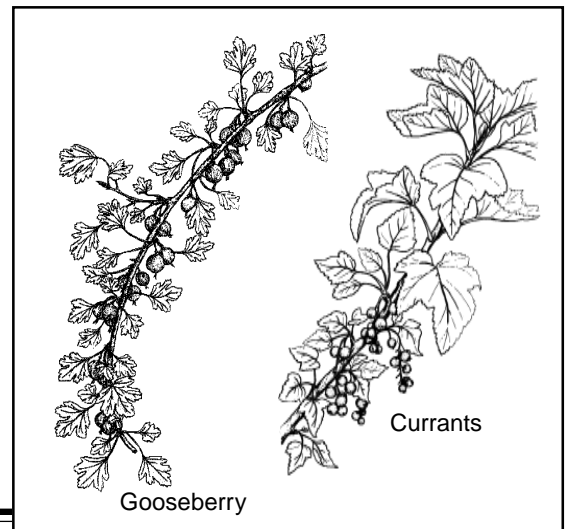


# Currants & Gooseberries

**Pest Management Guide for BC Commercial Growers**

*August 1998 Edition*



This guide is produced for commercial growers and includes currently recommended practices for pest control in currants and gooseberries. It includes only products that are registered for use in Canada at the time of publication, and are available in BC.

When planning a spray program, follow integrated pest management (IPM) principles to avoid unnecessary pesticide sprays. These principles are given in the 1998/99 Berry Production Guide (BCMAF and LMHIA publication).

Follow the pesticide recommendations in this guide to avoid excessive residues on food crops. Exceeding recommended rates or decreasing the days before harvest can result in high pesticide residues. Be sure to read the label on the pesticide container for complete instructions, warnings and legal restrictions regarding the use of the pesticide. The label is

the legal document concerning the pesticide use. Crops found with high residues or residues of unregistered pesticides can be seized and destroyed by the Health Protection Branch of Health Canada. For more information on the safe use of pesticides and calibrating sprayers refer to the 1998/99 Berry Production Guide (BCMAF and LMHIA) available from the Abbotsford Agriculture Centre.

Pesticide registrations and residue tolerances may vary in countries to which fresh or processed vegetables are exported. If the crop is to be exported, use products that have acceptable residue tolerances in the country of destination. Other products should not be used.

The BC Ministry of Agriculture and Food does not assume liability for crop loss, animal loss, health, safety or environmental hazards caused by the use of products or practices listed in this guide.



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# Weed Control

Pest	Chemical Control	Rates	Currant	Goose-berry	Directions for Use & Comments
<p>ALL EMERGED GREEN SEEDLING WEEDS AND ESTABLISHED BROADLEAVED WEEDS AND GRASSES</p>	<ul style="list-style-type: none"> <li>Gramoxone Ⓜ** (paraquat) ZNA PCP 8661</li> </ul>	<p>5.5 L/ha in 1100 L of water</p> <p><b>or</b></p> <p>5 tbsp or 75 ml/100 m<sup>2</sup> in 10 L of water</p>	<p>✓</p>	<p>✓</p>	<p>A non-selective, contact herbicide. Spraying under low light conditions (i.e. cloudy days or in evenings) will improve translocation within the weeds resulting in improved control of weeds and grasses.</p> <p>Apply as a directed spray to the row area under bushes established one or more years. Use a shielded nozzle and low pressure to avoid accidental contact or drift onto desired green growth. Apply first spray in the early spring before weeds are 10 cm high. Repeat as necessary.</p> <p>Mulches of sawdust or shavings will help suppress weed growth. Apply during the late winter early spring before the weeds emerge. Apply about a 10 cm (4 in) depth uniformly under the bushes in approximately a 1 m (3 ft) wide band.</p> <p>Control weeds in the aisles between the rows with frequent shallow cultivation <b>or</b> by establishing a slow-growing grass sod which can be mowed, as required.</p>

\*\* Although the toxicity rating of GramoxoneⓂ (paraquat) has not been clearly established as “very toxic” there is no doubt that swallowing it could be fatal. There is no specific antidote for GramoxoneⓂ (paraquat). Use extreme precautions to avoid accidental swallowing of this herbicide.

### Registrants by Code:

- BBB Bayer Inc.
- PLG Plant Products Co. Ltd.
- SXA Sanex Agro Inc.
- UAG United Agri Products
- UBC UBC Chemicals Corp.
- ZNA Zeneca Agro



# Insect Control

Pest	Chemical Control	Rates	Currant	Goose-berry	Directions for Use & Comments
APHIDS	• Clean Crop Malathion 25W (malathion) UAG, PCP 14656	2-2.5 kg/1000 L	✓	✓	Several types of aphids attack the growing tips of the canes and the under side of leaves. Their feeding injury causes the leaves to curl and often develop red coloured blisters. Older leaves usually become sticky from the "honeydew" excreted by the aphids. New growth becomes stunted and yields can be reduced. If leaves are curled, use high pressure to ensure spray coverage underneath the leaves. Apply controls only if aphids become numerous, especially on young plants.  Do not apply malathion within 3 days of harvest.  Do not apply Diazinon sprays after the flowers open.  Do not apply Guthion or Sniper sprays within 14 days of harvest.
	• Sanex Diazinon 50EC (diazinon) SXA, PCP 16518	1 L/ha	✓	✓	
	• Clean Crop Diazinon 50W (diazinon) UAG, PCP 19576	1 kg/1000 L	✓	✓	
	• Guthion Spray Concentrate (azinphos-methyl) BBB, PCP 8106	2-2.25 L/ha in 1600 L of water	✓	✗	
	• Guthion Solupak 50WP (azinphos-methyl) BBB, PCP 21374	1.1-1.25 kg/ha in 600 L water	✓	✗	
• Sniper 50W Clean Pak (azinphos-methyl) UAG, PCP 23323	1.1-1.25 kh/ha in approximately 1500 L of water	✓	✗		
<b>Note:</b> Ladybird beetles and other aphid predators frequently provide adequate control of aphids, especially in mature plantings. Thus, natural biological control agents can reduce the need for aphid control sprays.					
CURRANT BORER	• Guthion Spray Concentrate (azinphos-methyl) BBB, PCP 8106	2.25-3 L/ha in 1600 L of water	✓	✓	Small and yellowish foliage develops on the canes in the spring; these canes usually die within 3 weeks from the larvae tunneling and blackening the pith of the canes.  Adults are clear winged, steel blue moths with yellow markings. Egg laying occurs in June or July.
	• Guthion Solupak 50WP (azinphos-methyl) BBB, PCP 21374	1.1-1.25 kg/ha in 600 L water	✓	✗	Prune out dead wood in the fall and in the spring cut out and burn infested wood as soon as it is seen.  If sprays are required, apply spray when adults are observed. Repeat about two weeks later if more adults are observed.  Do not apply within 14 days of harvest.

# Insect Control

Pest	Chemical Control	Rates	Currant	Goose-berry	Directions for Use & Comments
<b>CURRENT FRUIT FLY</b>	<ul style="list-style-type: none"> <li>Clean Crop Malathion 25W (malathion) UAG, PCP 14656</li> </ul>	2-2.25 kg/1000 L	✓	✓	<p>Adult flies lay eggs in the developing berries shortly after flowering. Small white maggots develop inside the fruit. Control is based upon spraying to protect the green fruit immediately following flowering. Do not spray during flowering to avoid killing bees. Repeat spray in 10 - 14 days.</p> <p><b>Note:</b> Malathion is more effective when temperatures are at least 20°C. Although malathion may be applied up to 3 days before harvest, sprays applied later than recommended will not provide control of fruit flies.</p>
<b>EUROPEAN RED MITE</b>	No pesticides are registered.				These dull red coloured mites are not a common pest on either currants or gooseberries in BC. These mites overwinter as eggs on the branches.
<b>LEAF-HOPPERS</b>	<ul style="list-style-type: none"> <li>Clean Crop Malathion 25W (malathion) UAG, PCP 14769</li> </ul>	2-2.5 kg/1000 L	✓	✓	<p>Not generally a problem in BC. Nymphs feeding on the under sides of the leaves produce white spots on the upper sides of the leaves; gradually the whole leaf turns yellowish and brown. Plants lack vigour and the fruit is small.</p> <p>Apply control sprays, if required. Direct sprays to ensure the under sides of leaves are thoroughly sprayed. Do not apply within 3 days of harvest.</p>
<b>LEAF-ROLLER</b>	<ul style="list-style-type: none"> <li>Guthion Spray Concentrate (azinphos-methyl) BBB, PCP 8106</li> <li>Guthion Solupak 50WP (azinphos-methyl) BBB, PCP 21374</li> <li>Sniper 50W Clean Pak (azinphos-methyl) UAG, PCP 23323</li> <li>Sniper 240E (azinphos-methyl) UAG, PCP 23337</li> </ul>	<p>2.25-3 L/ha in 1600 L of water</p> <p>1.1-1.25 kg/ha in 600 L of water</p> <p>1.1-1.25 kg/ha in approximately 1500 L of water</p> <p>2.25-3 L/ha</p>	<p>✓</p> <p>✓</p> <p>✓</p> <p>✓</p>	<p>✗</p> <p>✗</p> <p>✗</p> <p>✗</p>	<p>Not a common problem in BC.</p> <p>In spring, caterpillars emerge, begin feeding and rolling the leaves. At a distance, the damage may be confused with aphid feeding injury.</p> <p>If a spray is needed mid-season, apply either Guthion or Sniper.</p> <p>Do not apply Guthion/Sniper sprays within 14 days of harvest.</p>



# Insect Control

Pest	Chemical Control	Rates	Currant	Goose-berry	Directions for Use & Comments
<b>SAWFLY</b> OR <b>CURRANT</b> <b>FRUIT-</b> <b>WORM</b>	<ul style="list-style-type: none"> <li>Plant Products Diazinon 500EC (diazinon) PLG, PCP 24418</li> <li>Clean Crop Diazinon 50W (diazinon) UAG, PCP 19576</li> </ul>	1 kg/ 1000 L	✓	✓	<p>Voracious small green caterpillars suddenly appear in large numbers and quickly defoliate plants. They feed from the edge of the leaves (leaving only the thickest veins) and from the centre of the plant outward. Gooseberries are a preferred host. Black currants are not attacked. There are two generations per year - one shortly after leafing out and the second in June. Apply control spray at the first sign of injury. Injury may be localized in a planting so only portions of the planting may require spraying.</p> <p>Do not apply Diazinon sprays after the first flowers open.</p>
<b>SCALE</b> <b>INSECTS</b>	No pesticides are registered.				Scale insects are an occasional pest on the older wood in gooseberries and red currants. Good renewal pruning usually provides adequate control.
<b>SIDER</b> <b>MITES</b>	<ul style="list-style-type: none"> <li>Clean Crop Malathion 25W (malathion) UAG, PCP 14656</li> </ul>	2-2.25 kg/ha in 1000 L of water	✓	✓	<p>Spider mites are generally controlled by naturally occurring biological control agents, but outbreaks can occur following azinphos-methyl (Guthion) or other insecticide sprays.</p> <p>Although malathion is still registered, control may only be partial due to pesticide resistance. Spray when temperatures are at least 20°C and ensure undersides of the leaves are thoroughly sprayed. Do not apply within 3 days of harvest.</p>
<b>ROOT</b> <b>WEEVIL</b> OR <b>STRAW-</b> <b>BERRY</b> <b>BUD</b> <b>WEEVIL</b>	No pesticides are registered.				<p>Adult weevils feed on the opening buds in the spring on warm nights; later in the growing season they feed in the leaves (eating notches in the edges of the leaves) or on the ripening fruit. The larvae eat the bark off roots causing plants to be weak or even die. Since adults cannot fly, the infested areas are often localized near the edges of the planting but later spread throughout planting. Since the adults are night feeders they are seldom seen. Control is based upon controlling the adults before egg laying occurs.</p> <p>Sprays applied for control of spider mites may also control weevils.</p>
<b>THRIPS</b>	<ul style="list-style-type: none"> <li>Clean Crop Malathion 25 WP (malathion) UAG, PCP 14656</li> </ul>	2-2.25 kg/ha in 1000 l of water	✓	✓	Sprays applied for fruitfly control should also control thrips.



# Disease Control

Pest	Chemical Control	Rates	Currant	Goose-berry	Directions for Use & Comments
<b>ANTHRACNOSE</b> <i>(Drepanopeziza ribis)</i> & <b>SEPTORIA LEAF SPOT</b>	<ul style="list-style-type: none"> <li>Clean Crop Copper 53 WP (tribasic copper sulphate) UAG, PCP 9934 PLUS hydrated lime</li> </ul>	3-5 kg/1000 L + 4 kg/1000 L	✓	✓	<p>These fungal diseases can cause yield loss and reduce vigour of susceptible varieties in wet seasons. Small, dark brown, angular or round spots appear on the leaves. If abundant, leaves may yellow and drop mid-season. On currants, anthracnose may cause fly-speck fruit spots. Berries may crack open and drop.</p> <p>Growing disease-resistant varieties is the best way of avoiding these problems. However, where susceptible varieties have been planted, a combination of spraying and the following cultural practices will help control these diseases: prune, and control weeds and grass to improve air circulation; apply overhead irrigation in the mornings so the plants do not go into the night wet; and destroy diseased, fallen leaves to remove the overwintering fungus. Cultivate to bury leaves before bud-break in spring.</p> <p>If these diseases were evident the previous season, apply sprays at approximately 7 day intervals in the spring to protect the newly developing leaves. Repeat as long as weather remains wet. Sprays may also be applied during wet weather in the fall to reduce overwintering inoculum.</p> <p>See comments below on tank mixing and applying Bordeaux mixture.</p> <p>Do not apply Ferbam within 14 days of harvest.</p>
	<ul style="list-style-type: none"> <li>Bordeaux mixture (8-8-100)</li> </ul>	6.75 kg/ha	✓	✗	
	<ul style="list-style-type: none"> <li>Clean Crop Ferbam 76WDG (ferbam) UAG, PCP 20136</li> <li>Ferbam 76WDG UBC, PCP 20536</li> </ul>	6.75 kg/ha	✓	✗	

## Bordeaux Mixture:

Tank mix Bordeaux by dissolving 8 lbs of copper sulphate crystals and 8 lbs of hydrated lime in 100 gallons of water. Use warm water to speed the dissolving. Pour the ingredients into the spray tank through a screen to remove lumps of undissolved material. Use only prior to fruit set or after harvest to avoid visible residues on the fruit.



# Disease Control

Pest	Chemical Control	Rates	Currant	Goose-berry	Directions for Use & Comments
<b>POWDERY MILDEW</b> <i>(Sphaerotheca species)</i>	<ul style="list-style-type: none"> <li>Clean Crop Copper 53 WP (tribasic copper sulphate) UAG, PCP 9934 PLUS hydrated lime</li> </ul>	3-5 kg/1000 L + 4 kg/1000 L	✓	✓	<p>Infection begins near bloom and may continue throughout the growing season. A white powdery growth appears on leaves, green shoots and fruit. Over time, this changes to a brown coating containing tiny black specks, making fruit unmarketable. These are the overwintering stage of the fungus. Severely infected plants may be stunted and fruit may also crack and rot.</p> <p>The best control is to plant resistant varieties. Good air circulation will lessen mildew problems. Warm, humid weather and heavy, late-season dews favour the development of mildew. Preventative sprays should be applied to susceptible varieties at approximately 7 day intervals, when conditions warrant, to protect the newly-emerging foliage.</p>
	<ul style="list-style-type: none"> <li>Bordeaux mixture (8-8-100)</li> </ul>				See comments above on tank mixing and applying Bordeaux mixture.
	<ul style="list-style-type: none"> <li>Microscopic Sulphur WP (sulphur) UAP, PCP 14653</li> </ul>	5 kg/ha	✓	✓	Apply microscopic sulphate at 10 - 14 day intervals from the onset of the disease until fruit colouring. Apply in sufficient water to thoroughly cover all foliage. Maximum 8 applications per year. Do not apply within 1 day of harvest.
	<ul style="list-style-type: none"> <li>Clean Crop Lime Sulphur (lime sulphur or calcium polysulphide 22%) UAG, PCP 16465</li> </ul>	1.5 L/100 L or 300 ml/20 L	✗	✓	Apply lime sulphur before the earliest flowers open and again at the calyx stage. Later sprays may result in visible residue on the fruit. Do not apply when foliage is wet. May cause leaf yellowing and defoliation to some varieties, so spray a test area first if uncertain.
<b>WHITE PINE BLISTER RUST</b> <i>(Cronartium ribicola)</i>	No effective chemical control				Some black currants, such as Ben Alder, and gooseberries are quite susceptible. Red currants are usually less affected. Small raised, yellowish orange spots develop on the underside of infected leaves. These become brownish and hairlike in late summer and fall. Severe defoliation may occur on susceptible plants. The 1998 PNW Disease Handbook does not recommend planting susceptible varieties within 1000 ft and preferably 0.5 miles from white (five-needed) pine.

# Pesticide Safety – Emergency Response

- Know the poisoning symptoms of the pesticides that are used. Read pesticide labels for symptoms. Effects from pesticide poisoning vary from person to person and are often difficult to recognize. Some poisoning symptoms are headache, tiredness, nausea, dizziness, irritation of the skin or nose or throat, blurred vision, tiny pupils, trembling, perspiration, difficult breathing, vomiting, and unconsciousness. Call a doctor or the Poison Control Centre immediately if poisoning is suspected. Follow their instructions.
  - Keep the phone numbers for Poison Control Centre, doctor, ambulance, and Provincial Emergency number 1-800-663-3456 nearby. The Poison Control Centre phone number is in the front of the telephone book.
  - Have protective gear and equipment easily available.
  - Keep absorptive material, a container for contaminated waste, tools to pick up contaminated material, bleach, and hydrated lime available.
4. Call the Poison Control Centre, doctor or ambulance. Be ready to tell them the pesticide name and PCP Act registration number.
  5. Unless the doctor or Poison Control Centre tells you otherwise, follow the procedures listed below, then;
  6. Transport the patient to the nearest hospital.

If a pesticide contacts the eyes, put on waterproof gloves and hold the eyelids open and rinse with clean water for 15 minutes or more. Do not use an eye cup.

If pesticide contacts the skin, put on waterproof gloves, remove the contaminated clothing, and wash the affected area of the skin with lots of soap and water.

If pesticide was breathed in, take the victim to fresh air as quickly as possible; loosen tight clothing and watch for signs of unconsciousness or convulsions. Keep the airway open and begin resuscitation if breathing has stopped or is difficult. Use a plastic face mask to protect yourself.

If a pesticide is swallowed check the label to see if vomiting is recommended. Do not induce vomiting if:

- the label says not to,
- the substance swallowed contains a petroleum product,
- the victim is unconscious or convulsing, or
- if the substance is corrosive.

To induce vomiting, give the victim water and tickle the back of the throat and tongue with your finger. If the victim cannot sit, place the person face down on his or her side. Keep the airway free of vomitus.

If a corrosive substance was swallowed and the victim is conscious and able to swallow, give him or her a half to full glass of milk or water. Do not give large amounts to drink as it may induce vomiting.

Warning: Do not induce vomiting if an acid, alkali or petroleum product is swallowed.

## First Aid

Make sure that all people working on the farm know what to do in case of an emergency. Consider taking a first aid course and CPR course.

If someone has been poisoned:

1. Protect yourself.
2. Move the victim from the area of contamination.
3. Check if the victim is breathing. If breathing has stopped or is very weak, clear the airway and begin artificial respiration. Continue until the victim is breathing normally or until medical help arrives. When doing mouth-to-mouth resuscitation, use a plastic mask to protect yourself from poison.

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