

FARM PRACTICE

STATIONARY EQUIPMENT

Description

Stationary equipment is defined as any type of equipment that, under ordinary operating conditions, would remain in one location. It may be possible to move the equipment to another location but it would not be operated during the relocation process.

Nuisance Concerns

The three main disturbances referred to in the *Farm Practices Protection (Right to Farm) Act* are odour, noise and dust. Of particular concern to stationary equipment use is noise.

Noise

Farmers engage in a variety of activities that require the use of equipment which generate noise. Noise is defined as any sound that is audible but judged to be an unwanted, irregular or erratic disturbance. Noise levels vary and may rise when equipment is run at higher speeds. Noise may be generated continuously or intermittently.

See also Nuisance Reference: [Noise](#)

Activities and Operations

Operation

Stationary equipment used for the production, storage, processing or marketing of farm products may be operated 24 hours a day. All stationary equipment should be operated as recommended by the manufacturer and should be maintained in good working order. In addition, noise suppression devices supplied by the manufacturer should be incorporated if impacts on neighbours or nearby workers are probable. In some circumstances a tractor – normally considered a piece of mobile equipment – may be operated in a stationary location to power emergency generators, drainage pumps, irrigation pumps or other portable equipment.

Location

Careful considerations should be given to the impacts stationary equipment may impose. It should be located where the potential impact on neighbors is minimized and – if possible – within a sound reducing structure such as an insulated equipment container. If an alternative better location cannot be incorporated and a sound proofing structure cannot be included, other attempts should be made to reduce impacts by installing tree buffers, acoustic panels or other noise reduction devices.

Crop Protection

Propane cannons are used to scare birds and protect crops. A variety of other noise-making devices may also be used.

See also Farm Practice: [Wildlife Damage Control – South Coastal BC](#)
[Wildlife Damage Control – Interior BC](#)

Feeding Equipment

Feeding systems for livestock are often mechanized using a combination of stationary and mobile equipment. Occasionally, the feeding operation is timed with other activities such as milking on dairy farms.

See also Farm Practice: [Structures](#)

Heating and Cooling Equipment

Large buildings, greenhouses or buildings in which drying or cooling of produce occurs may require large pieces of equipment such as boilers for heating purposes and compressors for refrigeration. This equipment may run almost continuously day and night.

See also Farm Practice: [Structures](#)

Power Generators

In remote locations, power generators may be used on a continuous basis. Stand-alone standby generators connected to a dedicated diesel engine are often used to supply emergency power during power outages. Sometimes tractors are used as the power source for the generator. In some cases cogeneration plants may be integrated into greenhouse operations to provide electricity and heat. Anaerobic digesters on farms with liquid-based manure systems may include stationary equipment to introduce methane gas into the natural gas pipeline grid or electrical energy into the power grid. In some areas of the province, wind turbines may be used to generate power, both for farm consumption and electricity sales to the grid. Wind turbines may be operated continuously if consistent winds are prevalent or intermittently during times when wind velocities are adequate.

See also Farm Practice: [Mobile Equipment](#)

Processing and Packaging Equipment

A variety of processing and packaging activities are carried out on farms. Cleaning, size reduction, mixing, sorting, drying, cooling and packaging operations may occur. Conveyance and materials handling equipment is also used.

See also Farm Practice: [Product Processing](#)

Ventilation Systems

Ventilation is essential to provide the correct environment in buildings for live animals, stored horticultural produce, and drying or cooling operations. Large fans are often used for summer cooling in poultry and swine barns. Onion drying and fall cooling of potatoes also require large amounts of air for ventilation.

See also Farm Practice: [Structures](#)

Water Systems

Water is typically conveyed and distributed with pumps in livestock watering, irrigation and drainage systems. Installations with quiet electric motors are common in permanent. In some situations, tractors may be used as the power source for pumping systems, especially for irrigation purposes.

See also Farm Practices: [Drainage](#)
[Feeding and Watering](#)
[Irrigation](#)

Waste Management Equipment

Pumps, augers, chains and other conveyance equipment may be used on livestock farms. Compost turners are used in compost operations. On farms where anaerobic digestion is incorporated to produce and process biogas, continuous operation of pumps, compressors, conveyors, boilers, cogeneration engines/generators, valves, absorption towers, grinders and shredders is common. Anaerobic digestion equipment which generates noise should be located wherever possible within dedicated structures such as sound proofed containers or separate insulated buildings.

See also Farm Practices: [Manure Storage and Use](#)
[Composting](#)

Wind Machines

Wind machines may be used to protect crops from injury caused by cold temperatures. Wind machines have been commonly used to protect grapevines and tender tree fruits from frost damage in the spring in the Okanagan Valley. Recently, wind machines have also been used to protect sensitive crops during the dormant winter season when much lower temperatures may also cause damage.

Wind machines have also been used in the Lower Mainland to protect blueberries. They are effective only when a temperature inversion exists where the air at ground level is colder than at the blade level of the machine. Wind machines are typically located in low spots where cold air pools. Temperature inversions typically form overnight after clear sunny days and during conditions in which wind speeds are very low or non-existent. Wind machines force the warmer air at blade elevation towards the ground, displacing and mixing with the cold air.

A range of passive and active measures can be utilized to accomplish frost protection. Passive measures include selecting crops and varieties resistant to cold damage, improving air drainage through tree removal, limiting soil cultivation, and ensuring adequate soil moisture. Active strategies include the use of heaters, irrigation systems and wind machines.

Guidelines for the use of Wind Machines – South Coastal British Columbia Only

Wind machines have been used to provide frost protection in South Coastal British Columbia for blueberries since 2009. With the expansion of blueberry acreage and through careful observation and data collection, the extent of frost damage has become more apparent. Substantial damage was especially apparent in April 2008. Other fruit crops that may benefit from frost protection measures are grown on a much smaller scale in the southwest area of the province.

Passive frost protection strategies are generally employed across the board for blueberry production. Variety selection is based on a number of factors with the most common varieties moderately sensitive to frost damage. Soil cultivation is not practiced in blueberry production, thus typically lending the soil environment to having adequate moisture that by nature promotes frost protection.

Active frost protection strategies are limited. Water application by irrigation is generally not suitable due to drainage concerns in areas where blueberries are grown. Heaters are generally considered unfeasible due to increasing fuel costs, high labour requirements and environmental concerns related to air quality. Wind machines are considered to be the preferred active crop protection technique. They incorporate large engines operating at high speeds and incorporate long blades to blow a large volume of air a long distance. Sound generates from the engine and the blades as they rotate. It is particularly difficult to make wind machines quieter. Slower blade speeds will reduce noise and airflow; to accomplish the same overall protective effect in a given area would, however, require more machines.

Many individuals are annoyed by sounds generated by wind machines. The sound is not unlike that created by a helicopter where whining and thumping noise is prevalent. Depending on the manufacturer, it typically requires four to seven minutes for a blade assembly to make a full sweep around a tower. The sound typically oscillates in intensity in sinusoidal fashion. Sound pitch and levels are affected by landscape and outdoor environments, as well as conditions inside houses. Wind machines produce low frequency sounds that travel long distances and may penetrate houses, similar to the low bass music generated from a stereo system.

Wind machines are typically operated at night and early morning when the temperatures are the lowest. Several years of experience in South Coastal British Columbia has demonstrated that wind machine operation ranges from 25 to 75 hours annually.

The following guidelines should be considered by farmers in the operation of wind machines:

- Avoid placing units within 200 metres of a neighbouring residence. The separation distance may be waived or adjusted if written permission from the owner of a neighbouring residence is obtained.
- Use real-time temperature and wind sensors to monitor conditions and to provide guidance for machine management.
- Do not operate wind machines in wind conditions over seven kilometers per hour.
- Keep records of dates and hours of use.
- Use mufflers on engines that drive the wind machine.
- Operate wind machines only when there is the threat or possibility of cold injury to crops within the area of influence of the units and in accordance with a frost management plan.

Related Farm Practices

Other farm practices that pertain to stationary equipment use include, but are not limited to, the following.

Storage of Hazardous Material

Stationary equipment often uses fuel and lubricants that are usually considered hazardous material.

See also Farm Practice: [Storage of Hazardous Material](#)

Legislation

Information on federal and provincial legislation can be found in Appendices B and C. Acts, regulations and bylaws that regulate or may affect stationary equipment use include, but are not limited to, the following.

Provincial Legislation

The *Environmental Management Act* regulates air pollution.

The *Workers Compensation Act* regulates worker safety, including exposure to noise. Part 28 of the *Occupational Health and Safety Regulation* establishes minimum health and safety requirements for agricultural workers.

Local Government Legislation

Local government noise bylaws may be applicable in some jurisdictions.

Publications and Websites

Publications that provide further information on stationary equipment use include, but are not limited to, the following. Refer to Appendix D for details.

British Columbia Environmental Farm Plan Reference Guide

British Columbia Frost Protection Guide

Protecting Orchards from Spring Frosts

Understanding and Managing Frost

Websites that provide useful information are noted below.

<http://www.agf.gov.bc.ca/resmgmt/publist/300Series/382600-1.pdf>

<http://www.bcfarmbiogas.ca/files/pdf/Electricity%20Feasibility%20Study.pdf>

<http://www.bcfarmbiogas.ca/files/pdf/Biomethane%20Feasibility%20Study.pdf>