



Aphids, Mites and Thrips:

Tips to Stay Ahead of the Terrible Trio

March 2016

Aphids, mites and thrips are three major sap-feeding pests that can exact a huge financial toll on spring crops. As temperatures rise and benches become filled with fresh plant material for spring sales, these pests build their numbers for the seasonal buffet served under the plastic of our greenhouses. To protect the economic promise of spring crops, we must shut down the buffet, stop the feeding and interrupt the life cycle of the pests before significant crop damage occurs.

Chemical rotation is imperative to ensure that two successive generations of pests aren't exposed to the same product or same MOA.

To maintain pesticide efficacy year after year, we must rotate the modes of action (MOA) used so that two successive generations of pests aren't exposed to the same product or same MOA. New MOA classifications are created as necessary for chemicals with unique target sites in pests. Each new MOA expands the possible rotations that can be made for a specific pest. Recent chemical introductions for 'The Big Three' of Spring – aphids, mites and thrips – have added two new MOAs (**Mainspring**[®] and **Sultan**[™]) and a new chemistry, currently classified at UN (**Rycar**[®]).

The MOA category UN is used when the target protein in the insect or pest has not been characterized. MOA UN contains azadirachtin, all of the microbial insecticides such as **BotaniGard**[®], **Grandevo**[®] PTO, **Met 52**[®] and **Preferal**[™], and defined chemicals such as **Overture**[®]. Microbial insecticides with MOA UN activity are excellent in rotation with traditional chemistries because they provide effective control and reduced risk of resistance.

Aphids Mainspring, with a new MOA 28, and Rycar (MOA UN) with its new chemistry are effective aphid controls. Mainspring is a systemic that can be drenched for aphid prevention. Rycar provides contact and translaminar control as a spray. These new products join **Kontos**[®] (MOA 23), MOA 4A products **Flagship**[®], **Safari**[®], **TriStar**[®] and **Marathon**[®], and **Endeavor**[®] (MOA 9B) as some of the most effective chemicals against aphids. Effective microbial products for aphids include Grandevo PTO, BotaniGard, and Preferal. Each of the microbials can be tank-mixed with azadirachtin product such as **AzaGuard**[™] EC, **Azatin**[®] O, or **Molt-X**[®] for added control.

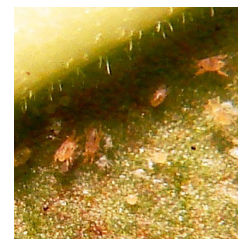


Thrips For thrips, Mainspring provides a drench application alternative to Kontos for western flower thrip. Rycar spray provides a new tool against the voracious chilli thrips.



These products join the older chemistries **Pylon**[®] (MOA 13), **Avid**[®] plus Azatin (MOA 6+UN), **Overture** and **Kontos** (drench only) as some of the best weapons in our chemical arsenal against thrips. Microbial weapons in the arsenal include BotaniGard, Grandevo PTO, Met 52 and Preferal; addition of an azadirachtin product is recommended.

Spider Mites Sultan (MOA 25) is a new class of chemistry that's proving to be very effective against all life stages. Use Sultan in rotation with **Floramite**[®] (MOA UN), **Shuttle O**[®] (MOA 20B), **Sirocco**[™] (MOA 6+UN) or Kontos in the battle with mites. Microbial products effective on spider mites are Grandevo PTO and Preferal. Always check the label for activity when treating other mite species.



Consider some additional information when working with microbial products. BotaniGard, Met 52 and Preferal are sold as formulations of the fungal spores to fogged, sprayed or drenched. The spores contact the insect host and germinate. The fungus invades the exoskeleton, growing and resulting in death within a few days. The efficacy of these pesticides and their persistence in a crop is affected by temperature and humidity, so maintain as much humidity as is feasible for several hours after treatment. In a humid greenhouse environment, residual activity can last 2 weeks. Grandevo PTO is a bacterial-based product that works through multiple mechanisms, acting as a stomach poison, reducing reproduction rates and repelling insects.

The microbials listed here work primarily through contact; a surfactant, such as **CapSil**[®], should be used when spraying to obtain thorough coverage. Tank-mixing with an azadirachtin insect growth regulator is recommended, unless only mites are being targeted. Grandevo PTO, BotaniGard and Preferal are compatible with most chemical insecticides, but are largely not compatible with most fungicides. Preferal is compatible with copper products, but shouldn't be used within 5 days of other fungicides. Grandevo PTO can also be tank-mixed with BotaniGard or Preferal. Contact GGSPRO for tank-mix recommendations. Many of these products are OMRI-registered. For growers using biological control agents (BCAs), these microbial products tend to be compatible with beneficials and exhibit good bee safety. Check with GGSPRO before using any insecticide with a BCA program).

Always read and follow all label directions. Products other than those mentioned here may also be safe and effective.

Featured Products

Product	MOA	Size	Item No.
Avid 0.15 EC	6	8 oz	70-1180
AzaGuard EC	UN	1 qt	70-1224
Azatin O	UN	1 qt	70-12301
BotaniGard ES	UN	1 qt	70-12501
CapSil	—	1 gal	74-1541
Endeavor WDG	9B	6-2.5 oz	70-1660
Flagship 25WG	4A	8 oz	70-1700
Floramite SC	UN	1 qt	70-1653
Grandevo PTO	UN	5 lbs	70-1760
Kontos SC	23	250 mL	70-1960
Mainspring	28	1 pt	70-2330
Marathon 1% G	4A	5 lbs	70-23752
Met 52 EC	UN	1 qt	70-2395
Molt-X	UN	1 pt	70-2400
Overture 35 WSP	UN	1 lb	70-2590
Preferal	UN	1 lb	70-2650
Pylon	13	1 pt	70-2675
Rycar	UN	8 oz	70-2900
Safari 20 SG	4A	3 lbs	70-29951
Shuttle O	20B	1 pt	70-30151
Sirocco SC	6+UN	8 oz	70-3017
Sultan	25	16 oz	70-3045
Tristar 8.5 SL	4A	4 oz	70-85220