Amgrow



Meteor®

Pre-Emergent Herbicide

A New Molecule
A New Mode of Action
A Fresh Approach

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Helping Australia Grow



ABOUT METEOR HERBICIDE

Meteor Herbicide from Amgrow is a new generation pre-emergent herbicide containing 960g/L of the active ingredient metolachlor.

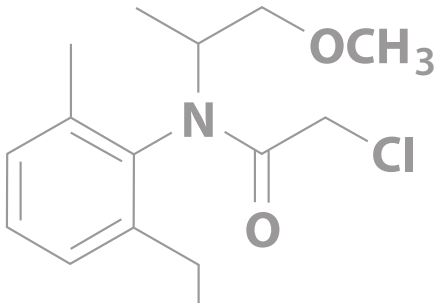
Meteor Herbicide provides up to four months pre-emergent control of wintergrass, crowsfoot grass and summergrass in a range of warm season turf varieties including soft leaf varieties of Buffalo, Common & Hybrid Couches, Kikuyu, Zoysia and QLD Blue Couch.

KEY FEATURES & BENEFITS

- ✔ New generation pre-emergent herbicide – Australia's first metolachlor based turf herbicide, the culmination of years of research and development
- ✔ Group K herbicide – ideal rotational tool for use in conjunction with conventional Group D pre-emergent products
- ✔ Up to three times safer on turf root development than Group D pre-emergent herbicides
- ✔ Ideal for use in turf production and propagation situations
- ✔ Reliable pre-emergent control of grassy weeds for up to three months
- ✔ Quality Australian made product

Meteor Herbicide at a glance	
Active Ingredient	960g/L Metolachlor
Formulation	Suspension Concentrate
Pack Size	5L, 20L
Poison Schedule	Schedule 5 (Caution)
Mode of Action	Group K Herbicide

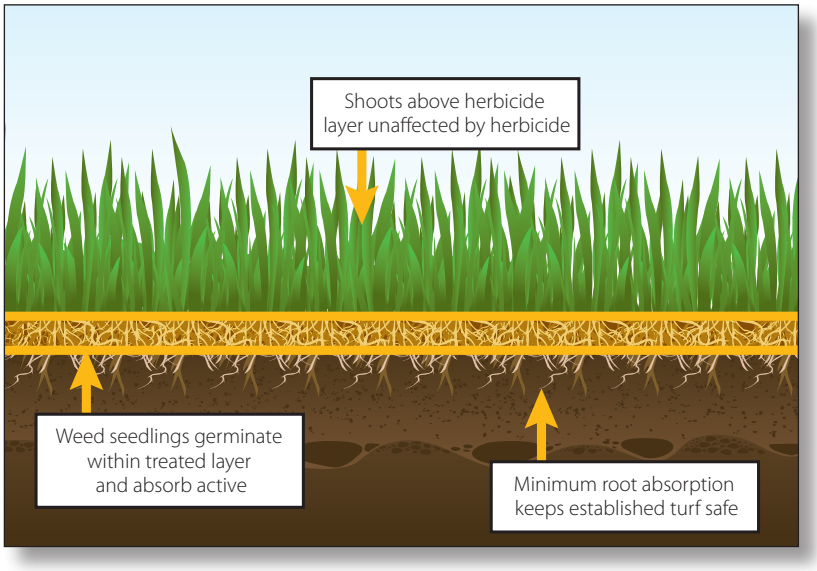
New Mode of Action



Metolachlor, the active ingredient in **Meteor Herbicide** is categorised as a Group K mode of action. Following plant uptake, metolachlor acts as a growth inhibitor by blocking the synthesis of very long chained fatty acids (VLCFA's). This occurs through the inhibition of elongase enzymes which initiated the formation of VLCFA's from shorter chain fatty acids. This results in the cessation of cell division and elongation, and ultimately plant death. Currently no reported resistance issues exist with Group K herbicides making it an excellent rotational tool for resistance management.

After application the metolachlor forms an herbicidal layer in the topsoil where it predominantly enters the susceptible plant by the young shoot (the coleoptile) as it emerges from the seed casing.

Root uptake of metolachlor does occur to some extent; however this is much lower than the level of shoot uptake. Herbicide uptake and subsequent weed kill occurs during or shortly after seedling germination as the weed seeds emerge within the treated herbicide zone.



Selectivity and Turf Safety

Once inside the plant, selectivity between susceptible and non-susceptible species is determined by the host plant's ability to metabolise metolachlor at a faster rate than the weed species.

The speed at which the metolachlor is metabolised is regulated by the presence of the glutathione-S-transferase (GST) enzyme within the treated plant. The higher the species' GST levels the more rapidly it can metabolise the metolachlor molecule and therefore the more tolerant it is.

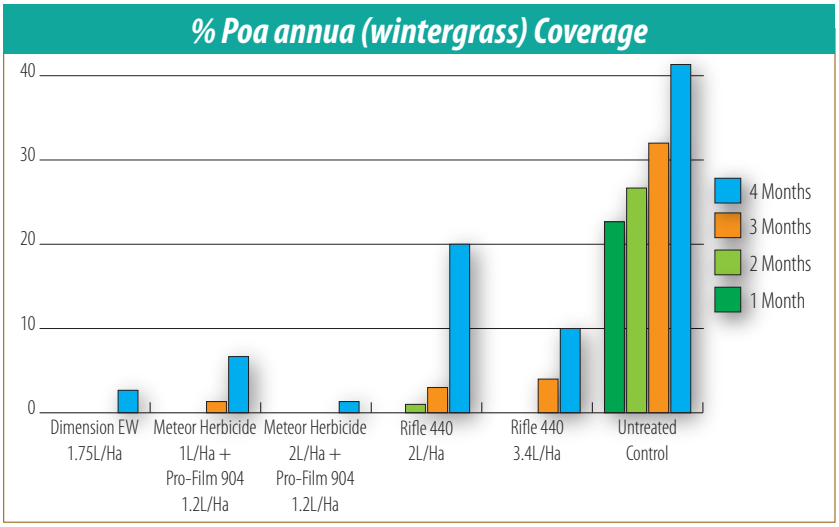
Additionally, the fact that metolachlor has little root absorption activity and the positioning of the treated layer above the existing root system of the host plant makes **Meteor Herbicide** low risk relative to other pre-emergent herbicides.

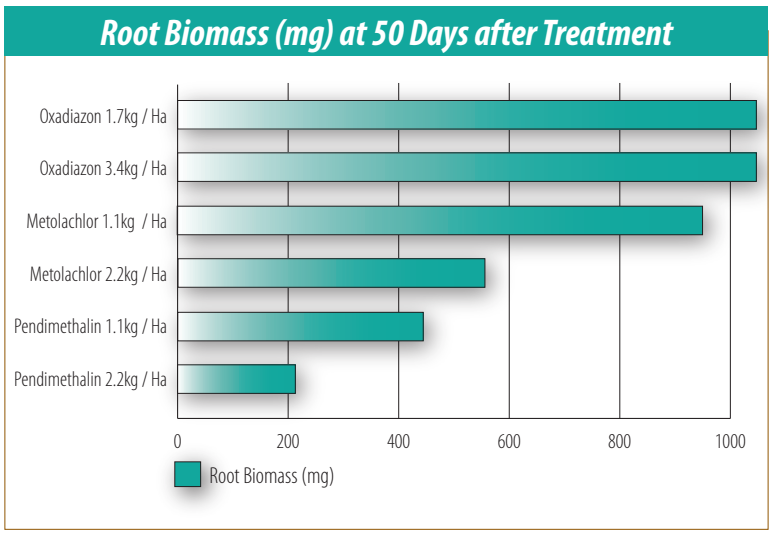
Weed Control

Meteor Herbicide has been shown to provide between three and four months of preventative control against wintergrass, crowsfoot grass and summergrass. Adjusting the rate of application will directly impact on the longevity of control achieved.

Field studies have consistently demonstrated that a rate of 2L/Ha will provide up to 4 months control of *Poa annua* (wintergrass) and up to 3 months control of crowsfoot grass and summergrass.

Soil texture and moisture levels play a major role in the level of longevity achieved with **Meteor Herbicide**. Shorter periods of herbicide activity may be observed in sandy soils with regular irrigation or rainfall.





Impact on Turf Root Development

Many conventional pre-emergent herbicides such as those in the Group D mode of action grouping are root absorbed and as such will inhibit or reduce turf root development. Metolachlor, the active constituent of **Meteor Herbicide** has been shown to have a greatly reduced impact on turf root development when compared to existing Group D pre-emergent herbicides.

This makes **Meteor Herbicide** the ideal tool for use in vegetative propagation situations where rapid turf root development is essential, such as during the regrowth phase in warm season turf production.

The opposite study undertaken by McCarty *et al.* (1995) demonstrates the influence of metolachlor on root development of Buffalo grass (*Stenotaphrum secondatum*) compared to other pre-emergent herbicides. Readings of root length and biomass were undertaken at two day intervals commencing on the 10th day after treatment.

A Programmed Approach to Weed Management

Meteor Herbicide provides turf Managers and Growers with the ideal tool to rotate mode of actions for weed resistance avoidance. When used in conjunction with Group D chemistries such as Dimension EW (420g/L dithiopyr), the multiple modes of activity provide a real solution to preventing the incidence of resistance. Additionally, the Group K mode of action of **Meteor Herbicide** poses a lower risk than Group D chemistries with regards to resistance potential (CropLife Australia).

Weed germination times vary significantly throughout the country depending on climate. An example of a weed management program utilising **Meteor Herbicide** and other pre-emergent herbicides is below.

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Key Weed Germination Window			Wintergrass									
							Summergrass					
									Crowsfoot grass			
Group K						Meteor Herbicide 2L/ha						
Group D	Barricade 4L/ha								Dimension EW 3L/ha			

APPLICATION INFORMATION

Situation	Weeds Controlled	Rate / Ha	Critical Comments
Established turf as named: Couch (*Cynodon dactylon* cv. Grand Prix) Common Kikuyu (*Pennisetum clandestinum*) Zoysia (*Zoysia japonica* cv. Empire) Qld Blue Couch (*Digitaria didactyla*) Buffalo (*Senotaphrum secundatum* var. Kings Pride)	Wintergrass (*Poa annua*) Summergrass (*Digitaria sanguinalis*) (*Digitaria ciliaris*) Crowsfoot Grass (*Eleusine indica*)	1-2 L/ha in a minimum of 400 L water/ha	Product must be watered in with a 2-4mm of irrigation. Not to be used on Golf and Bowling Greens. Mix with sufficient water volume in order to obtain good coverage. Use low rate for: • Pre-emergent control where lighter infestations are typical. Use higher rate for: • Pre-emergent control where heavy infestations are expected. • Where pre-emergent application is made early. • When longer residual control is required. Use on the named species and cultivars at recommended rates only as given in the situation column. Other varieties have not been tested.

Always read the full label before using this product.

Wintergrass



Summergrass



Crowsfoot Grass



Water Volume and Irrigation

As a pre-emergent herbicide it is critical that **Meteor Herbicide** is positioned correctly in the top of the soil column where weed seeds will be germinating. To achieve this it is recommended that 2-4mm of irrigation be applied immediately following application.

As a leaf absorbed herbicide it is essential that irrigation occurs within 2 hours to ensure the active is not absorbed by the host plant. A coarse nozzle and a minimum water volume of 400L/Ha are recommended to achieve adequate coverage during application.

Compatibility

Meteor Herbicide has been shown to be compatible with a broad range of plant protection products. When tank-mixed with a broadleaf herbicide such as Turzine Pro, **Meteor Herbicide** can become the perfect partner herbicide for a full broadleaf and grassy weed control solution in a single application.

Spray Adjuvants and Surfactants

Field research has demonstrated that the addition of a non-ionic deposition agent such as Pro Film 904 at 1.2L/Ha with Meteor Herbicide provides a significant benefit to the level of control achieved.

The addition of a soil penetrant is also recommended, particularly in difficult to wet soils or in application to turf with an extensive thatch and mat layer.



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