

**CROPLIFE AUSTRALIA FUNGICIDE RESISTANCE MANAGEMENT REVIEW GROUP**  
**Fungicide Activity Group Table (Valid as at 22 June 2018)**

| FRAC Code     | Fungicide Mode of Action Group         | Chemical Family      | Active Constituent                   | Trade Name* (Product name)                                  |
|---------------|--|----------------------|--------------------------------------|---|
| 1             | <i>Methyl Benzimidazole Carbamates</i> | <i>Benzimidazole</i> | carbendazim                          | <i>various</i>  |
|               |  |                      | thiabendazole                        | <i>various</i> e.g. Tecto®                                  |
|               |  | <i>Thiophanates</i>  | thiophanate-methyl                   | <i>various</i> e.g. Banrot®                                 |
| 2             | <i>Dicarboximide</i>                   | <i>Dicarboximide</i> | iprodione                            | <i>various</i> e.g. Rovral®                                 |
|               |  |                      | procymidone                          | <i>various</i> e.g. Sumisclex®                              |
| 3             | <i>DMI</i>                             | <i>Imidazole</i>     | imazalil                             | <i>various</i> e.g. Fungaflor®                              |
|               |  |                      | prochloraz                           | <i>various</i> e.g. Octave®                                 |
|               |  | <i>Piperazine</i>    | triforine                            | <i>various</i> e.g. Sapro®                                  |
|               |  | <i>Pyrimidine</i>    | fenarimol                            | Rubigan®  |
|               |  | <i>Triazole</i>      | bitertanol                           | Baycor®   |
|               |  |                      | cyproconazole                        | Alto®   |
|               |  |                      | difenoconazole                       | <i>various</i> e.g. Score®                                  |
|               |  |                      | epoxiconazole                        | <i>various</i> e.g. Opus®                                   |
|               |  |                      | fenbuconazole                        | Indar®  |
|               |  |                      | fluquinconazole                      | <i>various</i> e.g. Jockey®                                 |
|               |  |                      | flusilazole                          | <i>various</i> e.g. Nustar®                                 |
|               |  |                      | flutriafol                           | <i>various</i> e.g. Armour®                                 |
|               |  |                      | hexaconazole                         | <i>various</i>  |
|               |  |                      | ipconazole                           | Rancona®  |
|               |  |                      | myclobutanil                         | <i>various</i> e.g. Systhane®                               |
|               |  |                      | penconazole                          | Topas®  |
|               |  |                      | propiconazole                        | <i>various</i> e.g. Tilt®                                   |
|               |  |                      | prothioconazole                      | Brumby®, Prosar®  |
|               |  | tebuconazole         | <i>various</i> e.g. Raxil®, Folicur® |   |
|               |  | tetraconazole        | Domark®                              |   |
| triadimefon   | <i>various</i> e.g. Bayleton®          |                      |                                      |   |
| triadimenol   | <i>various</i> e.g. Bayfidan®, Baytan® |                      |                                      |   |
| triticonazole | <i>various</i> e.g. Premis®            |                      |                                      |   |
| 4             | <i>Phenylamide</i>                     | <i>Acylalanine</i>   | benalaxyl (+ mancozeb)               | <i>Galben®M</i>   |
|               |  |                      | furalaxyl                            | <i>Fongarid®</i>  |
|               |  |                      | metalaxyl                            | <i>various</i> e.g. <i>Ridomil®</i> , <i>Apron®</i>         |
|               |  |                      | metalaxyl-m                          | <i>various</i> e.g. <i>Ridomil® Gold</i> , <i>Apron XL®</i> |
|               |  | <i>Oxazolidinone</i> | oxadixyl (+ propineb)                | <i>Rebound®</i>   |

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| FRAC Code                  | Fungicide Mode of Action Group                         | Chemical Family                                       | Active Constituent | Trade Name (Product name)       |
|----------------------------|--|---|--------------------|---------------------------------|
| 5                          | Amines (Morpholines)                                   | Spiroketalamine                                       | spiroxamine        | Prosper®                        |
| 7                          | SDHI (Succinate dehydrogenase inhibitors)              | <i>n</i> -methoxy-(phenyl-ethyl)-pyrazole-carboxamide | Pydiflumetofen     | Miravis®                        |
|                            |  | Oxathiin carboxamides                                 | carboxin           | various e.g. Vitavax® ,         |
|                            |  |   | oxycarboxin        | Plantvax®                       |
|                            |  | Phenyl benzamides                                     | flutolanil         | Monstar®                        |
|                            |  | Pyridine carboxamides                                 | boscalid           | Filan®                          |
|                            |  | Pyrazole carboxamide                                  | penthiopyrad       | Fontelis®                       |
|                            |  |   | sedaxane           | Vibrance®                       |
|                            |  |   | penflufen          | EverGol® Prime                  |
|                            |  |   | fluxapyroxad       | Systiva®                        |
|                            |  |   | bixafen            | Aviator®                        |
| isopyrazam                 | Seguris®   |   |                    |                                 |
| Pyridinyl-ethyl-benzamides | fluopyram  | Luna® Privilege, Luna® Sensation                      |                    |                                 |
| 8                          | Hydroxy-(2-amino-)pyrimidine                           | Hydroxy-(2-amino-)pyrimidine                          | bupirimate         | Nimrod®                         |
| 9                          | Anilinopyrimidine                                      | Anilinopyrimidine                                     | cyprodinil         | Chorus®                         |
|                            |  |   | pyrimethanil       | various e.g. Scala®             |
| 11                         | Quinone outside Inhibitors (QoIs)                      | Methoxy acrylate                                      | azoxystrobin       | various e.g. Amistar®, Dynasty® |
|                            |  | Oximino acetates                                      | kresoxim-methyl    | Stroby®                         |
|                            |  |   | trifloxystrobin    | Flint®                          |
|                            |  | Methoxy carbamate                                     | pyraclostrobin     | Cabrio®                         |
| Methoxy-acetamide          | Mandestrobin   | Intuity®  |                    |                                 |
| 12                         | Phenylpyrroles   | Phenylpyrroles  | fludioxonil        | Maxim®                          |
| 13                         | aza-naphthalenes                                       | Quinolines  | quinoxifen         | Legend®                         |
|                            |  | Quinazolinone   | proquinozid        | Talendo®                        |
| 14                         | (Aromatic Hydrocarbons) (chlorophenyls, nitroanilines) | Aromatic hydrocarbons                                 | quintozene         | various e.g. Terraclor®         |
|                            |  |   | tolclofos-methyl   | various e.g. Rizolex®           |
|                            | Heteroaromatics  | 1,2,4-thiadiazole                                     | etridiazole        | Terrazole®                      |
| 17                         | Hydroxylanilide  | Hydroxylanilide                                       | fenhexamid         | Teldor®                         |
|                            |  | Amino-pyrazolinone                                    | fenpyrazamine      | Prolectus®                      |
| 20                         | Phenylureas  | Phenylureas   | pencycuron         | Monceren®                       |
| 21                         | Qil  | Cyano-imidazole                                       | cyazofamid         | RanMan®                         |
|                            |  | Sulfamoyl-triazole                                    | amisulbrom         | Amicus blue®                    |
| 28                         | Carbamate  | Carbamate   | iodocarb           | various                         |
|                            |  |   | propamocarb        | Previcur®                       |
| 29                         | Unspecified  | 2,6-dinitro-anilines                                  | fluazinam          | various e.g. Shirlan®           |
| 33                         | Phosphonates   | Ethyl phosphonate                                     | fosetyl-aluminium  | Aliette®                        |
|                            |  |   | phosphorous acid   | various e.g. Foli-R-Fos®        |

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|-----------|--|--|--|---|
| 40        | Carboxylic acid amides                               | Cinnamic acid derivative                                     | dimethomorph   | Acrobat®  |
|           |  | Malic acid   | mandipropamid  | Revus®  |
| 43        | Benzamides   | Pyridinylmethyl-benzamides                                   | fluopicolide   | Infinito®   |
| 44        | Microbial ( <i>Bacillus</i> sp.)                     | <i>Bacillus</i> sp. and the fungicidal lipopeptides produced | Bacillus subtilis syn. B.amyloliquefaciens* strain QST 713 | *synonyms for <i>Bacillus amyloliquefaciens</i> are <i>Bacillus subtilis</i> and <i>B. subtilis</i> var. <i>amyloliquefaciens</i> (previous taxonomic classification) |
|           |  |  | Bacillus amyloliquefaciens strain MBI600                   |   |
| 45        | Qxl  | Triazolo-pyrimidylamine                                      | ametoctradin   | Zampro®   |
| 46        | Plant extract  | Terpene hydrocarbons, terpene alcohols and terpene phenols   | Tea tree oil   | Timorex® Gold   |
| 49        | OSBPI oxysterol binding protein homologue inhibition | piperidinyl-thiazole-isoxazolines                            | oxathiapirolin   | Zorvec® Enicade®  |
| M         | Multi-site activity                                  | Inorganic  | chlorine dioxide   | Vibrex®   |
|           |  |  | hydrogen peroxide + peroxyacetic acid                      | Peratec®  |
|           |  |  | iodine   | various   |
|           |  |  | mercury  | Shirtan®  |
|           |  |  | sodium metabisulphite                                      | Osku-vid®   |
|           |  | Hydroxyquinoline   | 8-hydroxyquinoline   | Staehler Grafting Wax   |
| M1        | Multi-site activity                                  | Inorganic  | copper cuprous oxide                                       | various   |
|           |  |  | copper hydroxide   | various e.g. Kocide®  |
|           |  |  | copper oxochloride   | various e.g. Oxydul®  |
|           |  |  | copper ammonium acetate                                    | Liquicop®   |
|           |  |  | tribasic copper sulphate                                   | Tri-base Blue®  |
|           |  |  | copper octanoate   | Tricop®   |
| M2        | Multi-site activity                                  | Inorganic  | sulphur  | various e.g. Thiovit®, Kumulus®   |
|           |  |  | potassium bicarbonate                                      | Ecocarb®  |
|           |  |  | calcium polysulfide  | Miller Lime Sulfur Solution Fungicide Insecticide®  |
| M3        | Multi-site activity                                  | Dithiocarbamate  | mancozeb   | various e.g. Dithane®   |
|           |  |  | metiram  | Polyram®  |
|           |  |  | thiram   | various e.g. Thiram   |
|           |  |  | propineb   | various e.g. Antracol®  |
|           |  |  | zineb  | Zineb   |
|           |  |  | ziram  | various e.g. Ziram  |
| M4        | Multi-site activity                                  | Phthalimide  | captan   | various e.g. Captan   |

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|-----------|-------------------------------------|--------------------------------|--------------------------------|---------------------------|
| M5        | Multi-site activity                 | Chloronitriles                 | chlorothalonil                 | various e.g. Bravo®       |
| M6        | Multi-site activity                 | Sulfamide                      | tolylfluanid                   | Euparen Multi®            |
| M7        | Multi-site activity                 | Guanidine                      | guazatine                      | various e.g. Panoctine®   |
| M9        | Multi-site activity                 | Quinone (anthraquinone)        | dithianon                      | various e.g. Delan®       |
| U1        | Unknown                             | Potassium salts of fatty acids | potassium salts of fatty acids | EcoProtector®             |
| U6        | Unknown                             | Phenyl-acetamide               | cyflufenamid                   | Flute®                    |
| U8        | Actin disruption                    | Benzophenone                   | metrafenone                    | Vivando®                  |
|           |                                     | Benzoylpyridine                | Pyriofenone                    | Kusabi®                   |
| U12       | Cell Membrane Disruption (proposed) | Guanidine                      | dodine                         | Syllit®                   |

- Notes:
- The table does not include active constituents that have not yet been assigned an activity group by CropLife Australia.
  - Products with the same active constituent but different use patterns are also included in the table for example, seed treatments and foliar.
  - New active constituents and products can only be included in the activity group table once they are formally registered by the APVMA for commercial use.
  - Some products are mixtures of fungicides from different activity groups. These appear only once in the table.
  - If multiple trade names exist, the trade name entry is listed as various and the first registered trade name included.
- ® Registered trademark