ProForce

Numchuk Quad

Herbicide

Unique Quad Control
Industrial Herbicide Technology



Product Overview

Numchuk Quad is a non-selective knockdown and residual herbicide featuring Quad Control Herbicide Technology to provide effective post and pre-emergence weed control for up to 12 months

Numchuk Quad contains 100g/L Glyphosate, 60g/L Amitrole, 15g/L Oxyfluorfen and 350g/L Terbuthylazine – 4 herbicides from different mode of action groups

Numchuk Quad is registered to control most annual, perennial and broadleaf weeds in commercial and industrial areas including rights of way, roadsides, railway lines, guideposts, powerlines and substations, aerodromes, public utilities and fencelines

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Key Features

- Contains Quad Control Technology, multiple modes of action, reducing potential weed resistance issues.
- Very effective on hard to kills weeds like Fleabane and Giant Rats Tail.
- Substantial labour saving for weed management on road and rail situations.
- Provides both knockdown and residual control – reducing need for additional tank mixes.
- Has strong activity on both grasses and broadleaf weeds.
- Provides long term residual control – up to 12 months or greater.
- Can be used via handgun or boom application.
- Safe to established trees and ornamentals, as long as spray drift doesn't occur.



Peracto Trial: Sassafras, Tasmania, 2013-14

Residual control of grasses at 6, 8 and 12MAA

No.	Treatment	Rate (g ai/ha)	Residual control of grasses* (Biomass reduction as % untreated control)					
			6MAA		8MAA		12MAA	
1	Untreated control	Nil	0	c	0	c	0	c
2	Numchuk Quad plus Terwet 3780	5250 2L/100L	70	b	69	ab	58	b
3	Numchuk Quad plus Terwet 3780	10500 2L/100L	81	ab	79	ab	65	b
4	Numchuk Quad plus Terwet 3780	21000 2L/100L	94	a	94	a	93	a
5	Weedmaster Duo + Associate 600 WG + Pulse Penetrant	2160 12 200mL/100L	65	b	60	b	60	b
LSD (5% level)			16.3		27.8		15.1	

Means followed by the same letter are not significantly different (P = 0.05, LSD)
MAA: Months after application
* Grass species include a mix of hairy fingergrass, barnyard grass, winter grass, oatgrass and cocksfoot

Residual weed control at 8 and 12MAA

No.	Treatment	Rate (g ai/ha)	Residual weed control (Biomass reduction as % untreated control)							
			Blackberry				Cutleaf cranesbill		Wandering speedwell	
			8MAA		12MAA		8MAA		8MAA	
1	Untreated control	Nil	0	b	0	c	0	c	0	c
2	Numchuk Quad plus Terwet 3780	5250 2L/100L	98	a	52	b	96	ab	100	a
3	Numchuk Quad plus Terwet 3780	10500 2L/100L	100	a	65	ab	89	b	97	ab
4	Numchuk Quad plus Terwet 3780	21000 2L/100L	100	a	88	a	97	a	99	a
5	Weedmaster Duo + Associate 600 WG + Pulse penetrant	2160 12 200mL/100L	100	a	78	ab	94	ab	81	b
LSD (5% level)			3.4		28.4		tA		tA	

Means followed by the same letter are not significantly different (P = 0.05, LSD)
MAA: Months after application
tA: Data transformed using x = Arcsine square root percent (y)

Numchuk Quad – Use Rates & Label Recommendations

SITUATION	WEEDS	RATE	COMMENTS
Commercial and Industrial areas including rights of way, roadsides, railway lines, guideposts, powerlines and substations, aerodromes, public utilities and fencelines	Most annual, perennial and broadleaf weeds	**Boom Spray:** 20-25L/ha **Handgun:** High pressure spraying 1.8L/100L Low pressure spraying 180mL/10L	Apply in autumn or spring when weeds are actively growing. Do not apply under drought conditions. For best results add 120mL/100L of tallow amine ethoxylate surfactant. Suitable rainfall (20-30mm) to wet the soil through the weed root zone is necessary within 2-3 weeks after application. **Boom Spray:** Apply sufficient spray to obtain even coverage. **Handgun:** For high pressure spraying apply 1100L spray volume per hectare.

Formulated in Australia

Mode of Action

GROUP C M Q G HERBICIDE

Glyphosate, one of the active ingredients in Numchuk Quad Herbicide, controls weeds by inhibiting the activity of the EPSP enzyme (5-enolpyruvylshikimic acid-3-phosphate synthase), which is necessary for the formation of the aromatic amino acids within the plant.

Amitrole's mode of action isn't well understood, but it is believed to be an inhibitor of several important enzymes. One of which is lycopene cyclase which is involved in carotenoid production. Carotenoids are essential components of photosynthesis, playing an important role in preventing photo-oxidative damage.

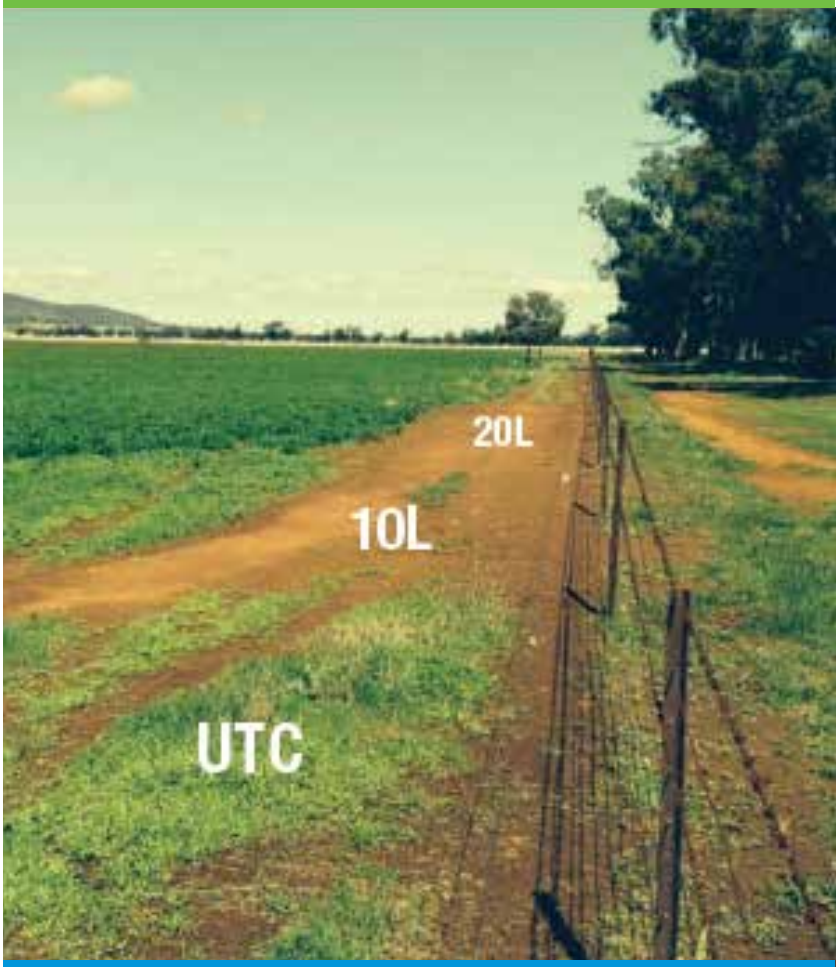
Oxyfluorfen targets a specific enzyme, protoporphyrinogen oxidase (PPO), in the chlorophyll pathway. Inhibiting PPO in plants leads to an accumulation of phototoxic chlorophyll precursors which, in the presence of light, rapidly disrupt cell membrane integrity.

The mode of action for Terbuthylazine appears to be due to a herbicide-produced deficiency in the growth regulator photosynthtate, caused by inhibition of photosynthesis.

Herbicide	Soil Half Life DT50*
Amitrole	16
Glyphosate	23.79
Oxyflourfen	73
Terbuthylazine	72

*Source: University of Hertfordshire: Pesticide Properties Database

Numchuk Quad – Field Performance



The Rock, NSW – 2014, 11 months

Numchuk Quad – Whole plot weed control at 1, 2, 4, 5, 8 and 11MAA

No.	Treatment	Rate (g ai/ha)	Whole plot weed control (% visual)											
			1MAA	2MAA		4MAA		5MAA*		8MAA		11MAA	
1	Untreated control	Nil	0	0	c	0	^	0	c	0	d	0	d
2	Numchuk Quad plus Terwet	5250 120 mL/100	100	66	b	87	b	50	b	48	c	17	c
3	Numchuk Quad plus Terwet	10500 120 mL/100	100	100	a	95	a	88	a	85	b	43	b
4	Numchuk Quad plus Terwet	21000 120 mL/100	100	100	a	98	a	91	a	95	a	68	a
LSD (5% level)			NSD	1.7		4.7		5.3		5.0		5.0	

Means followed by the same letter are not significantly different (P = 0.05, LSD)

MAA: Months after application

^ Treatment was excluded from statistical analysis to correct for skewness

* Replicate 1 was excluded from statistical analysis to correct for skewness

NSD = No significant difference due to a P-value > 0.05

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Numchuk Quad

Herbicide

Maximising performance

- Don't apply if heavy rains or storms that are likely to cause runoff are forecasted within 3 days. Avoid application to waterlogged soils.
- Don't apply with spray droplets smaller than a course spray droplet size.
- Avoid application when wind speed is less than 3 or more than 20 kilometres per hour, as measured at the application site.
- Do not apply during surface temperature inversion conditions at the application site.
- For best results add 120mL/100L of water of a suitable adjuvant / surfactant.
- Application should give 8-12 months effective weed control. Duration and effectiveness of control depends on the amount of chemical applied, soil type, rainfall, weed species and other conditions.
- Sufficient rainfall (20 to 30 mm either as rainfall or irrigation) to wet the soil through the weed root zone is necessary within 2-3 weeks of application to make the product effective. A delay in rainfall beyond 3 weeks may result in weeds germinating from depth and surviving. Heavy rainfall on light soils may cause movement of the herbicide out of the weed seed zone, resulting in reduced weed control.



About Us

Indigo Specialty Products is a privately-owned business, formed and owned by a small team of industry professionals with extensive experience in manufacture, distribution, development and product registration. We are a business focused on production & supply of plant protection, pest control, plant nutrition, soil, water management & biological products. Specialising in Australasian non-crop and niche horticultural markets, including Turf & Amenity, Nursery Production, Industrial Vegetation Management, Forestry, Pest Control and Consumer Home Garden & Pest Management.

Formuated in Australia

Our goal is to manufacture the Indigo product ranges in Australia as much as possible, where we can oversee product quality processes, whilst allowing us the flexibility to modify products to overcome ever changing challenges. Our ProForce and HydroForce range of products will be formulated in Australia using imported materials. Our Xcel Fertiliser and BioForce Biological range will be manufactered in Australia to the highest possible standards.

Developed & Researched for local conditions

We are heavily focused on local research and development to ensure our products perform at their peak in the Australian markets. We actively invest in field trial research programs and modify our formulations to match the local conditions of the key markets in which we operate to maximise performance.

Focused on Specialty markets

We strive to be relevant in our core markets, by adding value via overcoming issues and obstacles that are present in the markets we operate within. We do this by focusing on control of key pests or diseases or by solving key management issues that our valued end user customers have. We also strive to be active in the core markets in which we operate by working closing with our allied distributor network, offering support, service and advice where required.

Diagnostic Services

We offer a complete diagnostic services package, known as TechForce, designed to evaluate and identify key agronomic problems, so we can be better informed in recommending products for the specific situation. We also believe that by offering these services, our customers and users of our products can evaluate performance of the portfolio in a quantifiable and scientific approach. We use some of Australia's leading laboraties in delivering results for our services including Phoysn Analytical, Westgate Labs, Botanic Research, Biological Crop Protection and Royal Botanic Gardens.

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