

2023



EXTENSION AND ADVISORY TEAM

SPRAY GUIDE FOR PARSNIP

Nova Scotia Vegetable Crop Spray Guide 2023
[PAR1-23]



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LIABILITY STATEMENT

Recommendations in this guide are given for general information only and do not give the user the right to use a product in a manner not in accordance with the pesticide label or Pest Control Products Act. Perennia, by funding and printing this publication, and the editors/authors, do not offer any warranty or guarantee and do not assume any liability for crop loss, animal loss, health, safety, or environmental hazard caused by the use of any pesticide, advice, or recommendation in this schedule. Pesticides used in this schedule are products labeled for the target and crop. This information was retrieved from the Pest Management Regulatory online of Registered Products Database. The list of products presented in this schedule is intended to be complete, based on products known to be available in the region, but in no way is guaranteed to be complete. Some of the products listed may not be available. Trade names are given as a convenience to producers and are neither an endorsement of the product nor a suggestion that similar products are not available or effective.

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PESTICIDE EMERGENCY CONTACT INFORMATION

| Poison Control Centres | | |
|------------------------|------------------------------|---|
| Nova Scotia | 800.565.8161 or 902.470.8161 | IWK, Halifax, NS |
| New Brunswick | 911 | Ask for Poison Information |
| Prince Edward Island | 800.565.8161 or 902.470.8161 | IWK, Halifax, NS |
| Newfoundland | 709.722.1110 | Dr. Charles A. Janeway Child Health Care Centre, St. John's, NF |

| Environmental Emergencies (Pesticide Spills) | |
|--|--------------|
| Transport Canada Regional Operations Centre (24 hours) | |
| Nova Scotia | 800.565.1633 |
| New Brunswick | 800.565.1633 |
| Prince Edward Island | 800.565.1633 |
| Newfoundland | 800.563.9089 |

ABBREVIATIONS & CONVERSIONS

| Formulation and Measurement Abbreviations | | | |
|---|--------------------------|--------------|---------------------------------|
| FORMULATIONS | | MEASUREMENTS | |
| DF | Dry flowable | mL | millilitre |
| EC, E | Emulsifiable concentrate | kPa | kilopascal |
| L | Liquid | kg | kilogram |
| Sn / Su | Suspension | g | gram |
| WP/W | Wettable powder | L | litre |
| | | BIU | Billions of International Units |
| | | ppm | parts per million (1000 ppb) |
| | | ppb | parts per billion (1/1000 ppm) |

| Helpful Conversions ¹ | |
|---|--|
| kPa X 0.14 = pounds per square inch (psi) | millilitres X 0.035 = fluid ounces |
| hectares X 2.47 = acres | litres X 35 = fluid ounces |
| kilograms X 2.2 = pounds | litres X 0.22 = imperial gallons |
| kilograms per hectare X 0.89 = pounds per acre | litres per hectare X 14.17 = fluid ounces per acre |
| kilograms per hectare X 0.40 = kilograms per acre | litres per hectare X 0.40 = litres per acre |
| | degree-days C X 1.8 = degree-days F |

¹ Pesticide Units of Measurement

It is not recommended to convert label rates to imperial units because there is a high probability of mathematical and rounding errors. Present day pesticides are formulated to be more effective in smaller amounts. Therefore, even small conversion errors can lead to the use of incorrect rates (either too high or too low). Use metric – you will be glad you did!

| Pest | Group | Active Ingredient | Pesticide Product Name | Rate | Restricted Entry Interval (REI) | Pre-harvest Interval (days) | Remarks |
|--|-------|---------------------|---------------------------------|----------------------------------|---|-----------------------------|--|
| WEEDS: | | | | | | | |
| Preplant <i>Perennial weeds including quackgrass</i> | 9 | Glyphosate | Roundup WeatherMAX | 1.67-4.67 L/ha | 12 hours | - | Apply in the fall or spring prior to planting. Annual weed control programs will be necessary to control weeds germinating after planting. For quackgrass control, apply it to actively growing quackgrass when at least 4 new leaves are present. |
| | | | Touchdown Total | 1.8-5.0 L/ha | 12 hours | 7 | |
| | 14 | carfentrazone-ethyl | Aim EC | 36.5-117 mL/ha | 12 hours | 1 | Apply in minimum spray volume of 100 L/ha. Refer to label for target weeds, buffer zones and rates. Use high flow rate nozzles to apply the highest spray volume. |
| Pre-emergence Treatment Grasses and broadleaves | 7 | linuron | Afolan F | 1.4-2.4 L/ha | 9 days (scouting) 2 days (other) | 60 | Use lower rate on sandy soils. Heavy rain at emergence can cause injury. Plant seed at least 1.3 cm deep. |
| | | | Lorox L | 1.3-1.9 L/ha (loam or clay soil) | Apply as a band or broadcast application after planting | | |
| | 15 | S-metolachlor | Dual II Magnum or Komodo | 1.2-1.5 L/ha | 12 hours | 60 | Make only one application per year. Do not follow a pre-emergent application with a post-emergent spray later in the season. Use the higher rate for heavier weed problems. Apply in 150-300 L water/ha. Ground application only. Reduced levels of weed control may be observed when weed densities are high. |

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|--|-------|---------------------|---------------------------|----------------|-------------------------------------|-----------------------------|--|
| Pre-emergence followed by Postemergence | 7 | linuron | Afolan F | 1.3 L/ha | 9 days (scouting) 2 days (other) | 60 | These treatments need to be at least 2 weeks apart. Do not apply more than 2.7 L on sandy soils. Nozzle pressure must not exceed 275 kPa as crop injury may result. Applications at high temperatures can cause injury. Rate dependent on soil type and organic matter content. |
| | | | Followed by Afolan F | 2.0 L/ha | | | |
| | | | Lorox L | 1.25 L/ha | | | Treatments need to be at least 2 weeks apart. Never apply more than two applications per season. |
| | | | Followed by Lorox L | 1.9 L/ha | | | |
| Postemergence <i>Inter-row shielded</i> | 14 | carfentrazone-ethyl | Aim EC | 36.5-117 mL/ha | 12 hours | 1 | Apply in minimum spray volume of 100 L/ha. Refer to label for target weeds, buffer zones and rates. Use high flow rate nozzles to apply the highest spray volume. |
| | 22 | diquat | Reglone, Dessicash | 2.3-4.6 L/ha | 24 hours | - | |
| | 26 | Pelargonic acid | Beloukha | 12 – 20 L/ha | Until dry | 1 | Use the minimum effective rate for weed control. For harder-to-control weeds, higher rates or repeat applications may be required. Use shielded / directed spray to avoid spraying desired vegetation. |
| Postemergence Grasses and broadleaves | - | Acetic Acid | Serene NEW 2023 | 179-219.5 L/ha | When residue is dry | - | Apply as a uniform band or spot application directed at weeds on the ground between the crops. Use hooded or shielded application equipment. Do not spray the crop directly. Do not apply it when plants are under stress. Retreatment is required for regrowth of weeds. |

| Pest | Group | Active Ingredient | Pesticide Product Name | Rate | Restricted Entry Interval (REI) | Pre-harvest Interval (days) | Remarks |
|---------------|---------------|---|---|---|-------------------------------------|--|--|
| Emerged Weeds | 1 | Clethodim | Centurion + Amigo (adjuvant) | 0.19-0.38 L/ha Quackgrass: 0.38 L/ha 0.5% v/v Quackgrass: 1.0% v/v | 12 hours | 30 | To be used only with the adjuvant AMIGO. <u>Annual grasses:</u> Apply Centurion when the annual grasses and volunteer cereals are in the 2 to 6 leaf stage. Most effective control is achieved when application is made prior to tillering when grasses are small and actively growing. <u>Quackgrass:</u> Apply Centurion when the quackgrass is in the 2 to 6 leaf stage and 6 to 15 cm in height. Most effective results are achieved when application is made at the 3 to 5 leaf stage, when the canopy is uniform and actively growing. Apply a maximum of two applications per year. If repeat application is required, allow at least 14 days between first and second application. <i>* Refer to section "MINOR USES" in the label for additional use instructions.</i> |
| | 7 | linuron | Afolan F | 2.0-2.4 L/ha | 9 days (scouting) 2 days (other) | 60 | Apply when parsnips are 8-15 cm high. Do not apply more than 2.7 L on sandy soils. Nozzle pressure must not exceed 275 kPa as crop injury may result. Applications at high temperatures can cause injury. |
| | | | Lorox L | 1.9-2.5 L/ha | | | Apply in 220-440 L water/ha. Apply before broadleaf weeds reach 15 cm and when crop has 2 or more fully established leaves. Do not spray in hot dry weather or injury may result. |
| 15 | S-metolachlor | Dual II Magnum or Komodo | 1.2-1.5 L/ha | 12 hours | 60 | <i>Post emergent (crop at 3 – 5 leaf stage and weeds prior to the 2-leaf stage.</i> Make only one application per year. Do not follow a pre-emergent application with a postemergent spray later in the season. | |

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|-----------------|-------|-------------------|------------------------|-----------------|---------------------------------|-----------------------------|---|
| INSECTS: | | | | | | | |
| Aphids | 1 | Malathion | Malathion 85E | 535-1345 mL/ha | 24 hours | 7 | Max. 1 application per year in enough spray to achieve thorough coverage. Do not apply to wet foliage. |
| | 4 | Thiamethoxam | Actara 25 WG | 105 g/ha | 12 hours | 7 | Also controls Aster leafhoppers. Apply before pests reach damaging levels. Scout fields and retreat if populations rebuild to potentially damaging levels. Max 2 applications/season. Application interval 7 days. Apply in sufficient water volume to ensure adequate coverage. |
| | 4C | Sulfoxaflor | Closer SC | 50-150 ml/ha | 12 hours | 7 | Maximum 2 applications/growing season. Do not apply during crop flowering period or when flowering weeds are present in the treatment area. Minimum treatment interval = 7 days. Minimum 100 L/ha spray volume for ground application. |
| | 4D | Flupyradifurone | BYI 02960 200SL | 500 – 750 mL/ha | 12 hours | 7 | Tops or greens from these crops may not be fed to livestock as feed or used for human consumption. Minimum interval between applications: 10 days. Minimum application volume of 100 L/ha for ground application. Maximum amount allowed per crop season: 2000 mL/ha. |
| | 29 | Fonicamid | Beleaf 50SG | 0.12-0.16 kg/ha | 12 hours | 3 | Thorough spray coverage of plant foliage is essential. Minimum of 94 L water/ha. Maximum of 3 applications per season, allowing 7 days between applications. Avoid overnight storage of spray mixtures; do not use liquid fertilizer as a carrier and do not use adjuvants. |

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|---------------------------------|-------|-------------------|---|--|---------------------------------|-----------------------------|--|
| Aphids <i>(cont.)</i> | - | Mineral Oil | SuffOil-X ® NEW 2023 | 13 L / 1000 L of H2O | 12 hours | - | Deter Feeding. Begin applications when pests appear. Apply at 7-14-day intervals. Do not apply more than 8 applications per year. A minimum of 50 litres of spray solution per hectare is recommended. |
| Carrot weevil | 15 | Novaluron | Rimon 10 EC | 410 – 820 mL/ha | 12 hours | 3 | Reduces damage. Apply in sufficient water volume to ensure thorough coverage. Recommended water volume is 500 litres of water per hectare. Apply when insect populations reach locally determined economic thresholds. Apply at 7-day intervals. Maximum 3 applications per crop per season |
| | 28 | Cyantraniliprole | Exirel | 1000-1500 ml/ha | 12 hours | 1 | Begin applications at the 2-3 leaf stage or when scouting indicates the presence of weevils. Consult local agricultural authorities to determine appropriate threshold levels for carrot weevil in your area. Do not make more than 4 applications per season. Do not apply more than once every 7 days. |
| Tarnished Plant Bug | 29 | Fonicamid | Beleaf 50SG | 0.2 kg/ha (3 applications) 0.3 kg/ha (2 applications) | 12 hours | 3 | Suppression. Apply when Tarnished Plant Bugs first appear. Use a minimum water volume of 94 liters per hectare. Allow a minimum of 7 days between applications. Do not apply more than 3 applications per year. |
| Spider mites | - | Mineral Oil | SuffOil-X ® NEW 2023 | 13 L / 1000 L of H2O | 12 hours | - | Suppression. Begin applications when pests appear. Apply at 7-14-day intervals. Do not apply more than 8 applications per year. A minimum of 50 litres of spray solution per hectare is recommended. |

| Pest | Group | Active Ingredient | Pesticide Product Name | Rate | Restricted Entry Interval (REI) | Pre-harvest Interval (days) | Remarks |
|--|-------|-------------------------------|------------------------|---------------|---|-----------------------------|--|
| DISEASES: | | | | | | | |
| Root Canker | M5 | Chlorothalonil | Bravo ZN | 2.8 L/ha | 12 hours (Hand harvesting- 21 days, Scouting- 5 days) | 7 | Start applications around mid-August and repeat at 7–10-day intervals. Max 7 applications/season. |
| | | | Echo 90WSP | 1.5 kg/ha | | | |
| | | | Echo 720 | 1.9 L/ha | | | |
| White mould (<i>Sclerotinia sclerotiorum</i>) | 7 | Penthiopyrad | Fontelis™ | 1.0-1.75 L/ha | 12 hours | 0 | Begin applications prior to disease development and continue a 7- to 14-day interval. Make no more than 2 sequential applications of Fontelis Fungicide before switching to a fungicide with a different mode of action. Maximum seasonal use rate is 4.5 L/ha. |
| | 7, 3 | Pydiflumetofen, Difenconazole | A20259 Fungicide | 1.0 L/ha | 12 hours | 7 | Suppression only. Apply on a 7-14-day interval, starting prior to disease establishment. If disease pressure is high, use the shortest interval. Apply as a broadcast spray in sufficient water (minimum of 150 L/ha) for thorough coverage. Switch to a non-group 7 and 3 fungicides after 2 consecutive applications. |
| | 9, 12 | Cyprodinil, fludioxonil | Switch 62.5 WDG | 775-975 g/ha | 12 hours | 7 | Begin applications prior to or at the onset of disease and repeat applications on a 7–10-day interval if conditions remain favorable for disease development. Do not make more than 2 applications of SWITCH 62.5WG fungicide per season. |
| | BM02 | <i>Bacillus subtilis</i> | Serenade Opti | 1.1-2.2 Kg/ha | 4 hours | 0 | Biopesticide that will only suppress the indicated diseases. Begin application soon after emergence and when conditions are conducive to disease development. Repeat as necessary on a 7–10-day interval. |

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|--|-------|--------------------------------|------------------------|---------------|---------------------------------|-----------------------------|---|
| Gray Mold | 7 | Penthiopyrad | Fontelis | 1.0-1.75 L/ha | 12 hours | 0 | Begin applications prior to disease development, continue a 7–14-day interval. Use higher rate and shorter intervals when disease pressure is high. Max seasonal rate is 4.5 L/ha. Do not make more than 2 sequential applications before switching to another mode of action. |
| | 9, 12 | Cyprodinil, fludioxonil | Switch 62.5 WDG | 775-975 g/ha | 12 hours | 7 | Begin applications prior to or at the onset of disease and repeat applications on a 7–10-day interval if conditions remain favorable for disease development. Do not make more than 2 applications of SWITCH 62.5WG fungicide per season. |
| Leaf blight (<i>Alternaria spp.</i>) | 7 | Fluxapyroxad | Sercadis | 250-333 mL/ha | 12 hours | 7 | Begin applications prior to disease development and continue a 7–14-day interval if conditions are conducive for disease development. Use the higher rate and shorter interval when disease pressure is high. |
| | 7, 3 | Pydiflumetofen, Difenoconazole | A20259 Fungicide | 1.0 L/ha | 12 hours | 7 | Apply on a 7-14-day interval, starting prior to disease establishment. If disease pressure is high, use the shortest interval. Apply as a broadcast spray in sufficient water (minimum of 150 L/ha) for thorough coverage. Switch to a non-group 7 and 3 fungicides after 2 consecutive applications. |
| | 7, 11 | Fluopyram, trifloxystrobin | Luna Sensation | 300-500 mL/ha | 12 hours | 7 | Begin fungicide applications preventatively. Continue as needed on a 7-14-day interval. When disease pressure is severe, use the higher rates. |

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|--|-------|---------------------------------|------------------------|----------------|--|-----------------------------|---|
| Leaf blight <i>(Alternaria spp.)</i> <i>(cont.)</i> | 7, 11 | Pyraclostrobin, Fluxapyroxad | Merivon | 0.3 – 0.4 L/ha | 12 hours, 7 days (hand harvesting, mechanical harvesting) | 7 | Begin applications prior to onset of disease development. Apply subsequent applications on a 7–14-day interval if disease persists or weather conditions are favourable for disease development. |
| | 11 | Trifloxystrobin | Flint | 140-210 g/ha | 12 hours | 7 | Begin applications preventatively and continue as needed on a 14-day interval. Use higher rate and shorter spray interval when disease pressure is severe. Use sufficient water for thorough coverage. DO NOT apply more than 840 g per hectare per season. |

Use the following web link to search for any pesticide label mentioned in this guide, or any other pesticide registered in Canada: <http://pr-rp.hc-sc.gc.ca/lr-re/index-eng.php>