaf blower is used. See the example assessment provided by South Wales Fire and Rescue service which is available at [this link](#).
- 7.6 The operator **should** be aware of the recommended safe working area of 15 metres all around the leaf blower and should cease operations if anyone enters this zone, while the machine is being operated.
- 7.7 A leaf blower does not provide any cooling, therefore there is a need for an operator with a fire beater to follow the leaf blower to prevent re-ignition.

8 Summary

- 8.1 Leaf blowers have not been fully evaluated for use in muirburn / fire control operations, but the experience of operators in different parts of the world has been that they are an effective, additional tool if used within their capabilities.

9 Links to Further Information

- 9.1 The Muirburn Code – Supplementary Information 5
<http://muirburncode.org.uk/wp-content/uploads/2017/10/5-Planning-for-burning.pdf>
- 9.2 Husqvarna Leaf Blowers
<https://www.husqvarna.com/uk/products/blowers/>
- 9.3 Stihl Blowers and Vacuum Shredders
<https://www.stihl.co.uk/STIHL-Products/0400/Blowers-and-Vacuum-Shredders.aspx>
- 9.4 Makita Petrol Leaf Blowers
<https://www.makita.co.uk/products/petrol-blowers.html>
- 9.5 McCulloch Leaf Blowers
<https://www.mcculloch.com/uk/products/leaf-blowers/>

Members of Scotland's Moorland Forum

Association of Deer Management Groups
British Association for Shooting and Conservation
British Deer Society
British Trust for Ornithology (Scotland)
Cairngorms National Park Authority
Confor
Forestry Commission Scotland
Game and Wildlife Conservation Trust
Heather Trust
James Hutton Institute
John Muir Trust
Loch Lomond & The Trossachs National Park Authority
National Farmers Union Scotland
National Trust for Scotland
Royal Institution of Chartered Surveyors in Scotland
Royal Society for the Protection of Birds Scotland
Scottish Association for Country Sports
Scottish Countryside Alliance
Scottish Environment Protection Agency
Scottish Gamekeepers' Association
Scottish Government
Scottish Land & Estates
Scottish Natural Heritage
Scottish Raptor Study Groups
Scotland's Rural College (SRUC)
Scottish Water
Scottish Wildlife Trust