

Strawberry Agrichemical Regulatory Risk Assessment

September 2023

Regulatory pressures on agrichemicals are increasing globally, with many being either restricted or withdrawn from use. For older agrichemicals these pressures are often the result of reconsiderations involving new or refined risk assessment methodologies that requiring the generation of new data. A consequence of which can be that many of these agrichemicals are not meeting contemporary risk assessment standards as the necessary data is unavailable, or where data is available, the risk posed is considered unacceptable.

The use of agrichemicals can also be impacted through differences in standards between trading partners. The lack of an appropriate pesticide maximum residue limit (MRL) in an importing country can, for practical purposes, effectively prohibit use in the exporting country so as to ensure compliance, as a MRL breach would adversely affect market access.

The effects of the above are greater regulatory pressure placed on the use of individual agrichemicals or chemical groups. As a consequence it is possible that the number of approved agrichemical options could be adversely impacted.

To assist strategic planning, with respect to future pest management options, the following tables have been developed to highlight the regulatory threats to agrichemicals currently approved for the management of the pests and diseases in strawberries, as well as current initiatives aimed at addressing identified pest management deficiencies.

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|-----------|--|
| R1 | Short-term: Critical concern over retaining access |
| R2 | Medium-term: Maintaining access of significant concern |
| R3 | Long-term: Potential issues associated with use - Monitoring required |

| Active Constituents | Chemical group | Problem | Comment |
|------------------------------------|----------------|----------------------------------|---|
| INSECT AND OTHER PESTS | | | |
| 1,3-dichloropropene + chloropicrin | 8B | Symphylids | EU: No authorisations |
| Abamectin | 6 | Two-spotted (Red spider) mite | APVMA: Nominated for spray drift label review Canada: Some uses amended, & use in greenhouse gown cut flowers cancelled EU: Use restricted to permanent greenhouses |
| | | Western flower thrips | |
| Afidopyropen | 9D | Cabbage aphid | EU: No authorisations |
| | | Cotton (Melon) aphid | |
| | | Green peach aphid | |
| | | Silverleaf (Poinsettia) whitefly | |
| Bifenazate | 20D | Bryobia mite | Canada: Under review EU: Use restricted to non-edible crops in permanent greenhouses |
| | | Two-spotted (Red spider) mite | |
| Carbaryl | 1A | Grasshoppers | Canada: Reviewed, large number of uses deleted Codex: Review scheduled, support uncertain EU: Authorisation not renewed USA: Under review |
| Chlorantraniliprole | 28 | Cluster caterpillar | |
| | | Helicoverpa spp. | |
| Chlorpyrifos | 1B | Field crickets | APVMA: Under review Codex: All MRLs revoked Canada: Cancellation of all uses. EU: No authorisation in place USA: EPA decision to cancel use on food crops |
| | | Mole crickets | |
| | | Scarab beetles(PER81745) | |
| | | European earwig (PER90216) | |

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|--------------------------------|----------------|-------------------------------|--|
| Cyantranilprole | 28 | Cluster caterpillar | |
| | | Cotton (Melon) aphid | |
| | | Green peach aphid | |
| | | Helicoverpa species | |
| | | Lightbrown apple moth | |
| | | Onion thrips | |
| | | Plague thrips | |
| | | Strawberry aphid | |
| | | Western flower thrips | |
| Dimethoate | 1B | Aphids | Codex: No MRL. EU: Not authorised |
| | | Green vegetable bug | |
| | | Jassids | |
| | | Redlegged earth mite | |
| | | Rutherglen bug | |
| | | Spider mite | |
| | | Strawberry bug | |
| | | Thrips | |
| | | Wingless grasshopper | |
| Emamectin benzoate | 6 | Cluster caterpillar | EU: Candidate for substitution |
| | | Helicoverpa species | |
| | | Lightbrown apple moth | |
| | | Loopers | |
| Fenbutatin oxide | 12B | Two-spotted (Red spider) mite | APVMA: nominated for review Codex: To be reviewed by JMPR. No supporting registrant EU: No authorisation in place USA: Under review |
| Fenbutatin oxide + hexythiazox | 12+ 10A | | Fenbutatin oxide APVMA: nominated for review Codex: To be reviewed by JMPR. No supporting registrant EU: No authorisation in place USA: Under review |

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| Active Constituents | Chemical group | Problem | Comment |
|--------------------------|----------------|---|---|
| Fonicamid | 29 | Aphids (PER82598) | |
| | | Green mirid (PER82598) | |
| | | Green peach aphid (PER82598) | |
| | | Silverleaf (Poinsettia) whitefly (PER82598) | |
| Flubendiamide | 28 | Cluster caterpillar | |
| | | Helicoverpa species | |
| Helicoverpa NPV | 31 | Helicoverpa species | |
| Hexythiazox | 10A | Two-spotted (Red spider) mite | |
| Milbemectin | 6 | Two-spotted mite | |
| Indoxacarb | 22A | Garden weevil | Canada: No authorisations EU: No authorisation UK: No authorisation |
| | | Whitefringed weevil (PER14192) | |
| Malathion | 1B | Fruit flies | APVMA: Under review Codex: Re-evaluation scheduled EU: Restricted use to permanent greenhouses |
| | | Rutherglen bug (PER13542) | |
| Methomyl | 1A | Australian cabbage looper | APVMA: nominated for review Canada: Re-evaluation completed. Majority of uses removed EU: No authorisations in place USA: Under review |
| | | Cluster caterpillar | |
| | | Helicoverpa species | |
| | | Lightbrown apple moth | |
| | | Loopers | |
| Orange oil | UN | Silverleaf whitefly | |
| | | Two-spotted mites | |
| Paraffinic/petroleum oil | UNM | Aphids | |
| | | Mites | |
| Pirimicarb | 1A | Aphids | Codex: JMPR re-evaluation scheduled EU: Candidate for substitution |
| Propargite | 12C | Mites | APVMA: nominated for review EU: No authorisations |
| | | Two-spotted (Red spider) mite | |

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| Active Constituents | Chemical group | Problem | Comment |
|---------------------|----------------|---|--|
| Pyrethrins | 3A | Cabbage aphid | Canada: Under review |
| | | Cabbage white butterfly | |
| | | Caterpillars | |
| | | Fruit flies | |
| | | Greenhouse whitefly | |
| | | Lightbrown apple moth | |
| | | Plague thrips | |
| | | Rutherglen bug | |
| Pyriproxyfen | 7C | Greenhouse whitefly (PER13331) | |
| | | Silverleaf (Poinsettia) whitefly (PER13331) | |
| Spinetoram | 5 | Caterpillars | |
| | | Helicoverpa species | |
| | | Lightbrown apple moth | |
| | | Loopers | |
| | | Western flower thrips | |
| | | Fruit flies (PER87408) | |
| Spinosad | 5 | Helicoverpa spp. | |
| | | Lightbrown apple moth | |
| | | Loopers | |
| | | Western flower thrips | |
| Sulfoxaflor | 4C | Green mirid | USA: Pollinator concerns |
| | | Green peach aphid | EU: Restricted to permanent glasshouses only |
| Trichlorfon | 1B | Cluster caterpillar | APVMA: nominated for review |
| | | Cutworms | Codex: No MRLs |
| | | Fruit flies (PER12486) | EU: No authorisations USA: No MRLs |

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|---------------------|----------------|--|---|
| OTHER PESTS | | | |
| Copper complex | | Slugs & snails | |
| Iron-EDTA complex | | Slugs & snails | |
| Iron-EDTA complex | | White Italian (Sand dune)snail | |
| Methiocarb | 1A | Slugs & snails | EU: No authorisations |
| Methiocarb | 1A | White bradybaena (Oriental) snail | EU: No authorisations |
| Nematodes | | | |
| Abamectin | 6 | Root-knot nematodes (PER91777) | EU: Restricted use to permanent greenhouses |
| Fenamiphos | 1B | Crimp nematode (PER91381 runner production only) | EU: No authorisation |

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|-----------------------------------|----------------|---------------------------------|---|
| DISEASES | | | |
| 1,3-dichloropropene +chloropicrin | - | Fusarium wilt | EU: No authorisation |
| | | Pythium diseases - soil borne | |
| | | Rhizoctonia rot | |
| | | Verticillium wilt | |
| <i>Aureobasidium pullulans</i> | NC | Grey mould | |
| | | Phomopsis leaf blight/fruit rot | |
| | | Rhizopus fruit rot | |
| <i>Bacillus amyloliquefaciens</i> | BM02 | Botrytis rot | |
| | | Grey mould | |
| Captan | M4 | Black spot | EU: Under review proposed restriction to use in permanent greenhouses only USA: Under review |
| | | Grey mould | |
| | | Leaf scorch (Red spot) | |
| | | Phomopsis leaf blight/fruit rot | |
| | | Phytophthora fruit rot | |
| | | Ripe fruit spot | |
| Copper | M1 | Leaf diseases/spots | EU: Candidates for substitution |
| | | Leaf scorch (Red spot) | |
| | | Eye spot | |
| | | Grey mould | |

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|-----------------------------|----------------|--|---|
| Cyanogen (ethanedinitrile) | - | Charcoal stem rot | |
| | | Damping off | |
| | | Fusarium wilt | |
| | | Phytophthora trunk/collar rot | |
| | | Pythium diseases - soil borne | |
| | | Rhizoctonia rot | |
| | | Root and collar rot | |
| | | Sclerotium crown rot | |
| Spot blotch | | | |
| Cyflufenamid | U6 | Powdery mildew | |
| Cyprodinil +fludioxonil | 9 + 12 | Colletotrichum crown rot | <u>Cyprodinil</u> Canada: Under review EU: Candidate for substitution <u>Fludioxonil</u> EU: Under review & Candidate for substitution |
| | | Grey mould | |
| Fenhexamid | 17 | Grey mould | |
| Florylpicoxamid | 21 | Botrytis/Grey mould | EU: Pending |
| | | Powdery mildew | |
| Fluazinam | 29 | Gnomoniopsis fruit rot/leaf blotch (PER83871 runners only) | Canada: Under review |
| Fluopyram + tebuconazole | 7 + 3 | Botrytis/Grey mould | |
| Fluopyram + trifloxystrobin | 7 + 11 | Powdery mildew | |
| Iodine | M | Bactericide | |
| Ipflufenquin | 52 | Botrytis | EU: Pending |
| Iprodione | 2 | Grey mould | Canada: Majority of food crop uses deleted Codex: Review scheduled EU: No authorisation in place USA: Proposed deletion or restriction of uses |
| Isofetamid | 7 | Grey mould | |

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|------------------------------|----------------|--|--|
| Mancozeb +metalaxyl | M3 + 4 | Eye spot | <u>Mancozeb</u> APVMA: nominated for review Canada: Many uses cancelled Codex: To be reviewed 2024/25 EU: Authorisation not renewed <u>Metalaxyl</u> EU: Candidate for substitution <u>Metalaxyl-M</u> EU: Restricted use approval |
| | | Leaf scorch (Red spot) | |
| | | Phomopsis leaf blight/fruit rot | |
| | | Phytophthora fruit rot | |
| Metalaxyl-M | 4 | Root and crown rot (PER13697: runners only) | EU: Restricted use approval |
| Myclobutanil | 3 | Powdery mildew | APVMA: nominated for review EU: No authorisation in place |
| Orange oil | UN | Powdery mildew | |
| Penthiopyrad | 7 | Grey mould | |
| Phosphorous acid | 33 | Root and crown rot (PER13697: runners only) | |
| | | Phytophthora crown rot (PER80064) | |
| Potassium bicarbonate | M2 | Powdery mildew | EU: No authorisation in place |
| Polyoxin-D | 19 | Grey mould | EU: No authorisation |
| | | Powdery mildew | |
| Prochloraz | 3 | Colletotrichum crown rot | Codex: Periodic re-evaluation scheduled EU: No authorisation |
| Pydiflumetofen + fludioxonil | 7 + 12 | Botrytis | <u>Fludioxonil</u> EU: Under review & Candidate for substitution <u>Pydiflumetofen</u> EU: Authorisation pending |
| Pyraclostrobin | 11 | Colletotrichum crown rot (PER14483 - runners only) | |
| Pyrimethanil | 9 | Grey mould | Canada: Under review |
| Quinoxyfen | 13 | Powdery mildew (PER14577 – Runner production) | EU: No authorisations |
| <i>Streptomyces lydicus</i> | BM02 | Phytophthora crown rot | |
| | | Powdery mildew | |
| Sulfur | M2 | Powdery mildew(PER83325) | |

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| Active Constituents | Chemical group | Problem | Comment |
|---------------------|----------------|------------------------|--|
| Thiram | M3 | Black spot | APVMA: nominated for review Canada: All foliar uses cancelled Codex: To be reviewed 2024/25 EU: No authorisation in place |
| | | Grey mould | |
| Trifloxystrobin | 11 | Powdery mildew | Canada: Under review |
| Zineb | M3 | Leaf diseases/spots | APVMA: nominated for review Codex: To be reviewed 2024/25 EU: No authorisation in place |
| | | Leaf scorch (Red spot) | |

| Active Constituents | Chemical Group | Comment |
|------------------------------------|----------------|--|
| BROADLEAF WEEDS AND GRASSES | | |
| Chlorthal-dimethyl | 3 | EU: No authorisation in place |
| Fluazifop-P | 1 | |
| Glufosinate-ammonium | 10 | Canada: Review proposed EU: No authorisation in place |
| Glyphosate | 9 | Ongoing issues internationally EU: Under review |
| Simazine | 5 | APVMA: nominated for review EU: No authorisation in place |

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Funding statement: MT20007 - Regulatory Support & Response Co-ordination. This *multi-industry* project has been funded by Hort Innovation, using *industry research and development levies* and contributions from the Australian Government. Hort Innovation is the grower-owned, not-for-profit research and development corporation for Australian horticulture.

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