

## 4 Organic and Pesticide Free Production

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The objective of this section is to make prospective organic potato producers aware of some of the regulatory aspects and general agronomic practices that will assist in the production of "certified organic" potatoes.

Organic potato production prohibits the use of synthetic chemicals, fertilizers, pesticides, growth regulators, or genetically modified varieties. The decision to grow organic potatoes may be based on a personal desire to adopt an organic production system, to capitalize on the demand in the organic marketplace, or for various other reasons.

### 4.1 Regulations and Certification

Regulations for the production and processing of organic products were established by the Canadian General Standards Board and approved by the Standards Council of Canada in June 1999. Under the "National Standard of Canada for Organic Agriculture" (CAN/CGSB-32.310-99), minimum standards for the organic industry have been outlined. Individual certifying bodies use these regulations as a basis for their own standards, which are often more stringent than those in the National Standard.

A certifying body is a group that provides third-party verification of the organic production process. There are currently over forty such bodies in Canada. Each certifying body has the authority to grant "certified organic" status to any plant or animal product meeting the Regulation CAN/CGSB-32.310-99.

There are several general steps and practices to follow to become a certified organic potato grower.

#### Market Research

- Market research is an essential step before proceeding with certification or production. Determine the market potential and marketing strategies that will be used to sell your organic products.
- Talk to certified organic producers or processors about their experiences in organic production.

#### Certification

- Contact a certifying body and obtain copies of the standards and regulations. Familiarize yourself with the standards and guidelines of the certifying body you choose to deal with and develop a long-term strategy for your organic production.

- An independent organic inspector contracted by the certifying body will perform a farm inspection.
- #### Production Research

- Research organic production methods thoroughly. Sources of information include books, fact-sheets, Internet, producer organizations, organic farmers and organic specialists with federal and provincial agriculture departments.
- Attend organic producer organization information meetings and network with other organic farmers and gain from their experiences.

#### Production

- Plan to start small. Increase the size of the organic operation over several years.
- Grow and market products in accordance with the standards and guidelines established by the certifying body.
- Develop a comprehensive, clear and accessible record-keeping system (audit trail).

#### Marketing

- Ensure that all labelling complies with guidelines and regulations of the certification body.

### 4.2 Organic Potato Production Practices

A wide range of insect, disease and weed pests can attack potatoes. The key to successful production of potatoes without the use of synthetic pest control products is prevention and plant nutritional health.

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Experienced potato producers will be aware of the major threats to healthy potato production and know the consequences of aggressive pest attacks. Novice commercial potato producers may not be aware of the destruction of uncontrolled pest invasions and poor plant nutritional health and must be aware of the pitfalls of failing to adequately protect potato crops. Certain pesticides are approved for use by certification bodies. Consult the "Permitted Materials List" of the certifying body before applying a product. Ensure that all products used as pesticides are also approved by the Pest Management Regulatory Agency (PMRA). PMRA is the federal agency that approves the use of all pesticides (organic or synthetic) in Canada. It is against the law to apply a pesticide that is not registered by PMRA.

#### Overall plant-health considerations

- It is recommended that organic potatoes be grown in a minimum of a 4-year rotation to minimize yield losses from soil-borne diseases such as *Verticillium* wilt, *Fusarium* and *Rhizoctonia*.
- General soil fertility must be maintained by a well-planned management system involving rotations, legumes, straw and composted manure.
- Manure plays an important role in providing plant nutrients, however, organic producers must ensure that the manure has been composted properly and meets the standards approved by the certification authority.
- Organic producers cannot use a fungicide seed piece treatment, so it is recommended that whole seed be planted. Whole un-cut seed tubers are less likely to become infected with soil borne diseases than cut seed pieces. See section 3.2 *Seed Selection, Storage and Cutting* for more details.
- Plant low generation certified seed, which has a lower incidence of seed borne diseases.
- Certain certifying agencies and end-users may require the use of organic seed. Organic producers must clarify this prior purchasing seed.
- Vigorously growing potato plants are more resistant to insects and diseases than plants under stress. For example, the main prevention for early blight is ensuring that a potato crop has an adequate, season-long supply of nitrogen. Adequate soil moisture in the presence of adequate plant nutrition will assist in maintaining overall plant health.
- Potatoes should be planted after risk of frost has passed and when rapid emergence will reduce risks of seed decay.

#### 4.3 Pest management considerations

**Insects** See section 3.6.2 *Insect Management* for more detailed information.

- The main threat to yield loss is from Colorado potato beetle (CPB).
- *Bacillus thuringiensis* (Bt), a biological insecticide is accepted by many certification agencies, but producers are advised to consult with their own agency as to which Bt strains are approved for use.
- Isolation from production areas with a high density of potato acres will reduce risks from all insect pests.
- Locating a potato field at least 200 - 300 meters from a previous season's field will reduce the population of over-wintering Colorado potato beetle adults and resulting larvae. In spite of the success of this strategy be prepared with a plan to control larvae.

**Weed control** See section 3.6.3 *Weed Management* for more details about cultural and mechanical weed control.

- In extreme cases, summer fallow the year prior to potato production may be required to reduce weed populations to a point where they will not reduce yields or interfere with harvest operations.
- Post-plant cultivation (hilling, harrowing and hilling) is effective in controlling annual weeds, however, excessive cultivation or cultivation at the wrong time may reduce yield.

**Diseases** See section 3.6.4 *Disease Management* for more detailed information.

- Low-generation certified seed must be used to reduce the risk of seed-borne diseases.
- Whole seed must be used to reduce risk of spreading disease during cutting.
- Most whole seed pieces will emerge and produce healthy plants. However, some cut seed pieces will always decay resulting in reduced final stand. Plants will grow from seed tubers that are partially decayed, however vigor and yield will be reduced.
- Isolation may reduce the risks from diseases such as late blight.