

Roundup Ready® canola—2008 Limited Commercial Release. Getting the system right

Andrew Wells and **Mark Slatter**, Nufarm Australia Limited
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INTRODUCTION

The lifting of the moratorium in Victoria means growers in that State now finally have the choice to use this new herbicide-tolerant technology (Roundup Ready canola) in the southern cropping region of Australia. NSW have conditionally lifted their moratorium for GM canola, despite GM cotton (containing herbicide and/or insect tolerant traits) being successfully grown for 10 years. South Australia is yet to lift its moratorium on GM canola with a decision expected in mid February.

THE SYSTEM

Drought and the presence of the State-based moratoria means there is a limited quantity of seed, nevertheless, three seed companies will have approved Roundup Ready canola varieties, Nuseed, Pacific Seeds and Pioneer. The purchase, growth and handling of Roundup Ready canola will have both similarities and differences to conventional or other herbicide tolerant canola currently available to growers. There are several reasons for this, but the most important one is to ensure, above all, that the 2008 limited commercial release is a great success.

The system for 2008 broadly involves:

- Accreditation and Stewardship.
- Weed Resistance Management Planning (PRAMOG®) for the paddock.
- Growers to sign both Technology User Agreement (TUA) and Licencing Stewardship Agreement (LSA).
- Sale of seed via a Technology Service Provider (TSP).
- In-crop paddock audit.
- Post-harvest paddock audit.
- Segregation of grain storage and handling.

Roundup Ready canola was approved for use in Australia, by the Office of the Gene Technology Regulator (OGTR) in December 2003.

The Australian Pesticide and Veterinary Medicines Authority (APVMA) has approved Roundup Ready Herbicide (RRH) (690 g/kg glyphosate, present as ammonium salt) and a resistance management plan for the over-the-top (OTT) use of RRH on Roundup Ready canola.

ROUNDUP READY® HERBICIDE—THE LABEL

The label allows the use of up to two RRH applications to RR canola from cotyledon through to the six true-leaf stage, but prior to bud formation (Directions For Use Table below). Application of the herbicide during the reproductive growth phase can lead to pod abortion and reduced seed-set.

Good application practises are essential for management of off-target drift since young cereal crops are highly sensitive to glyphosate and this situation will coincide with RRH application in neighbouring paddocks.

DIRECTIONS FOR USE—ROUNDUP READY CANOLA

RESTRAINTS:

DO NOT use as the only method of weed control if glyphosate resistant weeds are suspected or present.

CROP SAFETY

Applications may be made in Roundup Ready canola from crop emergence to the 6 leaf stage (prior to bud formation).

Sequential applications must be at least 14 days apart and canola must have incremental growth of at least 2 new leaves between applications.

Some short-term, visual yellowing may occur when Roundup Ready Herbicide is applied. This effect is temporary and will not influence crop growth or yield.

No additional surfactant is required for use in Roundup Ready Canola.

This product should NOT be applied in tank mixtures in Roundup Ready Canola crops. Roundup Ready Herbicide should be applied alone.

SITUATION: ROUNDUP READY® CANOLA			
BEFORE USE IN THIS SITUATION IS CARRIED OUT USERS SHOULD CONSULT THE ROUNDUP READY CANOLA RESISTANCE MANAGEMENT PLAN WHICH HAS BEEN DEVELOPED TO MINIMISE THE EVOLUTION OF HERBICIDE RESISTANCE IN WEED POPULATIONS.			
WEEDS CONTROLLED	GROWTH STAGE OF CROP	RATE / HA	CRITICAL COMMENTS
Annual ryegrass Barley grass Brome grass Canary grass Capeweed Patersons curse Saffron thistle Scotch thistle Silvergrass Spear thistle Volunteer cereals Variegated thistle Wild mustard Wild oats Wild radish Wild turnip Winter grass	cotyledon to 6 leaf (prior to bud formation)	0.9 kg/ha	Up to 2 applications only may be made in any one crop. Each application must be 0.9 kg/ha. Repeat applications may be required if a second flush of weeds germinates but do not apply after the 6-leaf stage of the crop. For sequential applications, applications must be at least 14 days apart and the canola crop must have incremental growth of two leaves between applications. The canola crop must have not advanced beyond the latest recommended growth stage (i.e. 6 leaf). Ensure broadleaf weeds have at least one true leaf, and grasses two leaves before application.

NOT TO BE USED FOR ANY PURPOSE, OR IN ANY MANNER, CONTRARY TO THIS LABEL UNLESS AUTHORISED UNDER APPROPRIATE LEGISLATION.

WITHHOLDING PERIOD:

Harvest: NOT REQUIRED WHEN USED AS DIRECTED.

Grazing: DO NOT GRAZE OR CUT FOR STOCK FOOD FOR 7 DAYS AFTER APPLICATION.

WARNING: THE APPLICATIONS RECOMMENDED ABOVE ARE FOR USE ONLY WITH APPROVED CANOLA VARIETIES THAT ARE DESIGNATED AS CANOLA WITH THE ROUNDUP READY® TECHNOLOGY.

SEVERE INJURY OR DEATH OF CANOLA WILL RESULT IF ANY CANOLA VARIETIES NOT PROPERLY DESIGNATED AS HAVING THE ROUNDUP READY TECHNOLOGY ARE SPRAYED WITH THIS PRODUCT.

EXTREME CARE MUST BE TAKEN TO AVOID CONTACT WITH CROPS OR DESIRABLE PLANTS WITHOUT THE ROUNDUP READY TECHNOLOGY, OR WITH NATIVE VEGETATION, SINCE SEVERE INJURY OR DESTRUCTION WILL RESULT.

CONTROL OF VOLUNTEER ROUNDUP READY CANOLA AND ALTERNATE KNOCKDOWN CHEMISTRY

Field trials were conducted last year in South Australia and Victoria under the moratoria looking at OTT RRH applications, alternate knockdown herbicides and control options for Roundup Ready canola volunteers. Trials will be repeated again this year at three key sites, one each in South Australia, Victoria and New South Wales.

Much of this data will be used for label expansion through registration. Data will be presented demonstrating that a range of alternate herbicide chemistry options are available for controlling Roundup Ready canola volunteers in a range of situations. Some of this data is summarised in the Table below.

Herbicides tested against volunteer RR canola

Please note: not all herbicides are registered for the control of volunteer canola or oilseed rape/rapeseed

Good control (recommended): > 85%
Suppression (may be sufficient with low plant numbers and/or good crop competition): 65 - <85%
Poor control (expect regrowth): < 65%

Knockdown control of RR Canola	
Product	Rate
Early timing (4 - 6 leaf)	
Alliance *	2.0 L/ha
Amitrole T	2.8 L/ha
NUL 1736(200g/L glufosinate)#	2 L/ha
Hammer	50 mL/ha + Supercharge @ 0.5% v/v
Nuquat 250	1.8 L/ha
Revolver	1.8 L/ha
Invader 600	80 mL/ha + Bonza @ 1.0 % v/v
Late timing (6 - 8 leaf)	
Alliance *	2.8 L/ha
Amitrole T	5.6 L/ha
NUL 1736(200g/L glufosinate)#	5 L/ha
Nuquat 250	2.4 L/ha
Revolver	2.4 L/ha
In crop control of RR Canola	
Early timing (4 - 6 leaf)	
Affinity (+ MCPA 500)	50 g/ha + MCPA 500 @ 500 mL/ha
Agritone 750	700 mL/ha
Agtryne MA	1.0 L/ha
Amicide 625	1.0 L/ha
Broadside	1.0 L/ha
Bromicide 200	1.4 L/ha
Bromicide MA	1.4 L/ha
Estercide Xtra 680	600 mL/ha
LVE MCPA + Associate	500 mL/ha + 5 g/ha
Paragon	350 mL/ha
Surpass 475	1.3 L/ha
Late timing (6 - 8 leaf)	
Affinity (+ MCPA 500)	60 g/ha + MCPA 500 @ 500 mL/ha
Agritone 750	1.0 L/ha
Agtryne MA	1.5 L/ha
Amicide 625	1.4 L/ha
Broadside	1.4 L/ha
Bromicide MA	2.0 L/ha
Estercide Xtra 680	800 mL/ha
LVE MCPA + Associate	1.0 L/ha + 5 g/ha
Paragon	500 mL/ha
Surpass 475	1.8 L/ha
* registration pending	
# not registered	

Key points:

- Pre-emergent herbicides tested (not presented here) were Group D (trifluralin, e.g. Triflur Xcel), Group E (triallate, e.g. Avadex Xtra), Group K (metolachlor, e.g. Bouncer) and a Group D & K (trifluralin and cinmethylin, Triathlete—registration pending).
 - All herbicides are selective to RR canola and offer a range of weed control options including annual ryegrass.

2. Volunteer Control—wide range of herbicides tested (as reported above).
 - a) A range of selective cereal herbicides will provide control of volunteer RR canola in the following cereal cropping phase.
 - b) For knockdown/fallow situations make sure the partner herbicide being used with glyphosate is used at a robust rate—we are used to the glyphosate in a tank mix controlling the canola. Or better still use a non-glyphosate option if practical.
3. Seed treatments tested (not presented here) were Jockey (167 g/L fluquinconazole), Senator 600 (600 g/L imidacloprid), Cosmos (500 g/L fipronil) and fertilizer treated with Intake In-Furrow (250 g/L flutriafol). There were no crop safety issues and all products are registered for use in canola.
4. Insecticides—bare earth application and post-emergent use (not presented here). Endosulfan, (Endosulfan 350 EC), bifenthrin (Telstar 100 EC) and chlorpyrifos (Chlorpyrifos 500 EC) were applied to bare earth. These were no crop safety issues and all products are registered for use in canola.

Alpha-cypermethrin (Astound Duo) and dimethoate (Dimethoate) were applied post-emergence with excellent crop safety.

CONCLUSION

Cropping with Roundup Ready canola provides growers with a choice of a new and useful technology. A new approach and a different approach will be required by users' of this technology, compared with current canola production systems.

Nufarm has clearly demonstrated a range of volunteer control options for RR canola.

Nufarm has demonstrated several alternate knockdown products for use both prior to sowing and post-harvesting Roundup Ready canola, which are also affective on a range of other problem weeds including annual ryegrass. This is critical for Australian cropping systems that are based around minimum-tillage and direct-drilling.

Here's to a successful introduction of Roundup Ready canola in Australia.