



## Sustainable Best Practice

### Steps in vegetable pest & disease control

1. Use the following science proven prevention practices.
  - a. Warm sunny location
  - b. Develop free draining soil by adding lots of compost and raising above surrounding soil.
  - c. Add lime and a general NPK fertiliser such as *Tui Novatec Premium*, *Nitrophosaka* or a *General Fertiliser* before planting each crop
  - d. Avoid overhead watering – weeper soak hoses are best.
  - e. Practice crop rotation. If possible, fallow each garden area 1 year in 4.
  - f. Practice good garden hygiene, in particular remove and destroy diseased leaves immediately they appear.
  - g. Remove alternate plant hosts to vegetable pests and diseases, including weeds.
  - h. Select hybrid disease resistant varieties of seeds or seedlings
  
2. When pests or diseases attack
  - a. Positively identify the problem, and learn more about the life cycle, temperature/humidity level, method of spread, alternative hosts, best prevention and control tools. *Garden Pest & Disease Control* book – Copies available from independent garden centres, Paper Plus or [www.gardenadvice.co.nz](http://www.gardenadvice.co.nz)
  - b. Take prompt action. Early intervention provides best control especially if a pesticide is required.
  - c. **For vegetables it is important to select a pesticide that is registered under the ACVM Act and approved for use on the crop and purpose.**  
There are a number of BioGro certified organic products available, that are not registered and not approved for use on food crops. Organic does not mean 'safe' or 'free of natural toxins', - BioGro certified organic simply means - free of synthetic chemicals. Natural organic is not always safe, and chemical is not always toxic.
  
3. The following charts recommend the most cost effective, environmentally friendly pesticides registered and approved for use on vegetable crops in the home garden.

Note:

  - a. All these products are of low toxicity. (None are scheduled poisons carcinogens, or mutagens)
  - b. Most of these products have a 1 day withholding period, (the period between spraying and harvesting). Mavrik & Success Ultra have a 3 - 7 days
  - c. All these products are safe to bees once the spray has dried. Do not spray when bees are present.
  - d. Do not use unregistered products on food crops. Beware, some organic products contain natural toxins and are not registered / approved for food crops.
  - e. Do not use substitutes that are not registered under the ACVM Act.
  
4. In summary – Use all the prevention methods above that are applicable, in unison, including approved pesticides at the appropriate time.

Crop	Disease	Best practice sustainable control	Organic control	Pest	Best practice sustainable control	Organic control
<b>Asparagus</b>				Aphids	Eco-Oil + Eco-Neem or BioNeem	Eco-Oil + Eco-Neem or BioNeem
<b>Aubergine</b>				Aphids, mites	Eco-Oil + Eco-Neem or BioNeem	Eco-Oil + Eco-Neem or BioNeem
	Sclerotinia	Crop rotation		Caterpillars	Mavrik* + Eco-Oil	Nothing effective available
<b>Beans</b>				Aphids, mites,	Eco-Oil + Eco-Neem or BioNeem	Eco-Oil + Eco-Neem or BioNeem
	Sclerotinia	Crop rotation		Vege shield bug	Mavrik* + Eco-Oil	Nothing effective available
	Botrytis	Hygiene, ventilation, no overhead watering		Caterpillars	Mavrik* + Eco-Oil	Nothing effective available
				White fly	Mavrik* + Eco-Oil	Eco-Oil + Eco-Neem or BioNeem
<b>Broad Beans</b>	Chocolate spot	Free Flo Copper + Eco-Oil	Free Flo Copper + Eco-Oil	Aphids	Eco-Oil + Eco-Neem or BioNeem	Eco-Oil + Eco-Neem or BioNeem
	Rust					
<b>Brassicas</b> Broccoli Cabbage Cauliflower Brussels sprouts Swede				Aphids	Mavrik + Eco-Oil	Eco-Oil + Eco-Neem or BioNeem
	Club root	Crop rotation – Resistant variety	Crop rotation - Resistant variety	White Butterfly	Mavrik + Eco-Oil	(Spinosad coming soon)
	Downy mildew	Free Flo Copper + Eco-Oil	Free Flo Copper + Eco-Oil	Diamond back moth	Mavrik + Eco-Oil	(Spinosad coming soon)
	Ring spot			White Fly	Mavrik + Eco-Oil	Eco-Oil + Eco-Neem or BioNeem
				Slugs & Snails	Baysol	Quash
<b>Capsicum</b>	Sclerotinia	Crop rotation		Aphids, mites	Eco-Oil + BioNeem	Eco-Oil + Eco-Neem or BioNeem
<b>Carrots &amp; Parsnips</b>				Carrot Rust Fly	Nothing approved available. Rotate crop to fresh soil and cover with fine mesh net	
				Aphids & White fly	Eco-Oil + Eco-Neem or BioNeem	Eco-Oil + Eco-Neem or BioNeem
				Slugs & Snails	Baysol	Quash
<b>Celery</b>	Leaf spot	Free Flo Copper	Free Flo Copper	Aphids	Eco-Oil + Eco-Neem or BioNeem	Eco-Oil + Eco-Neem or BioNeem

<b>Cucurbits</b> Buttercup Butternut Cucumber Melon Pumpkin Zucchini	Leaf spot	Free Flo Copper	Free Flo Copper	Aphids	Eco-Oil + BioNeem	Eco-Oil + Eco-Neem or BioNeem
	Downy Mildew			White Fly	Eco-Oil + BioNeem	Eco-Oil + Eco-Neem or BioNeem
	Powdery Mildew	Eco-Fungicide	Eco-Fungicide	Mites	Eco-Oil + BioNeem	Eco-Oil + Eco-Neem or BioNeem
	Botrytis mould	Hygiene, ventilation, no overhead watering				
<b>Garlic &amp; Leeks</b>	Rust	Sulphur	Sulphur	Aphids, mites	Eco-Oil + BioNeem	Eco-Oil + Eco-Neem or BioNeem
<b>Lettuces</b>	Sclerotinia	<b>Avoid</b> overwatering.		Aphids	Eco-Oil + BioNeem	Eco-Oil + Eco-Neem or BioNeem
	Botrytis	Apply Botry-Zen as a preventative		Slugs & Snails	Baysol	Quash
<b>Onions</b>	Botrytis mould	Free Flo Copper + Eco-Oil	Free Flo Copper + Eco-Oil	Aphids	Mavrik + Eco-Oil	Eco-Oil + Eco-Neem or BioNeem
	Downy mildew			Thrips	Mavrik + Eco-Oil	Eco-Oil + Eco-Neem or BioNeem
<b>Peas</b>	Bacterial spot	Free Flo Copper + Eco-Oil	Free Flo Copper + Eco-Oil	Aphids	Eco-Oil + BioNeem	Eco-Oil + Eco-Neem or BioNeem
	Downy mildew			Slugs & Snails	Baysol	Quash
	Powdery mildew	Eco-Fungicide	Eco-Fungicide			
<b>Potatoes</b>	Early blight	Free Flo Copper + Eco-Oil	Free Flo Copper + Eco-Oil	Aphids	Mavrik + Eco-Oil	Eco-Oil + Eco-Neem or BioNeem
	Late blight			Potato psyllid	Mavrik + Eco-Oil	Eco-Oil + Eco-Neem or BioNeem
				Tuber moth	Mavrik + Eco-Oil	(Spinosad coming soon)
<b>Silver beet</b>	Downy mildew	Free Flo Copper	Free Flo Copper	Slugs & Snails	Baysol or Slug Off	Quash
	Powdery mildew	Eco-Fungicide	Eco-Fungicide			
<b>Sweet Corn</b>				Aphids	Eco-Oil + BioNeem	Eco-Oil + Eco-Neem or BioNeem
				Caterpillars	Mavrik* + Eco-Oil	
<b>Tomatoes</b>	Blight	Free Flo Copper + Eco-Oil	Free Flo Copper + Eco-Oil	White fly	Mavrik + Eco-Oil	Eco-Oil + Eco-Neem or BioNeem
	Botrytis mould	Hygiene, ventilation, no overhead watering		Caterpillars	Mavrik + Eco-Oil	(Spinosad coming soon)
	Powdery mildew	Eco-Fungicide	Eco-Fungicide	Potato/ tomato psyllid	Mavrik + Eco-Oil (Net where infestation bad)	Eco-Oil + Eco-Oil or BioNeem (Net where infestation bad)
	Virus	Use resistant varieties				

**Notes:**

1 This chart recommends products that are registered and approved for the pests and diseases on the specified crops, with a few off-label recommendations by necessity.

2 An 'off label' recommendation is acceptable where there is no registered approved product available, and an alternative is recommended which is approved for use on similar / related crops. The 'off label' recommendations in this chart are **in blue text with an asterisk \***

Some of these off-label recommendations are partly pragmatic to avoid having many different pesticides in the garden shed.

3 Never use a product that is not registered under the ACVM Act, as such products do not have approval for use on edibles. There are increasing numbers of unregistered pesticides being marketed which are of unknown toxicity, especially natural organic. Natural/Organic does not necessarily mean safe, —e.g., several brands of neem are not registered or approved for use on edibles. (Grosafe BioNeem, Eco-Neem and Naturally Neem are registered and approved for use on food crops.

4 All information in this chart is published in good faith and has been checked for accuracy from manufacturer's data and registration authorities. However, the writers will not be liable to any other person and accept no responsibility for any claim, action, loss, damage, cost or expense, whether direct or indirect. Consequential or economic, resulting from the use or miss-use of the information.

**OCP Eco-Oil** is a vegetable oil (soybeans) recommended for use on vegetables. It controls all sucking insects – aphids, white fly, thrips, and mites. *Eco-Oil* is BioGro certified organic and has a 1 day withholding period on all crops.

**BioNeem, Eco-Neem** and **Naturally Neem** are the only brands of neem approved for use on food crops. Better results are achieved when used in mixture with *Eco-Oil*. Controls aphids, mites, white fly, mites and other sap sucking insects. 1 day withholding period.

**Yates Mavrik** – Man made pyrethrum —controls sucking insects - aphids, mites, white fly, and thrips plus chewing and rasping insects - caterpillars and green shield bug. 3 – 7-day withholding. Mavrik is safer to bees, beneficial insects, and people than natural pyrethrum.

**Yates Success Ultra**- Based on an extract from natural soil bacteria, this new generation insecticide controls chewing insects such as caterpillars.

**Grosafe Free Flo Copper** – Contains copper hydroxide, which is significantly superior to copper oxychloride, easier to use than liquid coppers, leaves a lower copper footprint, requiring only half the quantity thus halving the cost.

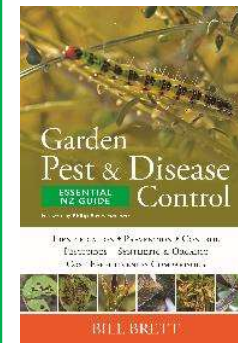
**OCP Eco-Fungicide** – Useful for keeping powdery mildew at bay on cucurbits and tomatoes late in the season. It kills the spore distribution stage with regular sprays.



**Garden Pest & Disease Control**

For more detail on pest & disease control, this book provides –

- Identification – 240 photos
- Detail of every pest/disease
- Prevention methods that work
- Organic gardening
- Pesticide details, legal status, approved use, comparison with alternatives – for every pesticide available
- Star rated comparison/quick reference charts for every product for every purpose/crop



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