

## COMMODITY

## GREENHOUSE

### Description

British Columbia's greenhouse industry is characterized by its engagement in three major enterprises: the greenhouse vegetable sector which produces primarily tomatoes, cucumbers, peppers, lettuce, eggplants and herbs; the floriculture sector which raises ornamentals such as cut flowers and flowering, potted, bedding and foliage plants; and the nursery sector which propagates a wide range of trees, tree seedlings, shrubs, perennials and vines.

Most greenhouse operations are located in the Fraser Valley. The average greenhouse covers an area of from two to four hectares with larger operations reaching sizes of greater than 20 hectares. More than one greenhouse may be located on a given farm property. Greenhouses are very efficient and productive, typically producing 15 to 20 times more produce than a field of the same area.

Greenhouse vegetables in B.C. are managed in such a manner as to require no herbicides and little or no pesticides. Instead, beneficial insects and other integrated pest management techniques are used. B.C. is considered a world leader in the implementation of biological control technologies.

Greenhouse vegetable operations are in production for 10–12 months of the year, depending on the crop grown. The production cycle begins with seeding activities in October or November. The majority of seedlings are transplanted into the greenhouse in November or December, although some operations transplant as late as February or March. Transplantation for cucumbers occurs every three to four months because three to four crops are grown annually. In general, crop harvest may begin as early as January and end as late as December.

Greenhouse floriculture products include cut flowers, flowering potted plants, bedding plants and foliage plants. Cut flowers include a diverse range of annuals, perennials, bulbs, ornamental grasses and woody cut flowers. The predominant cut flower crops are roses, gerberas, freesias, lilies, altstroemeria, daffodils, tulips, snapdragons, gladiolas, orchids, and stocks. Potted plants also include a broad range of crops with the main varieties comprising chrysanthemums, azaleas, African violets, orchids, cineraria, cyclamen, exacum, gerberas, gloxinia, hydrangeas, kalanchoes, begonias, bedding plants and foliage plants such as ferns. Seasonal favorites are poinsettias and Easter lilies. Bedding plants popular with home gardeners include impatiens and geraniums. Floricultural products are produced year-round.

Greenhouse production also includes the germination and growth of seedlings and the propagation of plants for use in Christmas tree, nursery and silviculture operations.

Greenhouse growers require specialized equipment to mix growing media and supplemental artificial lighting to maintain production levels. In addition, close proximity to grading and distribution facilities and convenient road access for transportation of products and materials is necessary for efficient operation. Products are often delivered to market early in the morning.

# Farm Practices of Particular Interest

Practices for specific farm activities can be found in the Farm Practice section of this reference guide. Farm practices that are of particular interest to greenhouse production include the following.

## Farm Buildings

Greenhouse producers require buildings to protect equipment and store growing media, fertilizers and pesticides.

See also Farm Practice: [Storage of Hazardous Material](#)  
[Storage of Farm Supplies and Products](#)  
[Structures](#)  
[Ventilation](#)

## Greenhouse Wastes

Greenhouse wastes such as crop residue, plastics and growing media must be handled, collected, stored, and disposed of in accordance with the *Agricultural Waste Control Regulation*. Maximum concentrations of allowable particulate matter in boiler emissions are addressed in the *Code of Agricultural Practice for Waste Management* and in Metro Vancouver's *Agricultural Boilers Emission Regulation Bylaw (No. 1098, 2008)*.

See also Farm Practice: [Farmstead Refuse](#)  
[Crop Residue Management](#)  
[Composting](#)  
[Burning](#)

## Irrigation

Greenhouse growers apply irrigation water daily in frequent, short applications. Fertilizers are generally applied through the irrigation water. Recirculation systems should be used whenever practical to collect excess irrigation water and to prevent leachates from entering groundwater.

See also Farm Practice: [Irrigation](#)

## Lighting

Supplemental lighting is essential to greenhouse crop production. Yard lights may also be used for security or safety purposes.

See also Farm Practice: [Lighting](#)

## Pesticides

The greenhouse industry in British Columbia is known for its use of integrated pest management technologies and practices. In limited situations where some pesticide use may be necessary, care in application rates and storage techniques must be taken.

See also Farm Practice: [Pesticides](#)

## Removal of Soil or Placement of Fill

Soil removal or placement of fill is a permitted agricultural activity in situations where this practice is necessary. A *Notice of Intent*, however, must be submitted to the Agricultural Land Commission for specified farm and non-farm uses where soil or fill must be removed or introduced. Allowable specified uses include greenhouses, farm buildings or structures for intensive livestock operation or

mushroom production, aquaculture facilities, or composting facilities. Conditions must be specified and removal of soil or placement of fill must exceed 2% of the area of the parcel. Proposals under the *Notice of Intent* may be allowed with approval of the Land Commission and with terms and conditions set by the Chief Executive Officer of the Commission.

### **Stationary Equipment**

The greenhouse industry is highly mechanized. Equipment is used for production, processing and product handling. Equipment may be used 24 hours a day during the production season. Cogeneration power units require round-the-clock operation for the production of heat and carbon dioxide.

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

### **Transportation**

Many greenhouse operators use vehicles that haul products and make deliveries around the clock. Adequate space on the farm property must be incorporated to accommodate the volume, movement, and parking of trucks and other traffic related to the activities and production of the farm. Operations which sell directly to the public must provide adequate off-road parking.

See also Farm Practice: [Transportation](#)  
[Direct Farm Marketing](#)

### **Water Management**

Stormwater runoff from greenhouse operations is permitted to enter municipal drainage systems, provided that a storm water management plan has been prepared in accordance with municipal bylaws. Water containing nutrients or other agricultural waste must not be directly discharged into a watercourse or groundwater supply.

See also Farm Practice: [Drainage](#)  
[Stormwater Management](#)  
[Fertilizers and Soil Conditioners](#)

### **Wood Waste**

Wood waste in the form of aged bark is typically used as a component in soilless potting media for nursery production. The greenhouse industry also uses wood waste as a fuel source in boilers.

See also Farm Practice: [Wood Waste](#)

## **Principal and Accessory Buildings**

From an operational perspective, the principal farm buildings or structures used in greenhouse enterprises are greenhouses, header houses, boiler rooms, direct farm marketing buildings, and storage buildings. Accessory farm buildings may include offices; agricultural waste, chemical, and compost storages; farm marketing buildings; generator enclosures; machine storages; on-farm composting, processing, soilless medium and product preparation structures; woodwaste storage buildings; and detention or retention ponds. From a watercourse protection perspective, however, the definition of principal and accessory buildings may differ. For the purposes of determining applicable setbacks from watercourses and property lines, therefore, local government bylaws or the *Guide for Bylaw Development in Farming Areas* should be consulted. Building assessments may need to be conducted on a case-by-case basis if the designation of a building as principal or accessory is unclear.

# Legislation

Agricultural producers are expected to follow all legislation that pertains to their farming operations. The *Farm Practices Protection (Right to Farm) Act* stipulates that the farm operation must meet the *Public Health Act*, *Integrated Pest Management Act*, *Environmental Management Act* and the regulations under those Acts. Information on federal and provincial legislation can be found in Appendices B and C.

Acts that pertain to specific farm activities are listed in the Farm Practices section of this reference guide. Local government bylaws may also apply to some farm practices. Acts that are not referenced elsewhere and which may be of special interest to greenhouse growers include the following.

## Federal Legislation

The *Fisheries Act* prohibits the discharge of deleterious substances such as pesticides and agricultural wastes into waters frequented by fish.

## Provincial Legislation

The *Environmental Management Act* and its associated *Agricultural Waste Control Regulation* set emission standards for boilers and heaters fuelled by biomass.

The *Safety Standards Act* regulates licensing of pressure vessels and levels of maintenance staff required to oversee heating plants.

## Local Government Legislation

Applicable local government legislation may include site coverage, noise and lighting bylaws. Local governments may introduce emission standards for boilers used to heat greenhouses.

# Publications

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

*British Columbia Environmental Farm Plan Reference Guide*  
*British Columbia Good Agricultural Practices (GAP) Guide*  
*Chemigation Guidelines for British Columbia*  
*Floriculture Production Guide for Commercial Growers*  
*Greenhouse Pepper Production Guide*  
*Greenhouse Vegetable Production Guide for Commercial Growers*  
*Nursery & Landscape Pest Management & Production Guide*  
*On-Farm Food Safety*