



Dow AgroSciences

SuccessTM NEO

INSECTICIDE

VEGETABLE TECHNICAL MANUAL

EVOLUTION TO REVOLUTION



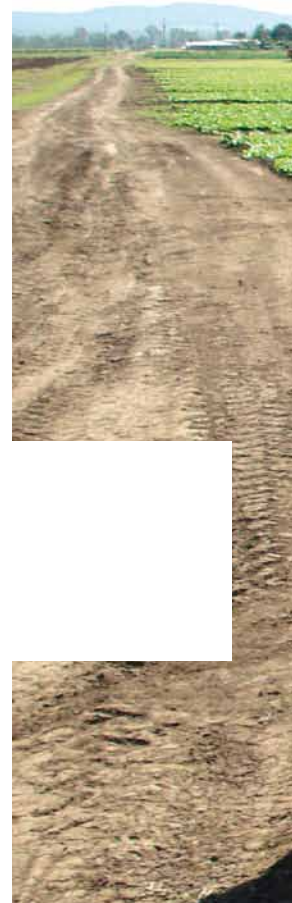


Dow AgroSciences

THE SUCCESS™ STORY

In 1982, a Dow AgroSciences research scientist took a holiday in the Caribbean where he visited an abandoned rum distillery on a tiny tropical island. In a climate where the incessant buzz of insect life droned 24 hours a day, the sudden quiet was deafening. Intrigued, he took some soil samples and transported them back to the USA for testing.

The Dow AgroSciences team discovered in the soil a bacterium (*Saccharopolyspora spinosa*) that gave excellent control of certain insects. The bacterium has never been found anywhere ever again. Dow AgroSciences set about breeding the *S. spinosa* and isolating its metabolites. Years of development culminated in the release of Success Naturalyte™ Insect Control. Success very quickly became the cornerstone of IPM programmes in a wide range of horticultural enterprises.

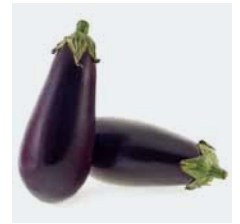


EVOLUTION

In 2006 Dow released Success² containing a higher concentration of the active ingredient spinosad. Success² has registrations in over 85 horticultural crops including leafy vegetables, brassicas, vines, pome and stone fruit, cucurbits, tropical and sub-tropical fruit, mangoes, berries and forestry.

Like its predecessor, Success² provided:

- Excellent control of the key chewing insect pests
- Unmatched safety to the main beneficial insects and mites
- A high level of environmental and user safety
- Short withholding periods for crops destined for domestic and export markets
- Defined stockfeed withholding period for vegetable waste and stubbles



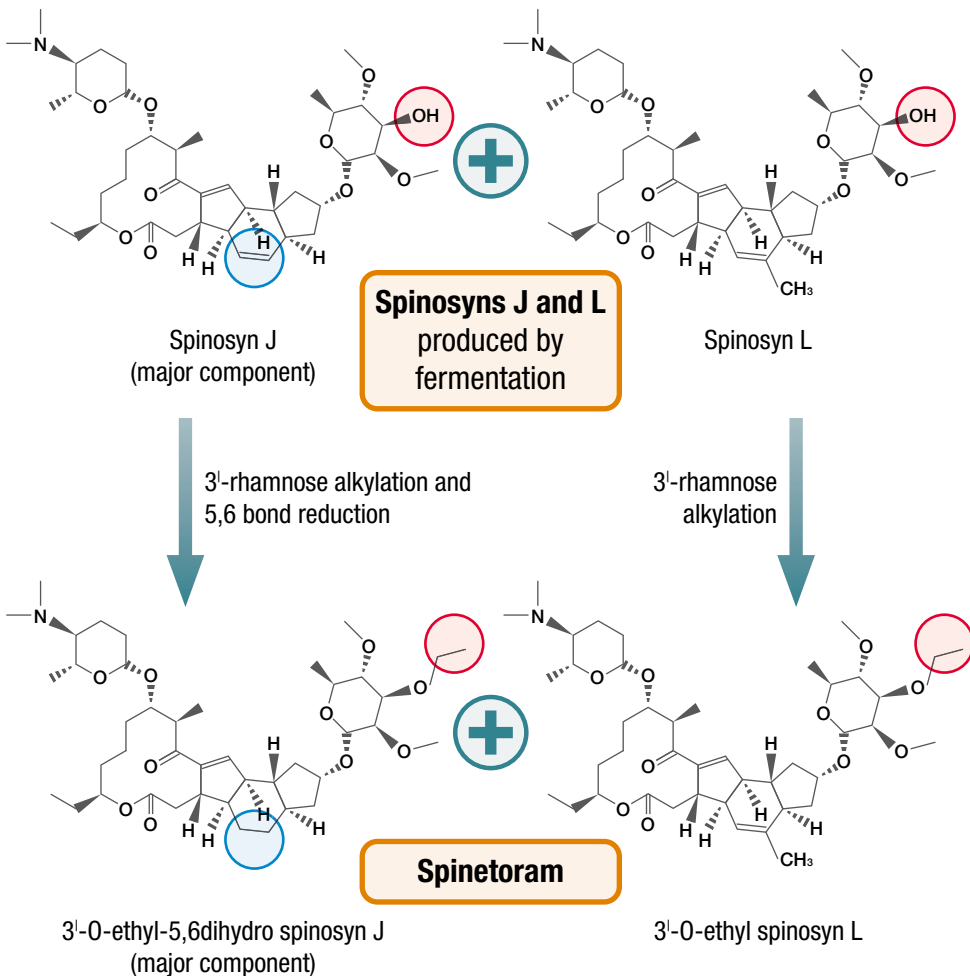
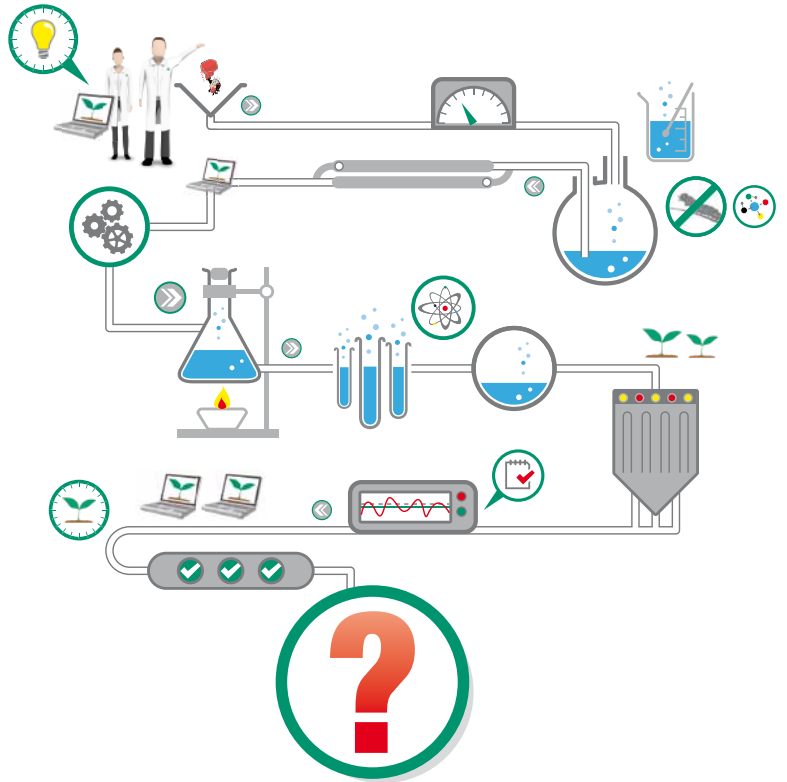


REVOLUTION

In order to enhance existing products, manufacturers often:

- Increase the level of active ingredient or
- Introduce another existing chemical to the product to broaden the spectrum of efficacy

Dow AgroSciences researchers took a different approach. We set about redesigning the original molecule.



*Here is the clever part
(In layman's terms)*

Instead of using Spinosyns A and D (which make Spinosad) we chose to use Spinosyns J and L and then to modify them to make Spinetoram.

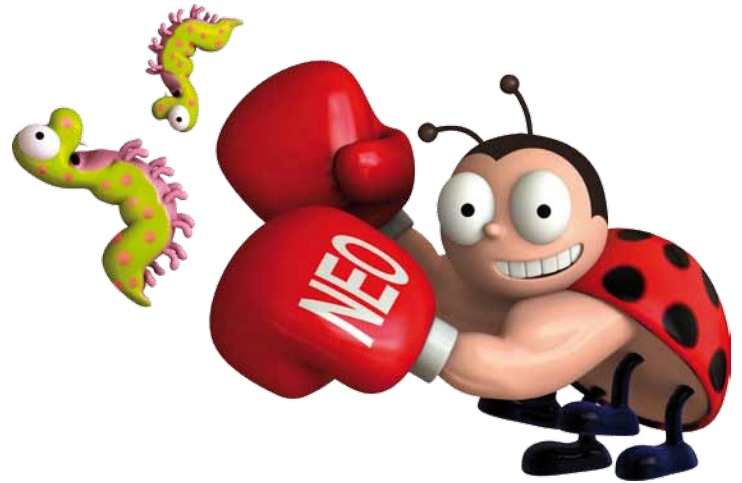
By tweaking the area in **BLUE** we improve photostability and thereby increase residual control; by tweaking the area in **RED** we increase efficacy across a wider range of insect pests.

Sounds simple... It took nearly 20 years, hundreds of scientists and millions of dollars. It's what we call 'Science for Growth'.

THE RESULTS

Improved residual activity

Success NEO has improved photo stability relative to Success². This means that it does not break down as readily in sunlight and is more effective for longer on the plant. Importantly it does not impact on the withholding periods which are the same as those for Success².

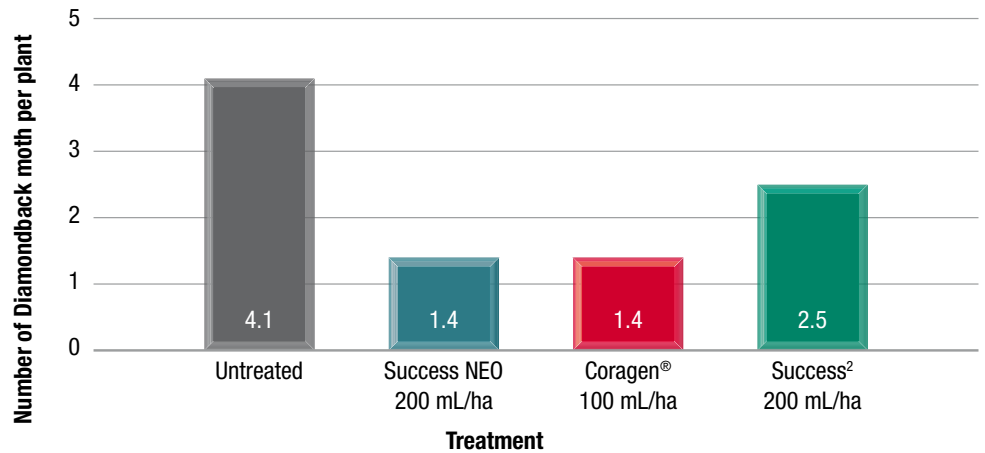


The following data is from a trial conducted on Diamondback moth in broccoli and results shown are of counts at 10 days after application.

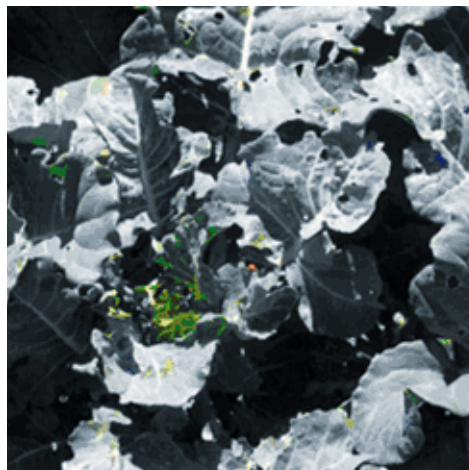


Control of Diamondback moth

Assessed 10 days after treatment, Manjimup WA, October 2010



10 days after application



Untreated control



Success NEO at 200 mL/ha



THE RESULTS *(continued)*

More powerful

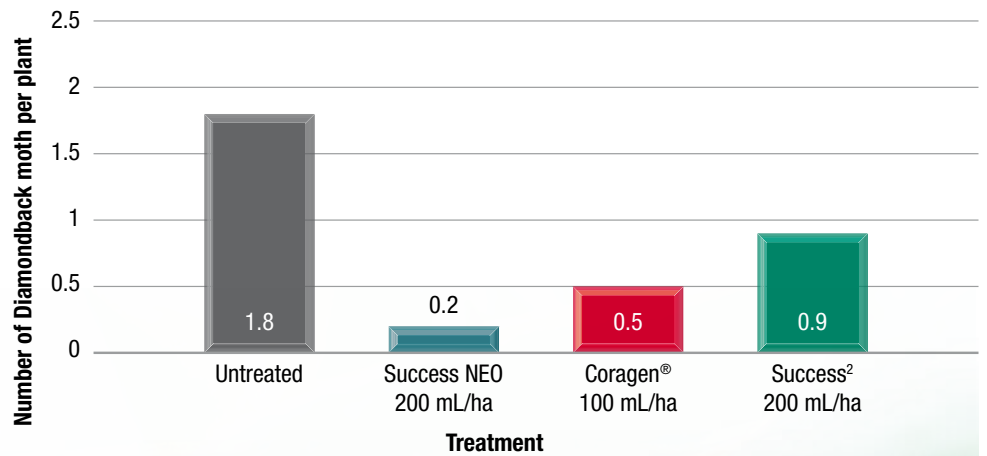
Success NEO contains spinetoram, a more powerful active ingredient than spinosad, the active ingredient in Success². Success NEO has been formulated to be used at the same rates as Success². This should eliminate any confusion regarding use rates. At label rates Success NEO will be at least as effective as Success² and fit easily into effective chewing pest management programmes.

The following data is from a trial conducted on Diamondback moth in broccoli. The trial was assessed 7 days after application.



Control of Diamondback moth

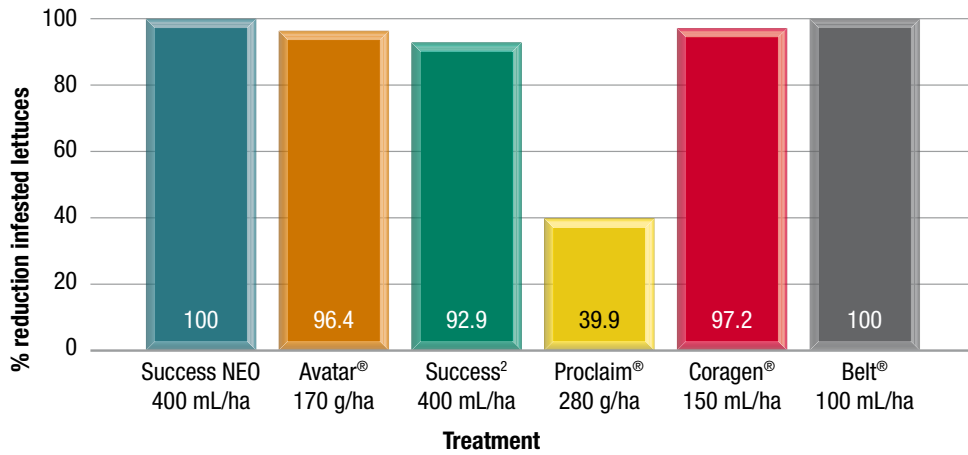
Assessed 7 days after treatment, Manjimup WA, October 2010



Control of *Helicoverpa armigera* in lettuce

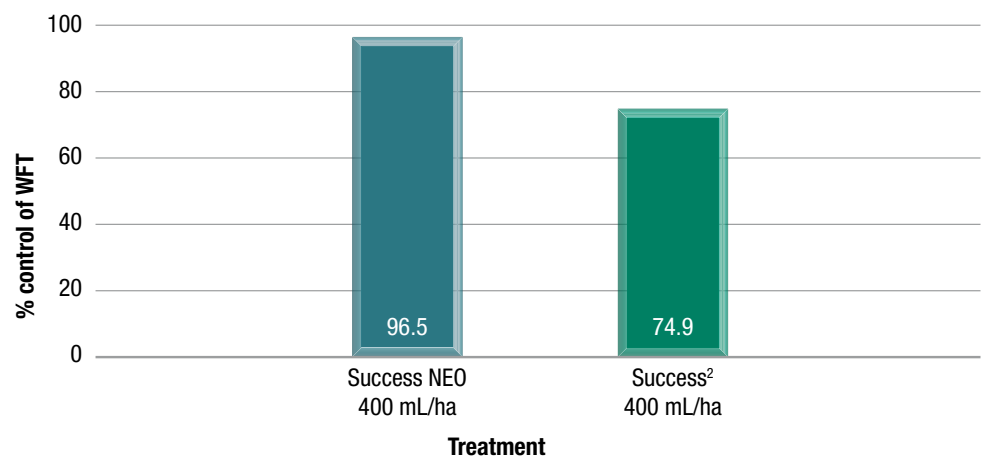
3 applications 7 days apart, assessed 12 days after 3rd application, Amiens SE Queensland

Only Proclaim® differed significantly (P=0.05) from all other treatments



Control of Western flower thrip (WFT) in capsicums

Assessed 7 days after treatment, Bowen N Queensland

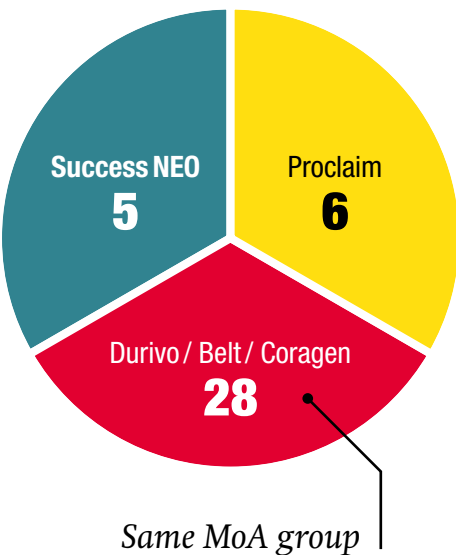




Dow AgroSciences

HARVEST WITHHOLDING PERIODS

BROCCOLI, BRASSICA LEAFY VEGETABLES, BRUSSELS SPROUTS, CABBAGE, CAULIFLOWER, CULINARY HERBS, CUCURBITS (Cucumbers, Melons, Squash and Zucchini), GREEN BEANS and PEAS (Green, Snow and Sugar snap), LEAFY VEGETABLES (Lettuce and Spinach), EGGPLANT, PEPPERS (Capsicums and Chillies), ROOT and TUBER VEGETABLES (Beetroot, Carrots, Parsnips, Potatoes, Radishes, Swedes and Turnips)	3 Days
CELERY and TOMATOES	1 Day



ROTATION

The introduction of three new products in the past two years should be good news, giving growers a range of rotation options. Unfortunately this is not the case. Each of the new products, Coragen from DuPont, Belt from Bayer and most recently Durivo® from Syngenta may be very good products in their own right, but the problem for growers is that they all have the same mode of action.

To prevent or delay the development of insecticide resistance it is necessary to rotate between products with different modes of action. Therefore, if Durivo has been applied to the soil or to seedling boxes, it is recommended that a product with a different MoA, i.e. a non Group 28, be used in the same crop.

An example of an effective rotation might be:



OR



SAFETY

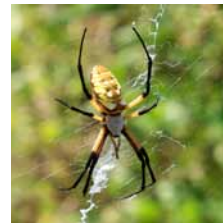
Beneficial insects

Success NEO is harmless to predatory arthropods including ladybird beetles, lacewings, big-eyed bugs, pirate bugs, damsel bugs, apple dimpling bugs, and spiders. These beneficial insects can aid in the extended natural control of insect pests and reduce the likelihood of secondary pest outbreaks.

Success NEO is toxic when sprayed directly onto parasitoid wasps, but once this spray has dried, residues on treated surfaces have very little effect.

Humans

Success NEO has a wide margin of safety for workers and they may re-enter treated crops once the spray is dry.



AWARDS

In recognition of the significant investment in science that gave rise to the discovery of Spinetoram, the new active ingredient in Success NEO, Dow AgroSciences was awarded the following:



*Presidential Green Chemistry Award
for Designing Greener Chemicals*



*AGROW Award for
Best New Crop Protection Product*



DIRECTIONS FOR USE

VEGETABLES:

Carefully monitor crops for eggs and larvae of pest species by regular field scouting. Target sprays against mature eggs and newly-hatched larvae when numbers exceed spray threshold. Apply repeat applications at 7-14 day intervals as new infestations occur or as specified under CRITICAL COMMENTS. As part of IPM programmes for Potato moth, Helicoverpa and Diamondback moth, it is important to plough crops in immediately after harvest.

CROP	PEST	RATE	CRITICAL COMMENTS
Brassica vegetables: Broccoli, Brussels sprouts, Cabbage, Cauliflower, Brassica leafy vegetables, Radishes ¹ , Swedes ¹ and Turnips ¹ <i>1 (See also under ROOT AND TUBER VEGETABLES below)</i>	Diamondback moth, Cabbage white butterfly, Cabbage cluster caterpillar, Cabbage centre grub and Loopers	200 mL/ha + wetter	Use a minimum spray volume of 250 L/ha and ensure thorough crop coverage by increasing water volume with plant growth stage. Add a non-ionic wetting agent at the recommended rate.
	Helicoverpa	200-400 mL/ha + wetter	Use the lower rate when good coverage can be achieved and the high rate in maturing crops if crop canopies prevent good coverage.
	Western flower thrips	400 mL/ha + wetter	Use this product as part of the WFT Resistance Management strategy.
Cucurbits: Cucumbers, Melons, Squash and Zucchini	Cucumber moth and Helicoverpa	200-400 mL/ha	Use higher rates during periods of high insect pressure or when crop coverage is difficult.
	Western flower thrips	400 mL/ha	Use this product as part of the WFT Resistance Management strategy.
Culinary herbs	Diamondback moth, Loopers and Lightbrown apple moth	200 mL/ha + wetter	Use a maximum spray volume of 250 L/ha. Ensure thorough coverage of the target area by increasing water volume with plant growth stage. Add a non-ionic wetting agent at the recommended rate.
	Helicoverpa	200-400 mL/ha + wetter	As above, plus use the lower rate when good coverage can be achieved and the high rate in maturing crops if crop canopies prevent good coverage.
Fruiting vegetables: Eggplant, Okra, Peppers (Sweet - Capsicums and Chillies) and Tomatoes Excluding Sweet corn	Potato moth (tomato leaf miner) and Helicoverpa	200-400 mL/ha or Dilute 20-40 mL/100 L	Use the per hectare rate when applying to bush tomatoes and sweet corn and the dilute rate (per 100 L) in trellised crops. Use the lower rate as part of an IPM programme when Helicoverpa is the dominant pest and good crop coverage is possible. Use higher rates during periods of high insect pressure or when crop coverage is difficult. Addition of a non-ionic wetting agent may improve control.
	Western flower thrips	400 mL/ha or Dilute 40 mL/100 L	Use this product as part of the WFT Resistance Management strategy.
Leafy vegetables: Lettuce, Endive, Silverbeet, Spinach and Brassica leafy vegetables	Loopers	200 mL/ha	See above under VEGETABLES.
	Helicoverpa	200-400 mL/ha	Use the lower rate as part of an IPM programme when Helicoverpa is the dominant pest and good crop coverage is possible. Use higher rates during periods of high insect pressure or when crop coverage is difficult.
	Western flower thrips	400 mL/ha	Use this product as part of the WFT Resistance Management strategy.
Legume vegetables (Succulent seeds and immature pods only): Beans, Peas, Snow peas and Sugar snap peas	Loopers	200 mL/ha	Do not make more than 3 applications per crop. Use higher rates during periods of high insect pressure or when crop coverage is difficult. <i>NOTE: Entrenched larvae will not be controlled.</i>
	Helicoverpa	200-400 mL/ha	
	Western flower thrips	400 mL/ha	Use this product as part of the WFT Resistance Management strategy.
Root and tuber vegetables: Beetroot, Carrots, Celeriac, Galangal, Parsnips, Potatoes, Radishes (Including Daikon), Sweet potato, Swedes and Turnips	Lightbrown apple moth and Loopers	200 mL/ha	See above under VEGETABLES.
	Helicoverpa	200-400 mL/ha	Use the lower rate when good coverage can be achieved and the high rate in maturing crops if crop canopies prevent good coverage. Entrenched larvae will not be controlled.
	Potato moth	200-400 mL/ha + wetter	Only target foliar infestations of potato moth. Potato moth larvae within stems or below the soil will not be controlled. Add a non-ionic wetting agent at the recommended rate.
Stalk and stem vegetables: Celery and Rhubarb	Helicoverpa	400 mL/ha	See comments under VEGETABLES above.

FOR ALL TREE AND VINE CROPS:

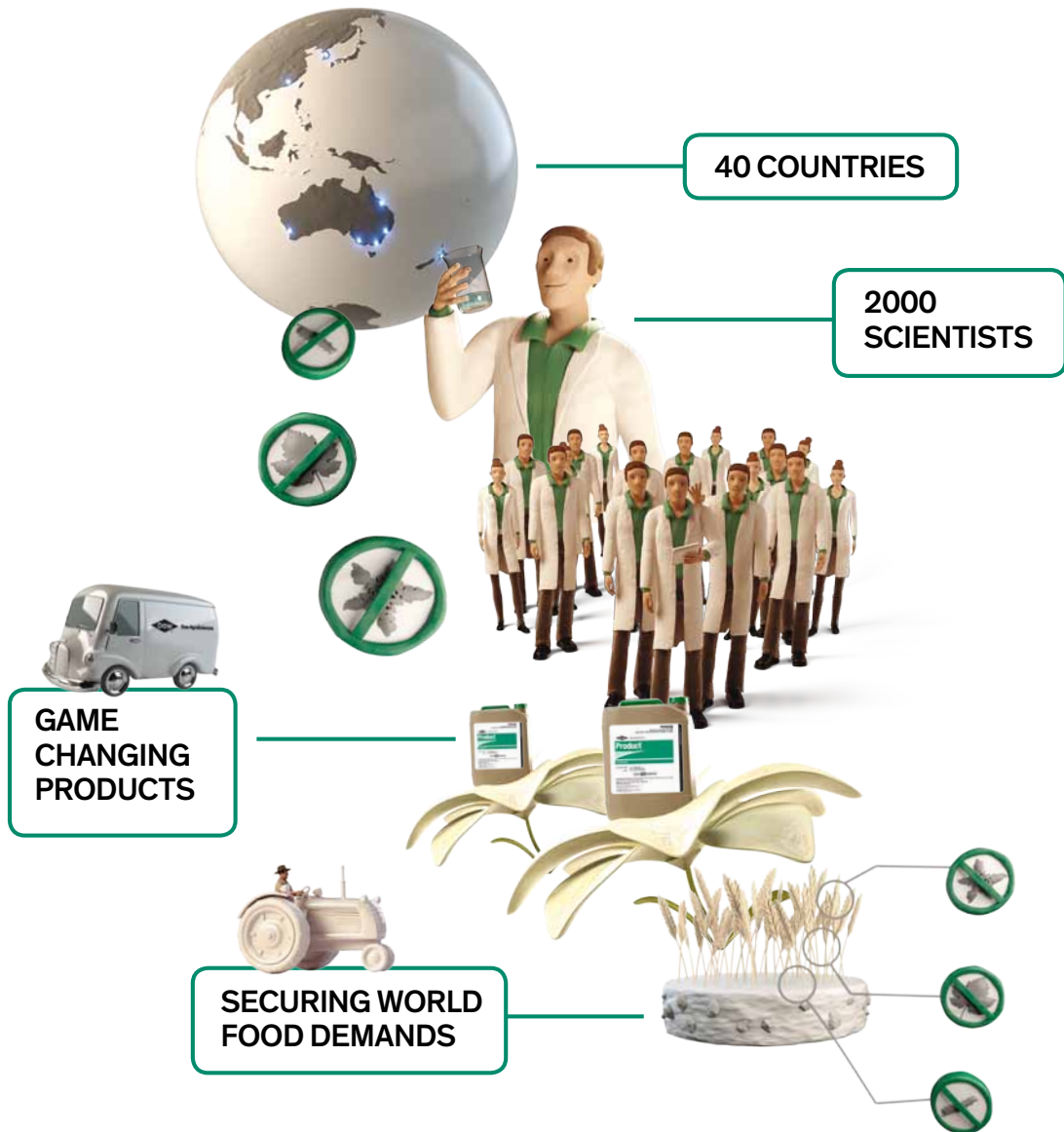
Carefully monitor crops for eggs and larvae of pest species by regular field scouting. Target sprays against mature eggs and newly-hatched larvae when numbers exceed spray threshold. Apply repeat applications at 7-14 day intervals as new infestations occur unless otherwise directed in the CRITICAL COMMENTS.

CROP	PEST	RATE	CRITICAL COMMENTS
Avocados (See also under TROPICAL AND SUB-TROPICAL FRUIT CROPS below)	Leafrollers (Including Avocado leafroller, Ivy leafroller and Lightbrown apple moth) and Loopers (Including Ectropis looper)	20 mL/100 L + wetting agent	See comments under FOR ALL TREE AND VINE CROPS above.
	Loopers	20 mL/100 L	See comments under FOR ALL TREE AND VINE CROPS above.
Berryfruit: Blackberries, Blueberries, Boysenberries, Cranberries, Currants, Gooseberries, Raspberries and Strawberries	Lightbrown apple moth and Helicoverpa	20-40 mL/100 L	Use the higher rate in dense canopies and when larvae have begun webbing leaves and fruit. Use the lower rate under an IPM system or where good coverage is assured.
	Western flower thrips	40 mL/100 L	Use this product as part of the WFT Resistance Management strategy.
	Avocado leaf roller	20-40 mL/100 L + wetting agent	Use higher rates for heavy infestations
Coffee	Avocado leaf roller	20-40 mL/100 L + wetting agent	Use higher rates for heavy infestations
Kiwifruit (See also under TROPICAL AND SUB-TROPICAL FRUIT CROPS below)	Lightbrown apple moth	20 mL/100 L	See comments under FOR ALL TREE AND VINE CROPS above.
	Flower-eating caterpillars and Small mango tipborer	20 mL/100 L + wetting agent	See comments under FOR ALL TREE AND VINE CROPS above.
Mango (See also under TROPICAL AND SUB-TROPICAL FRUIT CROPS below)	Large mango tipborer	5 mL/100 L + wetting agent	See comments under FOR ALL TREE AND VINE CROPS above.
	Tropical and sub-tropical fruit crops (Inedible peel): Avocado ² , Cherimoya, Custard apple, Durian, Feijoa, Guava, Jackfruit, Kiwifruit ² , Longan, Lychee, Mango ² , Mangosteen, Papaya, Passionfruit, Persimmon, Rambutan and Star apple ² (See separate listings above also for these crops)	Flower-eating caterpillars, Leafrollers, Loopers and Yellow peach moth	20 mL/100 L
Bananas	Red-banded thrips and Sorghum head caterpillar	40 mL/100 L	
	Banana rust thrips and Sugarcane bud moth	20 mL/10 L	Bunch spray: Apply as a fine spray to point of run-off (50-60 mL of solution) ensuring complete coverage of the bunch. Application should be made no later than 2 weeks after bunch emergence. Application should be made immediately after placement of the bunch cover. Good coverage of the bunch is essential. Do not make more than 2 applications per crop.



Dow AgroSciences

Solutions for the Growing World



WHAT DOES ALL THIS MEAN TO YOU?



Confidence in a drum

For more information contact your local Dow AgroSciences representative on TOLL FREE 1800 700 096

www.hortsolutions.com.au