

**Trade Advice Note  
on**

**Glyphosate**

**in the product**

**Roundup PowerMAX Herbicide by Monsanto  
(APVMA Product Number 55867)**

**Australian Pesticides and Veterinary Medicines Authority  
(APVMA)**

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## Trade Advice Note on the Product

### Roundup PowerMAX Herbicide (540 g/L glyphosate)

#### Introduction

The Australian Pesticides and Veterinary Medicines Authority (APVMA) has before it an application from Monsanto Australia Ltd to increase the use rate of Roundup PowerMAX Herbicide (540 g/L glyphosate present as the potassium salt) in pre-harvest sorghum from 1.35 L/ha to 2.0 L/ha. Permit 9357, which is in force from 2 April 2007 until 30 September 2009, allows the use of Roundup PowerMAX Herbicide at rates up to 2 L/ha (1080g a.i./ha), which is the maximum proposed rate in the current application.

The APVMA invites any person to submit a relevant written submission with respect to whether the proposed new use is likely to unduly prejudice trade or commerce between Australia and Australia's trading partners. **Please provide your submission by 31 October 2008.** Any submissions provided after this date may be unable to be considered before the regulatory decision is made. All submissions should be addressed to the above contact.

#### 1. Commodities exported

Sorghum grain and animal commodities derived from livestock fed on treated cereal forage, cereal fodder and pasture are the commodities exported. The submitted residues data indicate that residues in sorghum animal feeds, as a result of the proposed use pattern, would be substantially below the existing MRL of glyphosate in Primary Feed Commodities (150 mg/kg) and no change to animal commodity MRLs is required. The potential risk to trade through the export of animal commodities is not considered to be significantly changed by the proposal.

Sorghum hay is also exported and as the proposed use rate of Roundup PowerMAX Herbicide has been increased, potential residues in hay have also increased. However, the potential risk to trade through the export of sorghum hay is considered to be low and not significantly changed by the proposed increase in application rate.

#### 2. Destination and Value of Exports

In 2005/2006 Australia produced approximately 2019 kt of sorghum, of which 173 kt was exported. The value of Australian exports of sorghum was \$33 m. The major destinations for Australian sorghum are Taiwan, Japan, Papua New Guinea and the United Arab Emirates.

A summary of sorghum production, exports and value are presented in Table 1<sup>1</sup>. More specific information about the volume of exports of sorghum is presented in Table 2.

Table 1: Comparison of Sorghum Production and Value to Volume Exported and Export Value.

Year	Production		Exports	
	Volume	Value	Volume	Value
	kt	\$m	kt	\$m
1999-00	2116	260	539	81
2000-01	1935	279	691	122
2001-02	2021	349	586	109
2002-03	1465	300	70	17
2003-04	2009	319	289	61

<sup>1</sup> ABARE: 2006 Commodities Statistics (2006).

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2004-05	2011	270	513	96
2005-06	2019	360	173	33

Table 2: Comparison of Sorghum Exports by Destination.

Exports by destination	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06
	kt	kt	kt	kt	kt	kt	kt
Taiwan	7	5	8	2	9	40	26
Japan	469	602	491	1	221	386	86
Papua New Guinea	0	13	38	45	21	28	19
United Arab Emirates	1	1	1	2	1	2	1
Other <sup>1</sup>	63	70	48	20	37	58	41
<b>Total</b>	<b>539</b>	<b>691</b>	<b>586</b>	<b>70</b>	<b>289</b>	<b>513</b>	<b>173</b>
(value, \$m)	81	122	109	17	61	96	33

<sup>1</sup>No country detail provided due to confidentiality restrictions

### 3. Proposed use pattern for glyphosate

The proposed use pattern for Roundup PowerMAX Herbicide is presented below:

#### DIRECTIONS FOR USE

**Restraints:** DO NOT disturb weeds by cultivation, sowing or grazing for six hours of daylight following treatment of annual weeds and seven days for perennial weeds to ensure herbicide absorption, unless specified otherwise in critical comments.

Roundup PowerMAX (540g/L glyphosate - present as the potassium salt)

SITUATION	WEEDS CONTROLLED	Boom RATE /HA	CRITICAL COMMENTS
Sorghum control	Grain-sorghum (pre-harvest)	1 – 2 L (≅ 0.540 - 1.08kg a.i. as the potassium salt)	DO NOT apply if crop is under stress from low moisture, frost, cold or waterlogging. Apply when grain moisture is less than 25%. Use the higher rate where the crop has produced significant number of late tillers or where following crops will be established without further treatment. DO NOT apply to crops intended for seed production. Treatment may increase potential for crop lodging. Under any set of environmental conditions, individual varieties can vary in response to pre-harvest treatments. In general, varieties with a more “determinant” growth habit are more susceptible than “indeterminant” varieties.
	Grain-sorghum (post-harvest)	660 mL-1.35L (≅ 0.356 - 0.729kg a.i. as the potassium salt)	Slashed/ grazed stubble. Apply when fresh regrowth is at least 20cm high. Use the higher rate on standing stubble or where re-growth from slashed sorghum has advanced beyond 50cm in height.

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

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## WITHHOLDING PERIODS

SORGHUM: DO NOT HARVEST FOR 7 DAYS AFTER APPLICATION

### 4. Overseas Registration & Use Pattern

The herbicide glyphosate is registered for use in over 100 countries around the world. The registered use patterns for glyphosate in overseas countries are wide and varied.

### 5. Codex Alimentarius Commission MRLs and overseas MRLs

Glyphosate has been considered by Codex; the MRLs are tabulated below.

Substance	Commodity	MRL
Glyphosate	Cereal grains	30
	Sorghum straw and fodder (dry)	50

The table below shows relevant MRLs from other countries.

Substance	Country	Commodity	MRL
Glyphosate	U.S.A.	Sorghum	15
	Japan	Other cereal grains	20
	EC	Sorghum	20

### 6. Current and proposed Australian MRLs for Glyphosate relevant to sorghum

The current Australian MRLs relevant to sorghum are:

Table 1

Compound	Food	MRL (mg/kg)
Glyphosate	GC 0651 Sorghum	T10

Table 4

Compound	Food	MRL (mg/kg)
Glyphosate	Primary feed commodities [other than rape seed forage, rape seed straw and fodder (dry), cotton forage, soya bean hulls and soya bean aspirated grain fractions]	150

In support of their application for the increased use rate for glyphosate on sorghum, the applicant has submitted residue data from 17 trials conducted on sorghum in U.S.A. in 1992 and

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1998 and from 2 relevant trials conducted on sorghum in Australia in 1982. The proposed maximum application rate for glyphosate on sorghum is 1.08 kg a.i./ha with a WHP of 7 days. In the Australian trials, which had an application rate of 1.08 kg a.i./ha, residues in sorghum grain were <0.1 mg/kg (5 DAT) and <0.1 mg/kg (4 DAT). The recovery results for these trials were unacceptably low, resulting in a lack of confidence in the analytical results. The trials from the U.S.A. were at a higher application rate than that proposed (application at 1.66 - 1.71 kg a.i./ha, *i.e.* 1.54 - 1.58x the maximum proposed rate and PHI 6 - 8 days). Residues in sorghum grain listed in rank order were 1.1, 1.4, 1.6, 1.8, 1.9, 4.5, 4.8, 5.4, 6.2, 6.6, 6.6, 13 and 14 mg/kg. Scaled to 1x the proposed application rate, residues in sorghum grain listed in rank order are 0.7, 0.9, 1.0, 1.2, 1.2, 2.9, 3.1, 3.5, 4.0, 4.2, 4.3, 8.1 and 8.7 mg/kg (STMR = 3.1 mg/kg).

On the basis of the data provided, it is recommended that the current TMRL for GC0651 Sorghum of 10 mg/kg be changed to 15 mg/kg and made permanent.

The following changes to Table 1 of the MRL standard are recommended;

Table 1

Compound	Food	MRL (mg/kg)
DELETE:		
Glyphosate	GC 0651 Sorghum	T10
ADD:		
Glyphosate	GC 0651 Sorghum	15

In the two Australian trials that had an application rate of 1.08 kg a.i./ha (*i.e.* 1x the maximum proposed rate), residues in forage (for glyphosate only on a dry weight basis) were <0.3 mg/kg (14 DAT) and 25 mg/kg (4 DAT). The trials from the U.S.A. at 1.54 - 1.58x the maximum proposed rate gave residues in sorghum fodder/ stover (1992 and 1998 trials) listed in rank order after scaling to 1x the proposed application rate, residues in sorghum fodder/ stover of 1.7, 4.2, 5.0, 9.7, 11, 11, 11, 12, 14, 17, 18, 18 and 20 mg/kg (STMR = 11 mg/kg). Sorghum fodder (stover) is estimated to be 88% dry matter. Converting the above residues to residues from 100% dry matter, gives the following values listed in rank order: 2.0, 4.8, 5.7, 11, 12, 13, 13, 15, 16, 19, 20, 20 and 23 mg/kg (STMR = 13 mg/kg).

Residues in sorghum hay (1992 trials) listed in rank order after scaling to 1x the proposed application rate are 1.8, 2.6, 3.8, 9.0, 9.3, 11, 22, 22 mg/kg (STMR = 9.1 mg/kg). Sorghum hay is estimated to be 85% dry matter. Converting the above residues to 100% dry matter, gives the following values listed in rank order: 2.2, 3.1, 4.5, 11, 11, 13, 26 and 26 mg/kg (STMR = 11 mg/kg).

Processing studies showed that concentration factors >1 occurred in milo grain dust, clean grain and milo bran, after processing to bran, clean grain, flour, germ, grain dust, grits, starch and steepwater, showing that most of the residues occur on the surface of the crop. The highest residues were in grain dust and using the highest concentration factor of 6.3, residues in grain dust are expected to be <60 mg/kg.

Grain, fodder, forage and hay from sorghum may be fed at up to 100% of the diet of cattle and sheep, and grain at up to 100% of the diet of poultry and pigs. The submitted residues data indicate that residues in sorghum animal feeds, as a result of the proposed use pattern, would be substantially below the existing MRL of glyphosate in Primary Feed Commodities (150 mg/kg)

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and no change to animal commodity MRLs are required. The existing Table 4 MRL entry is therefore acceptable for the proposed use pattern and no change to this MRL is required.

## 7. Potential Risk to Trade

Export of treated produce containing finite (measurable) residues of glyphosate may pose a risk to Australian trade in situations where (i) no residue tolerance (import tolerance) is established in the importing country or (ii) where residues in Australian produce are likely to exceed a residue tolerance (import tolerance) established or referenced in the importing country.

This application seeks to increase the rate of glyphosate on sorghum to 1 - 2 L/ha (0.54 - 1.08 kg a.i./ha). Global MRLs have been established for sorghum, based on the use pattern in the U.S.A. at a rate of 1.7 kg a.i./ha. The MRL proposed for Australia is the same as that established in the U.S.A. and Australia has the lower use rate. Japan (20 mg/kg – other cereal grains) and Codex (30 mg/kg – cereal grains) have tolerances established for glyphosate in sorghum grain higher than that proposed in Australia (15 mg/kg). Taiwan which has become a significant export destination for sorghum does not have an established MRL. Residues of glyphosate occurring in sorghum grain from the proposed use are not expected to exceed 15 mg/kg. On the basis that the Codex MRL is higher than the Australian MRL, the risk to Australia's trade in sorghum is considered to be low.

The submitted residues data indicate that residues in sorghum animal feeds, as a result of the proposed use pattern, would be substantially below the existing MRL of glyphosate in Primary Feed Commodities (150 mg/kg) and no change to animal commodity MRLs are required. The existing Table 4 MRL entry is therefore acceptable for the proposed use pattern and no change to this MRL is required. The anticipated livestock exposure to glyphosate residues should not increase significantly as a result of the proposed use on sorghum. The current animal commodity MRLs are sufficient and no changes to these MRLs are recommended. The potential risk to trade through the export of animal commodities is not significantly changed by the proposal.

Sorghum hay is also exported and as the proposed use rate of Roundup PowerMAX Herbicide has been increased, potential residues in hay have also increased. However, the potential risk to trade through the export of sorghum hay is considered to be low and not significantly changed by the proposed increase in application rate.

## 8. Conclusions

Residue trials provided by the applicant indicate that glyphosate residues in sorghum will be below the proposed MRL of 15 mg/kg, when the product is used according to label directions. It is noted that Taiwan which has become a significant export destination for sorghum does not have an established MRL. It is considered that the proposed use will not prejudice Australian trade as the proposed MRL is lower than the CODEX MRL and other overseas MRLs.

The anticipated livestock exposure to glyphosate residues should not increase significantly as a result of the proposed use on sorghum. No changes to the current animal commodity MRLs are recommended. The potential risk to trade through the export of animal commodities is not significantly changed by the proposal.

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As the primary feed commodity MRL has not changed, the potential risk to trade through the export of sorghum hay is considered low and not significantly changed by the proposal.

Comments are sought on this assessment and on the potential for Roundup PowerMAX Herbicide to unduly prejudice Australian export trade when it is used on pre-harvest sorghum.