

MAIZE CROP GUIDE

A Weed and Pest Control Guide

Simple steps to produce an effective maize crop



Successful maize production

So you've invested in top quality treated seed and you are determined to give your maize crop every chance of being a winner.

Most likely to stand between you and success (apart from the weather) are weeds and pests. Hybrid maize varieties, while endowed with very high yield potential, are inherently poor competitors with weeds or pests.

Good weed and pest control is essential in maize.

Good weed control eliminates competition for light, nutrients and moisture for best growth conditions. It also protects the palatability and nutritional potential of your crop. Eliminating pests like slugs, armyworm and cutworm will ensure maximum plant establishment.

Plan early

Start early where perennial weeds are a problem.

In autumn, select the paddock early and control hard to kill perennial weeds (especially browntop, couch, Californian thistles, mercer grass, paspalum, kikuyu, etc.) with CRUCIAL®. Spray in autumn to maximise CRUCIAL translocation and effectiveness, then sow a short-term crop (ryegrass or cereal) for some high quality grazing or silage.



A pre-plant cleanup saves time

Before establishing the crop, spray with CRUCIAL to kill the existing vegetation. This clean-up provides the following benefits:

- Controls perennial weeds to minimise competition in the maize crop
- Reduces the tillage required to produce an excellent seedbed, saving time and money, because plant root breakdown has already been achieved by CRUCIAL
- Keeps the paddock in production longer beforehand, because an extensive cultivation or fallow period is not required for the new crop
- Weather is less likely to delay planting, since you are not relying on so many suitable days for cultivation.

CRUCIAL application rates

APPLICATION RATES FOR CRUCIAL		PULSE® PENETRANT RATES
Annual ryegrass, cereals	1.8–2.4L/ha	100ml/100L water
Browntop, kikuyu, mercer grass	3.6L/ha	100ml/100L water
Couch, paspalum	1.8–3.6L/ha	100ml/100L water
Perennial ryegrass, Californian thistles	2.4L/ha	100ml/100L water
Red fescue, docks	5.4L/ha	100ml/100L water

Note: Many old pastures contain hard to kill weeds and will need at least 3.6L/ha CRUCIAL.

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 species. Use at 20–40ml/ha.



ARCHER® 750

Add Archer 750 to improve control of weeds such as clover, thistles, plantain and yarrow. Use at 200–400ml/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 of weeds such as buttercup and large docks. Use at 20g/ha.

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

* Performance guarantee

Controlling pests pre-planting

Slugs



Slugs feed on seeds and germinating or emerged seedlings, reducing establishment. They are a major problem in strip-till and no-till situations, therefore SlugOut® should be applied as a matter of course.

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.

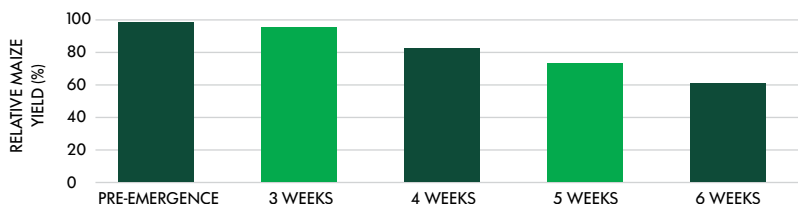
Pre-emergence weed control

Controlling weeds early with a pre-emergence herbicide is **CRUCIAL** in maximising maize yields. FAR trials show that waiting to control weeds until as little as 4 weeks after emergence can reduce maize yields by at least 10–20%.

Other risks of relying solely on a post-emergence herbicide include:

- Delay in application of post-emergence herbicides due to weather may result in even further yield losses
- Larger weeds are typically more difficult to control
- Post-emergence herbicides may only control certain weeds or control only broadleaf weeds and not grass weeds or vice versa.

Effect of post-emergence herbicide timing on maize yield losses due to weed competition



(Source: Foundation for Arable Research, Maize Arable Update, No.17)



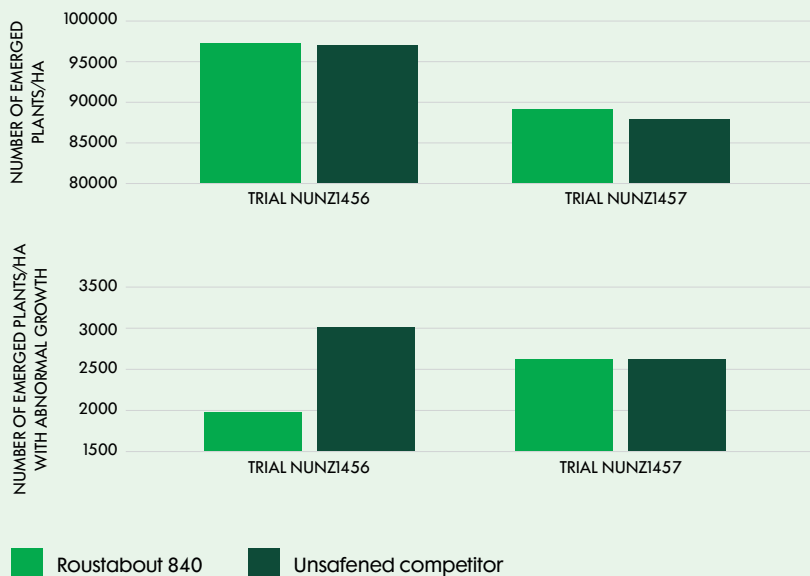
ROUSTABOUT® 840

Control a broad spectrum of annual grasses and broadleaf weeds before they emerge and compete in the crop, by applying Roustabout 840 to the bare soil. Roustabout 840 is a high strength acetochlor formulation which is applied soon after planting, prior to crop and weed emergence. For best results apply Roustabout 840 within seven days of last cultivation.

Roustabout 840 is effective in a wide range of soils and climates and provides up to 10 weeks pre-emergence weed control. Roustabout 840 doesn't rely on incorporation, although incorporation may be beneficial in dry conditions.

Roustabout 840 contains a safener to minimise damage to the maize during emergence, especially when conditions are less than desirable. This maximises the number of healthy maize plants that establish and grow to maturity.

Impact of using Roustabout 840 compared with an unsafened competitor



Trial NUNZI456: Planted 25 Sept 2014 – Pioneer P0791

Trial NUNZI457: Planted 26 Sept 2014 – Pioneer P0891

Broadleaf weed control



NU-TRAZINE™ 900DF

If a high infestation of broadleaf weeds (especially willow weed or fathen*) is expected, tank-mix Nu-Trazine 900DF with Roustabout 840. Nu-Trazine 900DF offers the following benefits:

- Highly effective for pre or post-emergence broadleaf weed control
- High strength granular formulation of atrazine, so there's less to handle and it's safer to use
- More compatible with other herbicides

The ability to tank-mix Nu-Trazine 900DF with Roustabout 840 or Primera® 480SC offers the flexibility to vary the rate of either herbicide according to conditions, which is not possible with ready-mixed products.



FLOWABLE ATRAZINE 500

Flowable Atrazine 500 is a highly effective herbicide for pre or post-emergence broadleaf weed control. Weeds controlled include fathen*, black nightshade, willow weed, amaranthus spp. and apple of Peru. Flowable Atrazine 500 should be tank-mixed with Roustabout 840 or Primera 480SC.



PRIMIERA 480SC

Primiera 480SC is an effective herbicide for pre or post-emergence weed control in maize (not recommended for use in sweetcorn and popcorn). Weeds controlled include black nightshade, fathen, mallow, redroot, willow weed and wireweed. Primiera 480SC also has activity on some grasses, particularly summer grass. To increase the spectrum of weed activity use in combination with 2L/ha of Flowable Atrazine 500 or 1.1kg/ha Nu-Trazine 900DF.

*Excludes triazine-resistant fathen.

Pre-emergence weed control

Application rates

HERBICIDE	WEEDS	APPLICATION RATE	APPLICATION TIMING
Roustabout 840	Annual grasses and broadleaf weeds	3L/ha, 2.5L/ha for light, sandy soils only	Apply to bare soil after planting and before weed emergence
Nu-Trazine 900DF	Broadleaf weeds including fathen, black nightshade, willow weed, amaranthus and apple of Peru	0.8–1.6kg/ha	Apply in tank mix with either Roustabout 840 or Primera 480SC
Flowable Atrazine 500	Broadleaf weeds including fathen, black nightshade, willow weed, amaranthus and apple of Peru	1.5–3.0L/ha	Apply in tank mix with either Roustabout 840 or Primera 480SC
Primera 480SC	Black nightshade, fathen, mallow, redroot, willow weed, wireweed and summer grass	350–450ml/ha	Apply immediately after planting and before weed emergence



Post-emergence weed control

Trials show pre-emergence weed control in maize out-yields post-emergence weed control, due to the removal of weed competition before it starts. Therefore, pre-emergence weed control should remain the foundation of a successful maize weed control programme. However, post-emergence herbicides may also be required in a range of situations, and it is important that they are chosen wisely. The weeds present will dictate which post-emergence herbicides are the most suitable.

Broadleaf weed control



KAMBA 750

Kamba 750 is a unique high strength dicamba formulation which controls broadleaf weeds.



PRIMIERA 480SC

Primiera 480SC is an easy to use, selective herbicide for weed control in maize with a flexible application period. Can be tank-mixed with Nu-Trazine 900DF or Flowable Atrazine 500 to increase the broadleaf weed spectrum. Tank-mix with Latro® WG if grass weeds are present.



EMBLEM® FLO

A fast acting liquid contact herbicide with no residual activity, providing excellent control of many seedling broadleaf weeds including triazine or dicamba resistant weeds. Suitable for use in sweetcorn crops. Tank-mix with Latro WG if grass weeds are an issue.



ARCHER 750

Targets Californian thistles, other thistles, yarrow, Bathurst bur and volunteer potatoes.



VALDO® 800WG

Targets buttercups, mallow, mayweed or spurrey.
Can be tank-mixed with Latro WG where grass weeds are also a problem.

Grass weed control



LATRO® WG

Latro WG is a water dispersible granule that is ideal for post-emergence control where annual and perennial grasses are the main target. Latro WG also controls or suppresses a wide range of broadleaf weeds and annual grasses with an easy to measure and mix granular formulation.

Nutsedge (Nutgrass) control



SEMPRA®

Semptra is a water dispersible granule that is ideal for post-emergence control of purple and yellow nutsedge. It is the only available registered product to control purple and yellow nutsedges in maize. Can also be tank-mixed with Kamba 750 or Primera 480SC for general broadleaf weed control.



Post-emergence weed control

Application rates

HERBICIDE	WEEDS	APPLICATION RATE	APPLICATION TIMING
Kamba 750	Broadleaf weeds like Californian thistles, bindweed, fathen and docks	270–400ml/ha	Apply to seedling weeds at 3–5 leaf stage, or rosettes less than 5cm diameter
Primiera 480SC	Broadleaf weeds and annual grasses	150–200ml/ha with Bonza® Gold at 500ml–1L/100L water. To improve activity use in combination with 1–1.5 litres/ha of Flowable Atrazine 500 or 0.4–0.7 kg/ha Nu-Trazine 900DF	Apply to weeds up to the 8 leaf stage
Emblem Flo	Broadleaf weeds	1L/ha in 200–500L water	Apply when weeds are between the cotyledon and 8 leaf stage
Archer 750	Yarrow, Bathurst bur, Californian thistles, other thistles and volunteer potatoes	200–400ml/ha	Apply after the 3 leaf expanded stage before the crop closure
Valdo 800WG	Buttercups, mallow, mayweed or spurrey	30–65g/ha with Bonza Gold at 500ml/100L of water	Apply when the maize is at the 4th leaf (90mm plant height) stage
Latro WG	Annual grass weeds (including yellow bristle grass) and perennial grasses like couch, ryegrass, Mercer grass and Kikuyu. Broadleaf weeds include black nightshade, fathen, redroot, thorn apple, twin cress, water pepper and willow weed	80–110g/ha with Bonza Gold spray at 500ml–1L/100L water	Apply before weeds have reached the 4 true leaf stage
Sempre	Purple and yellow nutsedge	65–130g/ha with either Bonza Gold at 500ml/100L water or Contact™ Xcel at 150ml/100L water	Apply when there is a minimum 10cm of new nutsedge growth prior to canopy closure of the crop

Note: Check label for weeds controlled and correct rate depending on weed species and size.

Post-emergence tank-mix options

PRODUCT COMBINATION	WEEDS	NOTES
Primiera 480SC + Latro WG	Broadleaf, annual grasses, perennial grasses	Outstanding control of hard to kill broadleaf weeds and annual and perennial grasses
Kamba 750 + Latro WG	Both broadleaf and grass weeds	Do not add Bonza Gold spray adjuvant with this tank mixture as there may be an increased risk of crop injury. Reduced grass weed control is likely
Emblem Flo + Latro WG	Both broadleaf and grass weeds	A dicamba free option. Do not add Bonza Gold spray adjuvant with this tank mixture as there may be an increased risk of crop injury. Reduced grass weed control is likely



Post-emergence pest control

Check maize crops regularly (every few days) in the first few weeks after emergence for evidence of pests.

Slugs



Slugs feed on seeds and germinating or emerged seedlings, reducing establishment. They are a major problem in strip-till and no-till situations, therefore SlugOut should be applied as a matter of course.

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.

Greasy cutworm caterpillars



Greasy cutworm caterpillars are blackish brown to a greasy greyish-green in colour and up to 50mm long. They live in the soil and emerge at night to feed. Newly emerged seedlings can be completely eaten leaving just the stalks, while older seedlings can have the stems cut near ground level, leaves severed off, or be completely defoliated.

KAISO® 50WG



Kairo 50WG is a powerful weapon against insects. In the form of unique granules with Sorbie® Technology. Provides easier and safer handling and storage and quick knock-down.

Apply Kairo 50WG at 200g/ha as soon as damage becomes evident.

Cosmopolitan armyworm



Armyworms can be identified by a light stripe on the side and a 'Y' shape on the head. They cause serious leaf feeding damage as well as direct injury to the ear.

Armyworms can damage maize plants in nearly all stages of development, especially later plantings that have not yet silked.

Corn earworm



Corn earworms are variable in colour ranging from pink to green or brown, with dark, bristly, raised bumps.

Corn earworm can damage cobs by feeding on silks (during pollination) and kernels throughout the grain fill period and subsequently by fungal attack of the grain during drydown.



CHLORPYRIFOS 500EC

Chlorpyrifos is effective against Armyworm and corn earworm. Apply at a rate of 500ml/ha, immediately after damage is first seen and repeat if necessary 14–21 days later. To aid in the spread as the crop increases in size, consult your local Territory Manager about using Flume®.

Chlorpyrifos has a 7 day withholding period.

Adjuvants

Using the correct adjuvant with your crop protection product can achieve higher efficacy, improved deposition, coverage and penetration. It can also reduce drift, water use and over-spraying or crop damage, resulting in safer more sustainable spraying practices.



BONZA GOLD

Bonza Gold is a blend of esterified canola oil with emulsifiers and surfactants to enhance wetting and spreading of agricultural chemicals, uptake of systemic herbicides and as an aid for modifying spray droplet quality and to preserve droplet survival.



CONTACT XCEL

Contact Xcel is non-ionic surfactant specifically formulated to reduce the surface tension of spray droplets, causing them to spread out evenly over sprayed surfaces upon impact. This provides an increase in the number of droplets retained by the target which then merge to form a continuous film, allowing maximum sites for chemical action or uptake.



FLUME

Flume is a superior non-penetrating super spreader that improves coverage of horticultural and agricultural products. It reduces surface tension of spray solutions, allowing spray to spread rapidly over plant surfaces. It is used in low water volumes. Flume saves in time, water and spray costs and can be used in aerial applications.



Post-harvest cleanup

Don't miss the opportunity for a post-harvest cleanup.


Spray with CRUCIAL, particularly if hard to control perennial weeds are present. This is the essential last step before establishing perennial pasture.



Post-harvest cleanup

Maize crop lifecycle and modes of action








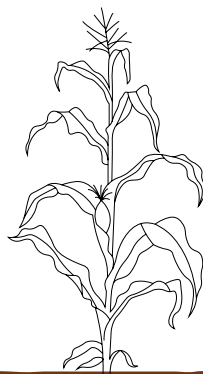

Maize crop lifecycle

PRE-PLANT SPRAY OUT		PRE-EMERGENCE	
CRUCIAL <small>ADVANCED TECHNOLOGY HERBICIDE</small>	9	<small>Nufarm</small> Routabout 840	15
<small>Nufarm</small> ARCHER 750 <small>DUAL SALT</small>	4		
NAIL 660	14		
SERO 750	2		
Charter <small>750WDG</small>	2		
Kamba 750	4	PRIMERA 480SC	
		Nu-Trazine 900DF	
		<small>Nufarm flowable</small> Affrazine 500	
		SlugOut	
			
PRE-PLANT		PRE-EMERGENCE	POST-EMERGENCE

Always consult product label for specific application timing.

Continual use of the same mode of action products can result in resistance development in weed populations. Where possible, it is important to rotate modes of action herbicides.

To aid in this, the modes of action for the herbicides are presented next to the product in green circles. The insecticide modes of action are in the orange circles.

POST-EMERGENCE		POST-HARVEST CLEANUP	
 ARCHER 750	4	CRUCIAL ADVANCED TECHNOLOGY HERBICIDE	9
Kamba 750	4	 ARCHER 750	4
 EMBLEM flo	6	 NAHL 660	14
 Latro WG	2	SERO 750	2
Sempre	2	Charter 750WDG	2
	27		
	5		
	5		
Chlorpyrifos 500EC	1		
 kaiso with SORBIT TECHNOLOGY	3		
			
EMERGENCE		MATURE PLANT	
			
		POST-HARVEST	

Working out what you need

	APPLICATION RATE PER HA*	TOTAL HA'S REQUIRED	AMOUNT REQUIRED
SPRAY OUT			
CRUCIAL	1.8–3.6L/ha		
Nail 600EC	20–40ml/ha		
Kamba 750	400ml/ha		
Charter 750WDG	20g/ha		
Archer 750	200–400ml/ha		
Sero 750WG	40g/ha		
Pulse Penetrant	100ml/100L water		
PRE-EMERGENCE			
Roustabout 840	3L/ha		
Nu-Trazine 900DF	0.8–1.6kg/ha		
Flowable Atrazine 500	1.5–3.0L/ha		
Primiera 480SC	350–450ml/ha		
POST-EMERGENCE			
Kamba 750	270–400ml/ha		
Primiera 480SC	150–200ml/ha		
Emblem Flo	1L/ha		
Latro WG	80–110g/ha		
Archer 750	200–400ml/ha		
Valdo 800WG	30–65g/ha		
Sempre	65–130g/ha		

	APPLICATION RATE PER HA*	TOTAL HA'S REQUIRED	AMOUNT REQUIRED
POST-EMERGENCE			
Bonza Gold	0.5–1L/100L water		
Contact Xcel	150ml/100L water		
PEST CONTROL			
SlugOut	10–15kg/ha		
Kaiso 50WG	200g/ha		
Chlorpyrifos 500EC	500ml/ha		
Flume	Refer to label		

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