

FARM PRACTICE

IRRIGATION

Description

Irrigation is defined as the application of water to a crop to replace the climatic moisture deficit over an irrigation interval. Chemigation is defined as the application of fertilizers and other chemicals to a crop through an irrigation system.

Irrigation is often required in British Columbia because climatic moisture deficits normally occur in many parts of the province during the summer months. Farmers access water for irrigation purposes by pumping from surface or groundwater sources or by having it delivered from an irrigation district or other water purveyor.

Activities and Operations

Access to Water

The *Water Act* stipulates that a water licence is required to extract water from a surface water source. Work in and about streams may also require an approval under the *Water Act*. The *Fisheries Act* prescribes that irrigation pumps and water intakes used on fish-bearing water sources are to be properly screened to prevent fish from being trapped. At the present time, licences or permits to access groundwater are not required.

Irrigation

Irrigation equipment may operate 24 hours a day during the crop-growing season. The amount of water applied should not exceed the climatic moisture deficit for the area or an amount that can be stored by the soil within the crop rooting depth. Irrigation systems should be designed and operated in accordance with the *BC Sprinkler Irrigation Manual* or the *BC Trickle Irrigation Manual*. Irrigation water should only be applied target areas. Part-circle sprinklers, shields or other devices should be used to ensure that irrigation spray is not introduced to public roads, power lines or other non-target areas.

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

Manure Application

Irrigation systems may be used to apply liquid manure to land if applied at agronomic rates. Operators must ensure that prevailing winds and spray patterns are considered to prevent spray drift or direct introduction of slurry into watercourses or wells, whether potable or not. A variety of alternatives such as applying manure with tanker units, dribble bars or by direct injection may be more suitable near particularly sensitive areas. Whenever possible, it is advisable to apply slurry between forage crop cuts at rates matched with nutrient requirements rather than relying on frequent or daily applications.

For systems that incorporate cross-connections, fail-safe mechanisms or practices are essential to ensure that waste is not inadvertently introduced via system piping into surface water or groundwater sources. Acceptable methods include the removal of a pipe section between the surface or groundwater source and the liquid slurry source, double check valves on the surface or ground water side of the system, or some other approved device such as a check valve with a low-pressure drain and vacuum relief valve. Drainage resulting from the opening of lines should be directed away from water sources. End caps or plugs must be installed on the pressure side of systems after pipe sections are removed.

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

Chemigation

Fertilizers and other chemicals may be applied to agricultural crops through sprinkler and trickle irrigation systems, provided that the product label states that the given chemical is approved for chemigation and provided that proper backflow preventers have been installed. The standards listed in the publication entitled *Chemigation Guidelines for British Columbia* provide guidance to backflow prevention. Local irrigation district approval may also be required.

Maintenance

Drip or trickle irrigation systems may require the injection of acids or chlorine to prevent emitters from plugging over a period of time.

Frost Protection

Irrigation equipment is often used to protect crops from frost during the spring and fall. Irrigation must be initiated prior to the onset of the frost and continued until the danger of frost has passed. Frost protection measures may be implemented for a variety of commodities and crops such as tree fruits, berries and vegetables.

Crop Cooling

Some new apple varieties must be cooled when summer temperatures peak to prevent the fruit from becoming scalded by the sun. Overhead irrigation systems may be used to keep fruit at an acceptable temperature. Irrigation systems will operate intermittently throughout the day when they are cooling crops.

Reclaimed Water Application

Treated reclaimed water can be used to irrigate agricultural land. The provincial *Environmental Management Act*, *Municipal Sewage Regulation* and local bylaws should be adhered to when reclaimed water is used to irrigate crops. A *Code of Practice for the Use of Reclaimed Water* provides guidance on the use of reclaimed water.

See also Farm Practice: [Non-Agricultural Waste](#)

Water Storage

Storage is often required to ensure that sufficient irrigation water is available later in the irrigation season when stream flows are low. Farmers often collect spring runoff into storages created by dams or dugouts. All storage reservoirs constructed by a dam must be licensed under the *Water Act*. Dugout water storage should be licensed; however, licensing for such storage is not a requirement in some regions of the province, provided that the dugout does not divert a watercourse and is filled only with surface runoff collected from an individual's own property.

Legislation

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

Federal Legislation

The *Fisheries Act* requires proper screening of irrigation intakes in watercourses to protect fish.

Provincial Legislation

The *Environmental Management Act* and the *Municipal Sewage Regulation* under the Act provide guidance for the use of reclaimed water on agricultural land.

The *Local Government Act* and the plumbing provisions within the *British Columbia Building Code* establish standards for backflow preventer installation.

The *Water Act* requires that a license or permit be applied for to withdraw water from surface water sources.

Local Government Legislation

Applicable water purveyor bylaws may specify water delivery rates or backflow prevention requirements.

Publications

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

British Columbia Environmental Farm Plan Reference Guide

British Columbia Environmental Farm Plan Reference Guide – Nutrient Management Reference Guide

British Columbia Environmental Farm Plan Reference Guide – Irrigation Assessment Guide

British Columbia Frost Protection Guide

British Columbia Sprinkler Irrigation Manual

British Columbia Trickle Irrigation Manual

Chemigation Guidelines for British Columbia

Code of Practice for the Use of Reclaimed Water

Irrigation Scheduling Techniques

Irrigation System Design with Reclaimed Water

Using Irrigation for Tree Fruit Cooling