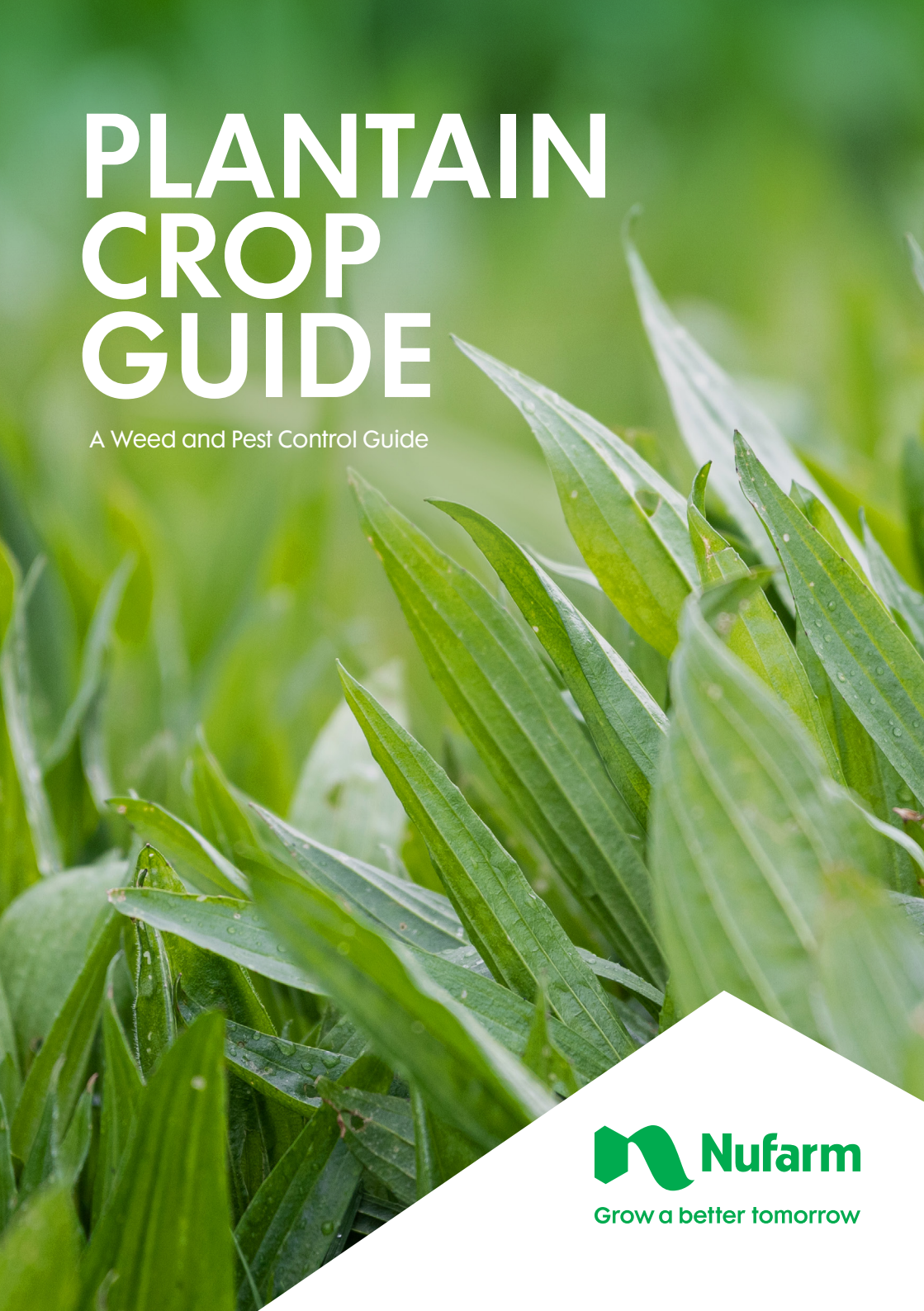
PLANTAIN CROP GUIDE

A Weed and Pest Control Guide



Nufarm

Grow a better tomorrow

Introduction

Nufarm have embarked on trials to register options for the crop over a long period of time. With more registrations now approved we present our Plantain Product Range guide. This easy to follow guide will help to ensure your plantain crops can get off to the best possible start and flourish for many years ahead.

Increasingly pastoral farming has come under the spotlight in New Zealand for how farming practices impact the environment. New ways of feeding animals have needed to be found to limit this while still maintaining New Zealand's competitive advantage in low cost, pastoral based systems.

Plantain has become a popular forage crop plant in New Zealand, with its good dry matter production and quality, particularly over dry summer periods as a high quality source of forage in lamb finishing systems. With more recent work by Agricom™, the variety Ecotain® Environmental Plantain shows the positive impacts the plant can have on nitrogen leaching in dairy herds. This has further raised the importance of the plant in farming systems.

While the plant can form a high quality portion of the diet of grazing animals in specialist crops sown alone or in combination with legume species such as red clover, or as part of a permanent pasture mix with grass and other pasture species, the long term production of the plant can be compromised due to a lack of robust, registered herbicide or insecticide options.

Ecotain Image supplied by Agricom.

Maximising your plantain

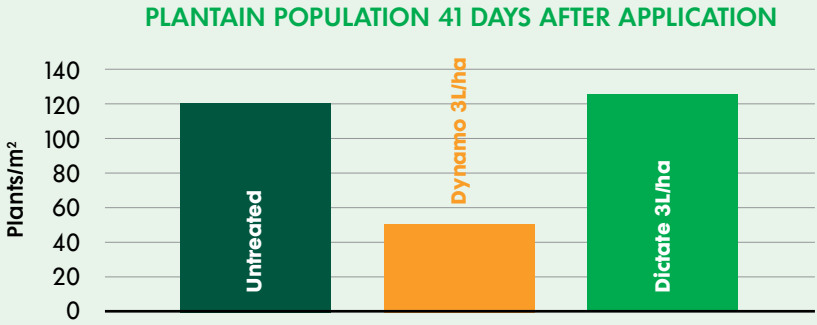
When using plantain in pastures to support an improved environmental approach, it is important to maintain as high a population of plantain as possible, as higher levels of plantain have proven to support improved environmental benefits. (Plantain Potency and Practice Programme – Ecotain).

In NZ trials, Nufarm Dictate® 480 herbicide has been proven to support higher levels of plantain during the establishment period. This is best demonstrated below; the photo on the left was sprayed with Dictate 480 during establishment, while the photo on the right was sprayed with a competitor product.

New pasture sown February 2023, Sprayed with Dictate 480 March 2023. Photo following first grazing.

New pasture sown February 2023, Sprayed with Dynamo March 2023. Photo following first grazing.

Plant counts showed in excess of a 50% reduction in plantain population after a Dynamo® application during the establishment period.



NUNZ2053 – Plant count 41 days after application.

Assessing plantain

An autumn plantain content assessment in pastures is an important process in regions where regional councils include the use of plantain as a management tool to mitigate nitrogen.

The following images show what differing levels of plantain look like in mixed pastures. The DairyNZ visual assessment guide is a good reference when doing this.

5%

15%

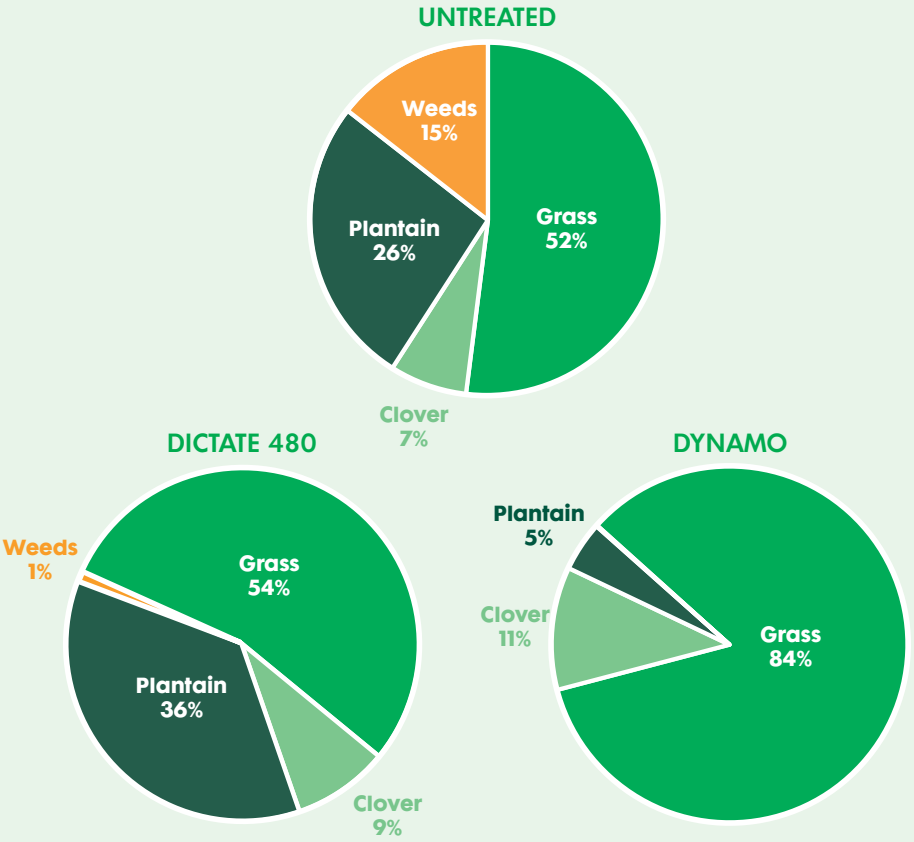
30%

60%

SOURCE: www.dairynz.co.nz/feed/crops/plantain/assessing-plantain-on-farm/ .

It can be easy to visually overestimate the amount of plantain in a mixed pasture sward. To get an accurate proportion of plantain, a common method used in research trials is a botanical composition. This is done by separating the mass of each species, then drying them to get their dry matter. The mass of the dried species as a proportion of the total dry matter harvested, as a percentage, gives the botanical composition. Lower dry matter species, such as plantain, can visually look to be a larger proportion of the sward than what they contribute to dry matter yield.

The following graphs show a significant reduction in weeds and a lift in plantain and clover content from using Dictate 480 when compared to the untreated.



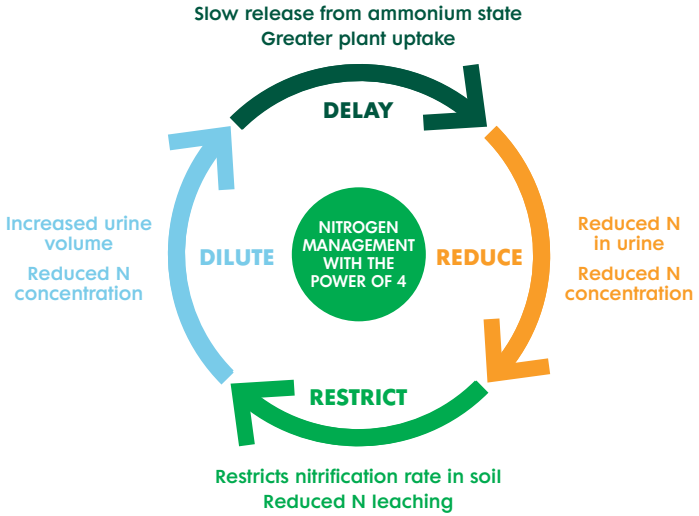
NUNZ2053: Botanical composition in the sward as a proportion of dry matter produced 41 days after application.

Why is Ecotain environmental plantain important?

Ecotain has been shown to have an effect on the nitrogen (N) concentration in urine patches through acting as a diuretic. Reducing N in urine patches could reduce the risk of N leaching into waterways.

For Ecotain to have its full effect for urine nitrogen reduction, it needs to be 30% of the population in the pasture. Therefore, anything that could reduce the population in the paddock should be avoided. Measuring N leaching, through Overseer, does not require a minimum quantity of plantain in the sward. The higher the portion of plantain, the more recognisable the benefits are to N leaching reduction modelling.

Ecotain plantain works in four main ways to reduce nitrate leaching:



DILUTE nitrogen being excreted, resulting in a reduced N load in the urine patch.

DELAY the conversion of ammonium to nitrate.

REDUCE the amount of dietary N which is excreted in urine.

RESTRICT the amount of leachable nitrogen in the soil.

Plantain has also shown to have an effect on GHG emissions; further work with the NZ Agricultural Greenhouse Gas Research Centre is underway to investigate these benefits.

Plantain growing options

Plantain is adaptable and can be grown in a variety of different methods, which all have their own set of pros and cons. The below information has been adapted from DairyNZ and outlines some of these to help decide which would be the best fit for your farming system.

Pure species

PROS

- Dedicated weed control and grazing management.
- High benefit from herbs (e.g. mineral content and environmental).

CONS

- Slightly slower winter growth rates than ryegrass.
- Requires nitrogen fertiliser.

Plantain & clover

PROS

- Dedicated weed control and grazing management.
- High benefit from herbs (e.g. mineral content and environmental).
- Increased nitrogen and benefit of clover filling sward gaps.

CONS

- Slightly slower winter growth rates than ryegrass.
- Potential bloat risk if clover dominates.
- Reduced weed control options.

Plantain in diverse pasture mix

PROS

- Increased pasture production and nutritive value in summer/autumn.
- Longer growing season.

CONS

- Grazing management cannot be optimised for all species.
- Quality of herbs diluted.
- Limited weed control options.

Adapted from: Lee and Minneé, (2012). DairyNZ Technical Series, August 2012. Chicory and plantain – your questions answered.

Plan early

Correct preparation of a paddock prior to sowing plantain is imperative. Whether grown as a specialist crop alone, with clover, or as part of a permanent pasture mix, it is critical to ensure it gets off to a good start. Planning needs to start many months before sowing seed.

Many farmers are looking to sow these crops into run out pastures which typically have significant weed issues.

The best advice that can be given is to select a paddock that does not have major weed problems (particularly those not well controlled by the available plantain herbicides). Once the paddock is chosen, do everything one can pre-sowing to minimise weeds, and check the spray history of the paddock to ensure that residual herbicides used prior will not be an issue for the emerging crop.

Use an effective spray out programme

Where hard to control perennial weeds are a problem (especially couch, mercer grass, paspalum, kikuyu, Californian thistle and browntop), planning at least one year ahead with options such as a brassica crop over the summer months followed by an annual ryegrass or cereals over the winter and early spring is beneficial to allow multiple opportunities for control using CRUCIAL® and other in-crop herbicides.

Plantain is sensitive to a number of herbicides so it is important to check plant back intervals when using herbicides during the preparation phase.

Alternatively consider a double spray out programme. This is recommended where not using a cropping programme to maximise the effectiveness of the spray out and the subsequent kill of the prior crop and weeds. This has the added benefit of conserving all important soil moisture to allow a more even strike of the plantain (and weeds).

Spray the existing crop/pasture and leave fallow before applying a second application of CRUCIAL with Pulse® Penetrant and cultivating.

CRUCIAL application rates

APPLICATION RATES FOR CRUCIAL®	
Annual ryegrass, cereals	1.8-2.4L/ha
Browntop, kikuyu, mercer grass	3.6L/ha
Couch, paspalum	1.8-3.6L/ha
Perennial ryegrass, Californian thistles	2.4L/ha
Red fescue, docks	5.4L/ha

Tips to maximise CRUCIAL performance

For maximum absorption, you need at least 5–10cm of actively growing leaf (minimum 10–15cm if couch is present). Spray first then wait 1 day for annual species and 3 days for perennial species before grazing.

Add Pulse Penetrant at 100ml/100L water to:

- Improve CRUCIAL penetration and uptake
- Ensure control of perennial ryegrass
- Aid rain-fastness of CRUCIAL – 15 minutes vs. 2 hours without Pulse Penetrant.

Hard to kill weeds

If necessary, add companion herbicides to control weeds that are not well controlled by CRUCIAL and Pulse Penetrant alone.

NAIL® 600EC

Add Nail 600EC to improve speed of brownout, and assist control of weeds such as mallows, nettles and polygonum spp.
Use at 20–40ml/ha.

RELAY® SUPER S

Add Relay Super S to improve control of weeds such as hemlock, ragwort, storksbill and thistles.
Use at 1.0–2.0L/ha.

SERO® 750WG

Add Sero 750WG to improve control of weeds such as clover, sheep's sorrel and yarrow. Use at 40g/ha.

KAMBA® 750

Add Kamba 750 to improve control of weeds such as dandelion, docks and willow weed.
Use at 400ml/ha.

CHARTER® 750WDG

Add Charter 750WDG to aid control weeds such as of buttercup and large docks.
Use at 20g/ha.

Observe the relevant plant back intervals and grazing withholding periods for the above herbicides for plantain (for further advice where these are not known, please contact your local Nufarm Territory Manager).

Pre-plant insect control options

Springtails (*Collembola sp.*)

Springtails can be a hugely damaging pest at crop emergence, with numbers present in pasture often 30,000/m^2 or more, so early control measures should always be applied.

DEW™ 600

Add Dew 600 at 400ml/ha at sprayout to control springtails. Dew 600 has a nil stock withholding period. Where a double CRUCIAL spray programme is used, add Dew 600 to the second application.

Slugs (*Deroceras sp.*)

Slugs feed on seeds and germinating or emerged seedlings, severely reducing establishment.

SLUGOUT®

SlugOut's unique dust-free granules give excellent coverage per square metre, ensuring effective control of crop-destroying slugs. Broadcast at 10–15kg/ha either in a single application, or in a split application, half (5–7.5kg/ha) applied around a week prior to planting, the other half at planting.

Post-emergence weed control

Close attention to crop and weed emergence during the establishment phase of a plantain crop will give the best chance of early weed control. Broadleaf control is best accomplished when the weeds are seedlings. Early weed control reduces competition and can allow for better establishment of the crop. The weeds present (broadleaf and grasses) will dictate which post emergence herbicides are most suitable.

Grass weed control

SEQUENCE™

SeQuence can be applied during establishment or after cutting/grazing for the control of a wide range of grasses in pure swards of plantain, or plantain/clover (e.g. where grass species are not desired). Active growth of weeds is preferred but control will also occur during the winter although it will be very slow to act. Do not graze for 3 weeks after application.

Key weeds controlled or suppressed include – annual and perennial ryegrass, cocksfoot, browntop, annual grasses including barnyard, summer grass, bristle grass, annual poa, volunteer cereals and barley grass.

Apply 0.25–3.0L/ha depending on weed species present. Always apply with Bonza® Gold at 1L/100L water (2L/ha maximum). Do not apply to plantain seed crops after flower seed heads are first visible in the base of the plants. Do not apply to mixed swards containing desirable grass species.

Broadleaf weed control

DICTATE® 480

After years of trials, Nufarm are happy to confirm Dictate 480 is registered as a weed control option for broadleaf control in plantain, plantain/clover or pastures containing plantain. This offers an extremely crop safe weed control option compared to other registered options, whilst still offering robust weed control.

Dictate 480 can be used for broadleaf weed control during warm conditions. Apply once plantain have reached the 2 leaf stage, and clover at 2 true trifoliate leaves.

Key weeds controlled or suppressed include – thistles (nodding, sow), storksbill, fathen and willow weed. Dictate 480 offers significant advantages where flumetsulam resistant chickweed is suspected in the weed populations. Plants with up to 3 branches will be controlled. Apply Dictate 480 at 3L/ha with 25ml/100L Contact™ Xcel. Coverage is critical so always apply in water rates of at least 300–500L/ha. Do not add adjuvants unless specified on the label. Observe a 14 day grazing withholding for plantain monoculutres and plantain pastures. Always follow the label with tank mix partners.

KAMBA® 750

Kamba 750 is the only dicamba product registered for use in plantain swards when grown alone. Kamba 750 can be used for broadleaf weed control in plantain crops grown alone, without clover or grass species grown in the mix. Apply once plantain have 2–4 true leaves, and weeds are at the cotyledon to 4 leaf stage.

Key weeds controlled or suppressed include fathen and prostrate amaranthus. Apply Kamba 750 at 400ml/ha in 150–200L water/ha. Do not spray under cold, slow growing conditions. Active growth is important to optimise recovery from herbicidal effects. Some initial growth suppression or leaf twisting may occur. Avoid spray swath overlaps.

Post-plant insect control options

Slugs (*Deroceras sp.*)

Slugs feed on seeds and germinating or emerged seedlings, severely reducing establishment.

SLUGOUT®

SlugOut's unique dust-free granules give excellent coverage per square metre, ensuring effective control of crop-destroying slugs. Broadcast at 10–15kg/ha either in a single application, or in a split application, half (7.5kg/ha) applied around a week prior to planting, the other half at planting.

Greasy cutworm (*Agrotis ipsilon*)

Greasy cutworm can be a pest during early establishment of plantain crops, and while sporadic can be severely damaging to new crops. Whilst insecticide seed treatment can manage numbers well for the first few weeks following planting, numbers can build to severely damaging amounts once these wear off.

KAISO® 50WG

Synthetic pyrethroids like Kaiso 50WG can provide robust control of Greasy cutworm populations during the establishment period in pure plantain & plantain/clover swards. Apply immediately as damage occurs. Preferably in the evening as a directed spray to thoroughly cover the base of the plants and the surrounding soil. Allow 14 days between application and stock grazing.

Plantain Moth (*Scopula sp.*)

Plantain moth are a complex of multiple native caterpillar species, that can be sporadically damaging in plantain and plantain/clover crops if conditions allow for populations to develop to damaging numbers.

KAISO® 50WG

Kaiso 50WG has been found to be very effective at controlling these insect pests in pure plantain and plantain/clover swards. Apply Kaiso 50WG at 100g/ha in 150–200L water/ha (aerial 100—50L water/ha), as soon as caterpillars have been noticed in the base of the crop. Allow 14 days between application and stock grazing. Do not spray when clover is flowering.

Crop use chart

	PLANTAIN	PLANTAIN/ CLOVER	PASTURES CONTAINING PLANTAIN & CLOVER
Dictate® 480	✓	✓	✓
Sequence™	✓	✓	x
Kamba® 750	✓	x	x
Kaiso® 50WG	✓	✓	x

If you're using one of our products in accordance with the label, you have the peace of mind that Nufarm has your back with our Nufarm Performance Guarantee on all our products.

Talk to your local Nufarm Territory Manager or call Customer Services on 0800 683 276

Working out what you need

	APPLICATION RATE PER HA*	TOTAL HA'S REQUIRED	AMOUNT REQUIRED
SPRAY OUT			
CRUCIAL®	1.8–5.4L/ha		
Pulse® Penetrant	100ml/100L water		
Nail® 600EC	20–40ml/ha		
Sero® 750WG	40g/ha		
Charter® 750WDG	20g/ha		
Kamba® 750	400ml/ha		
Relay® Super S	1.0–2.0L/ha		
POST-EMERGENCE BROADLEAF WEED CONTROL			
Dictate® 480	3.0L/ha		
Kamba® 750	400ml/ha		
Contact™ Xcel	25–50ml/100L water		
POST-EMERGENCE GRASS WEED CONTROL			
SeQuence™	0.25–3.0L/ha		
Bonza® Gold	1L/100L water		
INSECT CONTROL			
Dew® 600	400ml/ha		
SlugOut®	10–15kg/ha		
Kaiso® 50WG	100–200g/ha		
Contact™ Excel	25–50ml/ha		
Flume®	150–200ml/ha		

*Please refer to product labels for specific application rates and use directions

Notes:

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