syngenta.

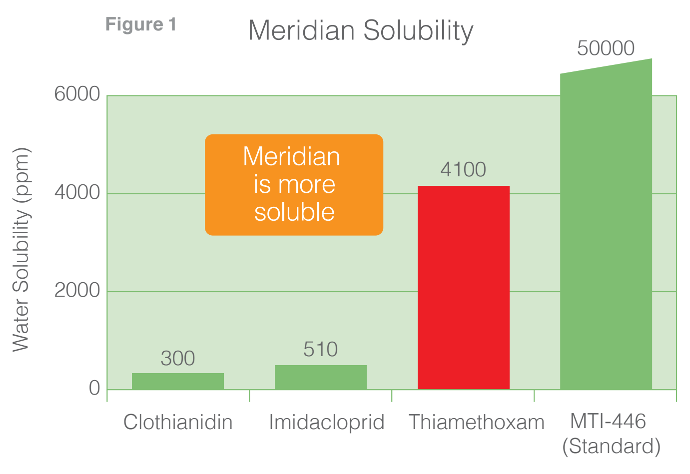
Turf Science in action

Save up to 60,000 litres of water per hectare

Irrigation savings "washing in" after application

Meridian® can help to save up to 60,000 litres of water per hectare during post grub-insecticide application "wash in". The superior solubility of the active ingredient – thiamethoxam (neonicotinoid) – is the main reason for this benefi Thiamethoxam is approximately 8 times more soluble than imidacloprid (Fig. 1), thus increasing robustness and water savings during incorporation.

Figure 1



Effective in wet and dry soil conditions

Neonicotinoids age in soil, with the majority of the active ingredient available during the fist 30 days dissolved in soil moisture. Increased solubility of thiamethoxam during this time will ensure elevated levels of availability and thus efficacy in drier soil conditions. In the longer term (20-100 days), thiamethoxam will bind to soil, to be released more readily back (desorbed) into solution than imidacloprid. This is called bio-availability, meaning the active ingredient is available to the biological system – plants for uptake and/or contact with burrowing grubs. Higher bio-availability contributes to higher levels of efficacy. Meridian will ensure high level performance in most soil conditions (Fig. 2). Meridian may therefore perform better than imidacloprid in drier soils such as fairways, semi-roughs, ovals and parks lacking regular irrigation (Fig. 3)

Figure 2

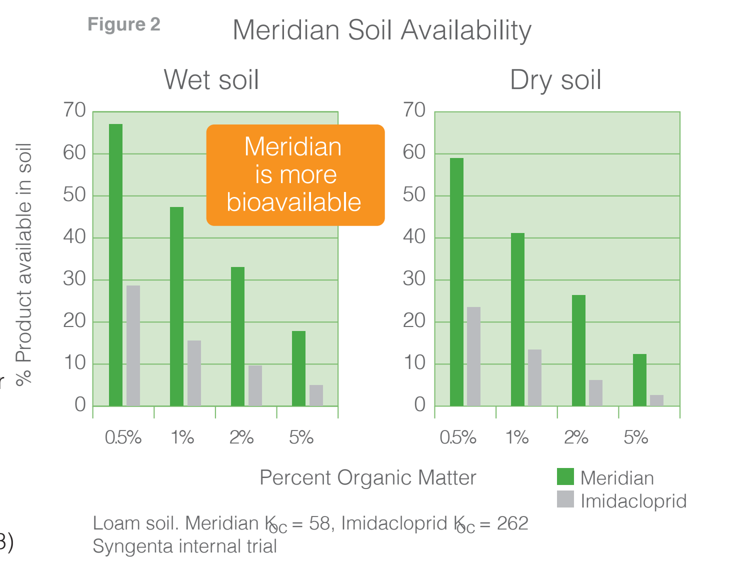

Meridian Soil Availability
Wet soil
Dry soil
% Product available in soil
70
60
50
40
30
20
10
0
Meridian is more bioavailable
0.5%
1%
2%
5%
Percent Organic Matter
Meridian
Imidacloprid
Loam soil. Meridian Koc = 58, Imidacloprid Koc = 262
Syngenta internal trial

Figure 3 **Performance in dry soil**

	0-30 days	20-100 days
	Dissolved (majority of active)	Soil bound (majority of active)
Meridian	Higher solubility Increased bio-availability and efficacy	Easier desorption Increased bio-availability and efficacy
imidacloprid	Lower solubility Decreased bio-availability and efficacy	Difficult desorption Decreased bio-availability and efficacy

Season-long control of grubs

Scarabs
(African Black Beetle)

The African Black Beetle (*Heteronychus arator*) (Fig. 4) occurs in all states and completes a single life cycle per year. Mating occurs in early spring with egg laying activities peaking during October in the northern states (QLD, NSW and WA) and a little later during early November in the southern states (ACT, VIC, TAS and SA) (Fig. 6). First and second instar grubs feed on roots in the upper soil layers. The excellent contact and systemic action of Meridian controls grubs and protects roots.

Figure 4

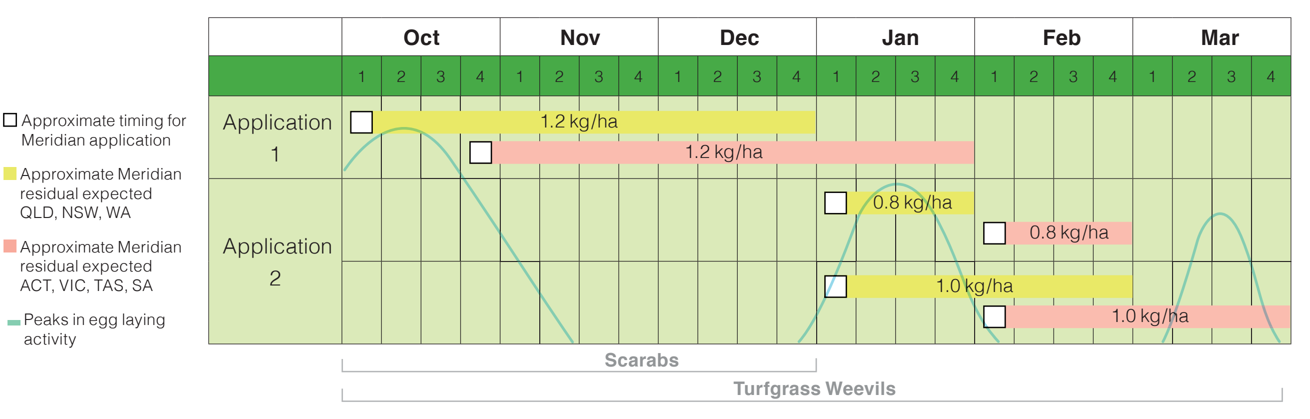
Turfgrass Weevils
(Billbug or La Plata Weevil)

The Billbug Weevil (*Sphenophorus brunnipennis*) (Fig. 5) occurs in all states and completes multiple lifecycles – commonly 2 and exceptionally 3 per year. The first generation overlaps largely with the scarabs during spring and early summer. The second generation normally peaks with egg laying during mid summer (January)(Fig. 6). This generation is normally at lower infestation levels, but still has a high enough impact to warrant treatment. On the rare occasion that a third generation occurs, it peaks with egg laying during early autumn (March-April) (Fig. 6). First instar larvae initially feeds in the stems, before dropping to the soil, continuing feeding on roots in the upper soil layers. The excellent systemic action of Meridian within plants ensure early control of this pest, even prior to dropping to the soil.

Figure 5

Meridian has excellent efficacy on African Black Beetle and Billbug larvae (1st and 2nd instar only). The best timing for application is thus during or shortly after peak egg laying. The illustration below suggests the optimum time of application to ensure optimal results. Meridian has varied dose rates to accommodate the need for a follow up application when the second and/or third generations of Billbug is to be controlled.

Figure 6 **Season long grub control program**


Approximate timing for Meridian application
Approximate Meridian residual expected QLD, NSW, WA
Approximate Meridian residual expected ACT, VIC, TAS, SA
Peaks in egg laying activity
Oct
Nov
Dec
Jan
Feb
Mar
1 2 3 4
Application 1
1.2 kg/ha
1.2 kg/ha
Application 2
0.8 kg/ha
0.8 kg/ha
1.0 kg/ha
1.0 kg/ha
Scarabs
Turfgrass Weevils

Get Preventive and Curative Control of Grubs, Ants and Other Turf Insect Pests with Meridian Insecticide

Meridian® insecticide is a proven leader for preventive and curative control of soil and foliar pests such as chinch bugs, ants, grubs and other surface feeders. Applied foliarly or as a soil application, it provides pest protection in a wide range of areas including lawns and landscape ornamentals such as bedding plants, trees and shrubs.

Curative White Grub Control

The active ingredient in Meridian, thiamethoxam, moves systemically throughout plants to provide curative control of white grubs and to quickly prevent damage to turf. Additionally, Meridian is metabolized slowly in the leaf tissue for long-lasting control.

- When used as a curative treatment, Meridian should be watered in within 24 hours of application to move the product into the root zone.
- White grubs that contact or ingest Meridian are affected and mortality occurs quickly to prevent further turf damage.
- Meridian controls grubs through the second instar (July through August), reducing the need to purchase an additional and expensive curative product.
- The same curative grub application of Meridian is also effective on pyrethroid-resistant chinch bugs.

Prevent More Pests with Less Effort

Meridian also provides preventive control for lawn care operators. Even if there is no rain or irrigation for up to seven days after application, Meridian maintains its efficacy in the soil, making it an effective preventive control option.

Protecting Landscape Ornamentals

One of the most differentiating features of thiamethoxam is its systemic activity in plants. When applied to soil, the active ingredient is absorbed through the roots and spreads throughout the plant. When applied foliarly, the active ingredient is transferred through the canopy of the plant. As a result, key landscape ornamental pests such as aphids, mealybugs, scale, white flies and tent caterpillars are also controlled.

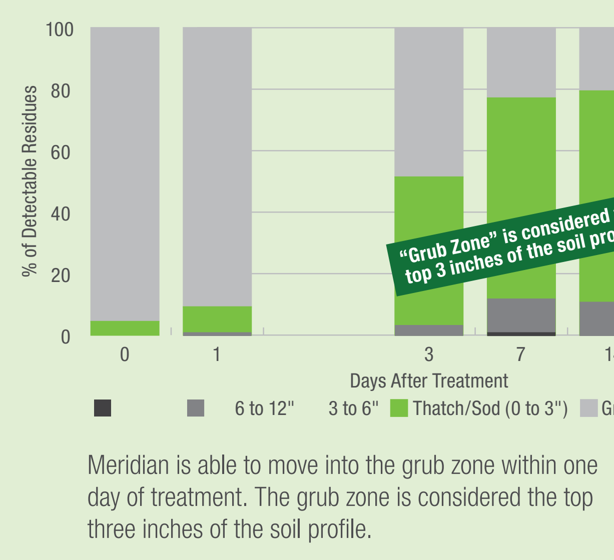
Flexible Application to Fit Your Needs

Meridian widens the window of application for flexible, preventive control by providing season-long control on your schedule. If you miss the early window for application, Meridian can be applied later in the season. With two formulations, you can apply Meridian in the most efficient way for your business.

- Meridian 0.33G: a spreadable granule sold in a 40-lb. package
- Meridian 25WG: a water-dispersable granule used for spray applications that is sold in 17-oz. and 102-oz. packages.

Quick Movement into the Grub Zone

Source: Fischer, W - P#2002WF13A & 2002WF13B



Meridian is able to move into the grub zone within one day of treatment. The grub zone is considered the top three inches of the soil profile.

Why Choose Meridian?

When compared to Merit® insecticide, Meridian scores high marks:

- Meridian is labeled for control against a broader range of landscape insects including ants, sod webworms, plant bugs and tent caterpillars.
- Meridian demonstrates a favorable 40 percent plant uptake rate 24 hours after treatment.
- Meridian remains effective up to seven days after treatment, even without watering in from rain or irrigation.

Turfgrass Soil Insecticide Comparison

	Meridian®	Merit®
White Grubs	Equal	
Curative Grub Control	✓	✗
Chinch Bugs	✓	✓
Mole Crickets	✓- suppression	✓
Fire Ants (mound treatments)	✓	✗
Ants	✓	✗
Sod webworms	✓	✗
Billbugs	✓	✓
Landscape Insects		
Aphids	✓	✓
Whiteflies	✓	✓
Mealybugs	✓	✓
Black vine weevil	✓	✓
Leafhoppers	✓	✓
Plant bug	✓	✗
Honeylocust pod gall	✓	✓
Nipple gall	✓	✓
Blister gall	✓	✓
Tent caterpillars	✓	✗
Surface Water advisory	✓	✓
Ground Water advisory	✓	✓
Plant uptake	40% at 24h	10% at 24h
Current Formulation(s)	0.33G, 25WG	75WP, 75WSP, 2F, 2.5G, 0.5G
Watering Requirements for preventive treatments	up to 7 DAT	within 24 hours after application

✗ = not labeled. **DAT** = days after treatment. ✓= labeled.
✓- suppression = suppression claim only.

IRAC MOA CLASSIFICATION
GROUP 4 THIAMETHOXAM

Labeled Use Rates by Formulation

Pests	25WG	0.33G	Lb ai/A
White Grubs	12.7-17 oz/A	60-80 lbs/A	0.2-0.26
Chinch Bugs	12.7-17 oz/A	60-80 lbs/A	0.2-0.26
Mole Crickets*	12.7-17 oz/A	60-80 lbs/A	0.2-0.26
Craneflies	12.7-17 oz/A	60-80 lbs/A	0.2-0.26
Flea beetles Greenbugs Leafhoppers Sod webworms Spittlebugs	12.7-17 oz/A	60-80 lbs/A	0.2-0.26
Fire Ants (mound treatments)	1.3 oz/10 gals.	N/A	N/A
Ants (broadcast treatments)	12.7-17 oz/A	60-80 lbs/A	0.2-0.26
Billbugs	12.7-17 oz/A	60-80 lbs/A	0.2-0.26
Landscape Ornamental Pests	2-8.5 oz/ 100 gals. OR 12.7-17 oz/A	60-80 lbs/A	0.2-0.26

*Suppression only.
All rates are per year.

Do not apply more than 17 oz./A per year of Meridian 25WG or more than 80 lbs./A per year of Meridian 0.33G.

Key Features of Meridian

- True broad-spectrum control of surface-feeding insects including white grubs and chinch bugs.
- Wide application window for flexible preventive control.
- Curative control through second instar.
- Highly systemic movement of the AI means faster control.
- Relaxed watering in requirements when applying preventively.

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