



Australian Government
**Australian Pesticides and
Veterinary Medicines Authority**



Trade Advice Notice

on imazapic and imazapyr in the product Sentry Herbicide for use on oats

APVMA product number 67951

April 2022

© Australian Pesticides and Veterinary Medicines Authority 2022

ISSN 2200-3894 (electronic)

Ownership of intellectual property rights in this publication

Unless otherwise noted, copyright (and any other intellectual property rights, if any) in this publication is owned by the Australian Pesticides and Veterinary Medicines Authority (APVMA).

Creative Commons licence

With the exception of the Coat of Arms and other elements specifically identified, this publication is licensed under a Creative Commons Attribution 4.0 Licence. This is a standard form agreement that allows you to copy, distribute, transmit and adapt this publication provided that you attribute the work.



A [summary of the licence terms](#) and [full licence terms](#) are available from Creative Commons.

The APVMA's preference is that you attribute this publication (and any approved material sourced from it) using the following wording:

Source: Licensed from the Australian Pesticides and Veterinary Medicines Authority (APVMA) under a Creative Commons Attribution 4.0 Australia Licence.

In referencing this document the Australian Pesticides and Veterinary Medicines Authority should be cited as the author, publisher and copyright owner.

Cover image: iStockphoto (www.istockphoto.com)

iStockphoto images are not covered by this Creative Commons licence.

Use of the Coat of Arms

The terms under which the Coat of Arms can be used are set out on the [Department of the Prime Minister and Cabinet website](#).

Disclaimer

The material in or linking from this report may contain the views or recommendations of third parties. Third party material does not necessarily reflect the views of the APVMA, or indicate a commitment to a particular course of action. There may be links in this document that will transfer you to external websites. The APVMA does not have responsibility for these websites, nor does linking to or from this document constitute any form of endorsement. The APVMA is not responsible for any errors, omissions or matters of interpretation in any third-party information contained within this document.

Comments and enquiries regarding copyright:

Assistant Director, Communications
Australian Pesticides and Veterinary Medicines Authority
GPO Box 3262
Sydney NSW 2001 Australia

Telephone: +61 2 6770 2300

Email: communications@apvma.gov.au

This publication is available from the [APVMA website](#).

Contents

Preface	1
About this document	1
Making a submission	1
Further information	2
Introduction	3
Trade considerations	3
Commodities exported	3
Destination and value of exports	3
Proposed Australian use pattern	4
Results from residues trials presented to the APVMA	6
Grain – imazapic	6
Grain – imazapyr	6
Animal feeds - imazapic	7
Animal feeds – imazapyr	7
Overseas registration	7
Codex Alimentarius Commission and overseas MRLs	7
Current MRLs for imazapic and imazapyr	9
Proposed amendments to the MRL Standard for imazapic and imazapyr	10
Potential risk to trade	10
Conclusion	11

List of tables

Table 1: Proposed use pattern being considered by the APVMA	4
Table 2: International MRLs for imazapic	8
Table 3: Current relevant MRLs for imazapic in Table 1 of the MRL Standard	9
Table 4: Current relevant MRLs for imazapic in Table 4 of the MRL Standard	9
Table 5: Current relevant MRLs for imazapyr in Table 1 of the MRL Standard	9
Table 6: Current relevant MRLs for imazapyr in Table 4 of the MRL Standard	10
Table 7: Amendments to Table 1 of the MRL Standard for imazapic	10
Table 8: Amendments to Table 1 of the MRL Standard for imazapyr	10

Preface

The Australian Pesticides and Veterinary Medicines Authority (APVMA) is an independent statutory authority with responsibility for assessing and approving agricultural and veterinary chemical products prior to their sale and use in Australia.

The APVMA has a policy of encouraging openness and transparency in its activities and of seeking stakeholder involvement in decision making. Part of that process is the publication of Trade Advice Notices for all proposed extensions of use for existing products where there may be trade implications.

The information and technical data required by the APVMA to assess the safety of new chemical products and the methods of assessment must be undertaken according to accepted scientific principles. Details are outlined in regulatory guidance published on the APVMA website.

About this document

This Trade Advice Notice indicates that the APVMA is considering an application concerning the use of a proposed agricultural chemical.

It provides a summary of the APVMA's residue and trade assessment.

Comment is sought from industry groups and stakeholders on the information contained within this document.

Making a submission

The APVMA invites any person to submit a relevant written submission as to whether the application to vary the registration of Sentry Herbicide should be granted. Submissions should relate only to matters that the APVMA is required by legislation to take into account in deciding whether to grant the application. These grounds relate to the trade implications of the extended use of the product. Submissions should state the grounds on which they are based. Comments received outside these grounds cannot be considered by the APVMA.

Submissions must be received by the APVMA by close of business on **10 May 2022** and be directed to the contact listed below. All submissions to the APVMA will be acknowledged in writing via email or by post.

Relevant comments will be taken into account by the APVMA in deciding whether to grant the application and in determining appropriate conditions of registration and product labelling.

When making a submission please include:

- contact name
- company or organisation name (if relevant)
- email or postal address (if available)

- the date you made the submission.

Please note: submissions will be published on the APVMA's website, unless you have asked for the submission to remain confidential, or if the APVMA chooses at its discretion not to publish any submissions received (refer to the [public consultation coversheet](#)).

Please lodge your submission using the [public consultation coversheet](#), which provides options for how your submission will be published.

Note that all APVMA documents are subject to the access provisions of the *Freedom of Information Act 1982* and may be required to be released under that Act should a request for access be made.

Unless you request for your submission to remain confidential, the APVMA may release your submission to the applicant for comment.

Written submissions should be addressed to:

Executive Director, Risk Assessment Capability
Australian Pesticides and Veterinary Medicines Authority
GPO Box 3262
Sydney NSW 2001

Phone: +61 2 6770 2300

Email: enquiries@apvma.gov.au.

Further information

Further information can be obtained via the contact details provided above.

Further information on Trade Advice Notices can be found on the APVMA website: apvma.gov.au.

Introduction

The APVMA has before it an application from Nufarm Australia Limited to register the use of Sentry Herbicide on Kingbale and Archer oat varieties. The product contains 525 g/kg imazapic and 175 g/kg imazapyr as its active ingredients.

The use of Sentry Herbicide on Kingbale oats is currently registered and a Trade Advice Notice was published in November 2020.¹ The current proposal is to amend the current registered use “For application only to oat crops grown for grazing, oaten hay or seed production (such as Kingbale). DO NOT apply to crops intended for the harvest of grain” to allow use on Kingbale and Archer oats only, including in crops which may be harvested for grain. A label statement has however been proposed to state that “Grain harvested from failed hay crops, screenings from seed crops or excess seed cannot be delivered to bulk handlers and is not suitable for export”.

Trade considerations

Commodities exported

Oat grain and hay are considered to be major export commodities², as are commodities of animal origin, such as meat, offal and dairy products, which may be derived from livestock fed feeds produced from treated oats. Residues in these commodities resulting from the use of Sentry Herbicide may have the potential to unduly prejudice trade.

As quantifiable residues of imazapic and imazapyr are not expected in oaten hay, the overall risk to trade in oaten hay associated with the proposed use is considered to be low and does not require further consideration.

As no changes are required to the animal commodity MRLs, the risk to trade with respect to animal commodities is considered to be low and does not require further consideration.

The risk to trade with respect to oat grain is considered below.

Destination and value of exports

The export value of Australian oats sown for grain was \$106 million in 2018–19, \$136 million in 2019–20 and \$289 million in 2020–21 (approximately 127 to 567 kt per year over that period)³.

¹ Australian Pesticides and Veterinary Medicines Authority, [Trade Advice Notice on imazapic and imazapyr in the product Sentry Herbicide for use on oats](#), APVMA website, 25 November 2020, accessed 4 April 2022.

² Australian Pesticides and Veterinary Medicines Authority, [APVMA Regulatory Guidelines, Agricultural Data Guidelines - Overseas trade \(Part 5B\)](#), APVMA website.

³ Australian Bureau of Agricultural and Resource Economics, [Agricultural commodities and trade data](#), DAWE website, accessed 4 April 2022.

The main destinations for Australian oats over the last 5 years were China, India, Malaysia and Japan⁴.

Proposed Australian use pattern

Table 1: Proposed use pattern being considered by the APVMA

Situation	Weeds controlled	Rate	Critical comments
Pre-emergence use:	Barley grass (<i>Hordeum</i> spp.) Brome grass (<i>Bromus</i> spp.)	40 - 50 g/ha (= 21 - 26.3 g imazapic/ha and 7 - 8.75 g imazapyr/ha)	<p>DO NOT apply Sentry® (to a crop) more than once in a growing season. Where Sentry® is used pre-emergence followed by a post-emergent treatment with another imidazolinone-based herbicide or any other Group 2 herbicide to control grasses in cereals or brassicaceous weeds in canola, only sow an imidazolinone herbicide tolerant crop the following season.</p> <p>Ensure follow crop comments and restrictions on the label are consulted prior to use.</p> <p>Sentry® may be applied up to and immediately prior to planting with incorporation by the sowing process using knife/blade points and press wheels.</p> <p>Best weed control will be achieved when applied to weed free, moist, friable soil immediately prior to sowing. Sentry® can be applied to dry soil but will not be active until follow up rain disperses the product to the root zone of germinating weeds. Applying Sentry® to dry soil when weeds are germinating from depth can impair performance. A 15 to 20 mm rainfall event received within two weeks of application will limit this risk.</p> <p>The low rate of Sentry® may not provide adequate control when used in heavy stubble covers, on high weed density burdens and in heavier soil types. Tank mixing with a suitable pre-emergence grass herbicide is recommended (see Compatibility section).</p> <p>Applying Sentry® in tank mix with pre-emergence grass herbicides will improve grass control, particularly Annual ryegrass, and the control of some broadleaf weed species. This is</p>
Kingbale or Archer Oats – DO NOT apply to other oat varieties.	Climbing buckwheat (<i>Fallopia convolvulus</i>) Hedge mustard (<i>Sisymbrium officinale</i>) Indian hedge mustard (<i>S. orientale</i>) Wild radish (<i>Raphanus raphanistrum</i>) Wireweed (<i>Polygonum aviculare</i>)	Refer to Compatibility Section and Critical Comments for advice and rates of herbicide tank mix partners.	
	Suppression of the following weeds: Annual ryegrass (<i>Lolium rigidum</i>) Capeweed (<i>Arctotheca calendula</i>) Clover (<i>Trifolium</i> spp.)		
	Fumitory (<i>Fumaria</i> spp.)		
	Long storksbill (<i>Erodium botrys</i>) Paterson's curse (<i>Echium plantagineum</i>) Phalaris (<i>Phalaris</i> spp.)		
	Volunteer barley (<i>Hordeum vulgare</i> - other than imidazolinone herbicide tolerant barley varieties)		
	Volunteer canola (<i>Brassica napus</i> - other than imidazolinone herbicide tolerant canola varieties)		
	Volunteer wheat (<i>Triticum aestivum</i> - other than imidazolinone herbicide tolerant wheat varieties)		
	Volunteer oats (<i>Avena sativa</i> - other than imidazolinone herbicide tolerant oat varieties)		
	Wild oats (<i>Avena</i> spp.)		

⁴ Australian Export Grains Innovation Centre, [Opportunities and risks for the Australian oats industry](#), AEGIC website, accessed 4 April 2022.

Situation	Weeds controlled	Rate	Critical comments
			<p>especially applicable when using Sentry® at 40 g/ha. Choice of the mixing partner regime depends upon weed spectrum and site conditions. DO NOT apply a Sentry® tank mix in a manner contrary to advice provided on the label of the mixing partner.</p> <p>Wherever possible, an appropriate follow up post- emergence herbicide regime using alternative modes of action herbicides is recommended for weed seed set management.</p> <p>Harvest Weed Seed Set Control (HWSSC) measures are recommended in all situations in order to limit the survival of Group 2 resistant seeds, but are essential where Group 2 based herbicides, including Sentry®, have been applied pre- and post-emergence. See Best Management Practice.</p> <p>Imidazolinone herbicide tolerant Oats</p> <p>Kingbale and Archer are the only varieties approved for use with Sentry, DO NOT apply to other oat varieties.</p> <p>Kingbale and Archer are oaten hay varieties. Grain harvested from failed hay crops, screenings from seed crops or excess seed cannot be delivered to bulk handlers and is not suitable for export. Grain from these situations can be fed to livestock on the Australian domestic market.</p> <p>If crops are stressed due to drought conditions, they should be grazed or harvested for grain and not cut for export oaten hay markets.</p>

Sentry Herbicide (containing 525 g/kg imazapic and 175 g/kg imazapyr as the only active constituents).

{Note: Yellow highlighted label directions are different to those on the currently registered label}.

Restraints:

DO NOT apply post-emergence to imidazolinone tolerant barley or oats (Kingbale or Archer).

DO NOT apply to crops or weeds which are suffering moisture stress (waterlogged or drought affected) or stressed from previous herbicide or foliar fertiliser treatment.

DO NOT apply by aircraft.

WITHHOLDING PERIODS (Imidazolinone herbicide tolerant Oat):

Harvest: Not required when used as directed.

Grazing: DO NOT graze or cut for stock food for 8 weeks after application.

Results from residues trials presented to the APVMA

The proposed use pattern of Sentry Herbicide on imidazolinone herbicide tolerant oats (Kingbale and Archer varieties only), is for a pre-emergent application by incorporation by sowing (IBS) at an application rate of 40 to 50 g/ha (21 to 26.3 g imazapic/ ha and 7 to 8.75 g imazapyr/ ha) with a harvest WHP of “Not required when used as directed” and a proposed grazing WHP of “DO NOT graze or cut for stock food for 8 weeks after application”.

In support of the application, the applicant submitted a study containing details of 2 GLP trials conducted on Kingbale oats in Australia in 2020–21, as well as summary data from a number of non-GLP residue trials conducted in Australia in 2020. For the non-GLP trials, the residue analysis was conducted in a GLP-accredited facility and sufficient details of the trials have been submitted to indicate that they were conducted in accordance with the proposed label instructions and that samples were stored in an appropriate manner. Six previously submitted Australian GLP trials conducted on Kingbale oats in 2018 or 2019 were also considered.

Grain – imazapic

The combined dataset considered suitable for MRL estimation for the proposed use on oats is in rank order:

<0.02 (17), 0.022 and 0.032 mg/kg (STMR = 0.02 mg/kg, n = 19).

The OECD MRL calculator estimates an MRL of 0.04 mg/kg based on this dataset, with the proviso “High uncertainty of MRL estimate due to high level of censoring”.

An imazapic MRL of 0.05 mg/kg for GC 0647 Oats is considered appropriate to cover residues arising in oat grain from the proposed use pattern, in conjunction with the proposed WHP of “Not required when used as directed”. The established MRL for Oats at *0.02 mg/kg will be deleted.

Grain – imazapyr

The combined dataset considered suitable for MRL estimation for the proposed use on oats is in rank order:

<0.01 (11), 0.010, 0.013 (2), 0.016, 0.023, 0.028, 0.035 and 0.067 mg/kg (STMR = 0.01 mg/kg, n = 19).

The OECD MRL calculator estimates an MRL of 0.08 mg/kg based on this dataset, with the proviso “High uncertainty of MRL estimate due to high level of censoring”.

An imazapyr MRL of 0.1 mg/kg for GC 0647 Oats is considered appropriate to cover residues arising in oat grain from the proposed use pattern, in conjunction with the proposed WHP of “Not required when used as directed”. The established MRL for Oats at *0.01 mg/kg will be deleted.

Animal feeds - imazapic

As no detectable residues of imazapic were observed in oaten hay in 7 Australian GLP trials conducted at both approximately one and 2× the proposed maximum application rate and no finite residues were observed in 11 valid non-GLP hay samples, residues of imazapic in hay are expected to be non-detectable. No change is therefore required to the established imazapic MRL for AS 0647 Oat straw and fodder, dry at *0.02 mg/kg.

As no detectable residues of imazapic were observed in oat forage in 7 Australian GLP trials conducted at both approximately one and 2× the proposed maximum application rate, residues of imazapic in forage are expected to be non-detectable. No change is required to the established imazapic MRL for Cereal grains forage (fresh weight) at *0.05 mg/kg.

Animal feeds – imazapyr

As no residues of imazapyr were observed in oaten hay in 7 Australian GLP trials conducted at both approximately one and 2× the proposed maximum application rate and no finite residues were observed in 11 valid non-GLP hay samples, residues of imazapyr in hay are expected to be non-detectable. No change is therefore required to the established imazapyr MRL for Oat forage and fodder at *0.01 mg/kg.

As no detectable residues of imazapyr were observed in oat forage in 7 Australian GLP trials conducted at both approximately one and 2× the proposed maximum application rate, residues of imazapyr in forage are expected to be non-detectable. No change is required to the established imazapyr MRL Oat forage and fodder at *0.01 mg/kg.

Overseas registration

The applicant has indicated that there are no imazapic and imazapyr products registered overseas for use on imidazolinone herbicide tolerant oats.

Codex Alimentarius Commission and overseas MRLs

The Codex Alimentarius Commission (Codex) is responsible for establishing Codex Maximum Residue Limits (CXLs) for pesticides and veterinary medicines. Codex CXLs are primarily intended to facilitate international trade and accommodate differences in Good Agricultural Practice (GAP) employed by various countries. Some countries may accept Codex CXLs when importing foods. Imazapic and imazapyr have been considered by Codex.

The following overseas MRL has been established for imazapic (Table 2).

Table 2: International MRLs for imazapic

Commodity	Tolerance for residues arising from the use of imazapic (mg/kg)	
	Australia ⁵	EU ⁶
Definition	Sum of imazapic and its hydroxymethyl derivative	Imazapic
Oat	*0.02 (current) (0.05 – proposed)	*0.01

Codex⁷, Japan⁸, Korea⁹ and China¹⁰, which all have a residue definition for imazapic of parent only, do not have an established imazapic MRL for oat grain.

The USA¹¹, with a residue definition of “Sum of imazapic and its metabolites (\pm)-2-[4,5-dihydro-4-methyl-4-(1-methylethyl)-5-oxo-1H-imidazol-2-yl]-5-hydroxymethyl-3-pyridinecarboxylic acid and (\pm)-2-[4,5-dihydro-4-methyl-4-(1-methylethyl)-5-oxo-1H-imidazol-2-yl]-5-(β -D-glucopyranosyloxy)methyl-3-pyridinecarboxylic acid, calculated as imazapic”, does not have an imazapic MRL for oats.

Taiwan¹² (residue definition unknown) also does not have an imazapic MRL for oat grain.

Codex, the EU, Japan, Korea, the USA and China, which, like Australia, all have a residue definition for imazapyr of parent only, do not have an established imazapyr MRL for oat grain.

Taiwan (residue definition unknown) also does not have an imazapyr MRL for oat grain.

⁵ Australian Government, [Agricultural and Veterinary Chemicals Code \(MRL Standard\) Instrument 2019](#), Federal Register of Legislation, accessed 4 April 2022.

⁶ European Commission, [Pesticide residue\(s\) and maximum residues levels \(mg/kg\)](#), European Commission website, accessed 4 April 2022.

⁷ Food and Agriculture Organisation of the United Nations, [Codex Alimentarius International Food Standards](#), FAO website, accessed 4 April 2022.

⁸ Japanese Food Chemistry Research Promotion Foundation, [Table of MRLs for Agricultural Chemicals](#), JFCRPF website, accessed 4 April 2022.

⁹ Food Safety Korea, [Pesticide MRLs for agricultural commodities](#), FSK website, accessed 4 April 2022.

¹⁰ United States Department of Agriculture, [China: Maximum Residue Limits for Pesticides in Foods, Global Agricultural Information Network report](#), 24 August 2021, accessed 4 April 2022.

¹¹ Electronic Code of Federal Regulations, [USA Electronic Code of Federal Regulations](#), ECFR website, accessed 4 April 2022.

¹² Food and Drug Administration Taiwan, [Standards for Pesticide Residue Limits in Foods](#), accessed 4 April 2022.

Current MRLs for imazapic and imazapyr

Table 3: Current relevant MRLs for imazapic in Table 1 of the MRL Standard

Compound	Food	MRL (mg/kg)
Imazapic (formerly known as imazameth)		
MO 0105	Edible offal (mammalian)	*0.05
PE 0112	Eggs	*0.01
MM 0095	Meat (mammalian) [in the fat]	*0.05
ML 0106	Milks	*0.01
GC 0647	Oats	*0.02
PM 0110	Poultry meat	*0.01
PO 0111	Poultry, edible offal of	*0.01

Table 4: Current relevant MRLs for imazapic in Table 4 of the MRL Standard

Compound	Animal feed commodity	MRL (mg/kg)
Imazapic (formerly known as imazameth)		
	Cereal grains forage (fresh weight)	*0.05
AS 0647	Oat straw and fodder, dry	*0.02

Table 5: Current relevant MRLs for imazapyr in Table 1 of the MRL Standard

Compound	Food	MRL (mg/kg)
Imazapyr		
MO 0105	Edible offal (mammalian)	*0.05
PE 0112	Eggs	*0.01
MM 0095	Meat (mammalian) [in the fat]	*0.05
ML 0106	Milks	*0.01
GC 0647	Oats	*0.01
PM 0110	Poultry meat [in the fat]	*0.01
PO 0111	Poultry, edible offal of	*0.01

Table 6: Current relevant MRLs for imazapyr in Table 4 of the MRL Standard

Compound	Animal feed commodity	MRL (mg/kg)
Imazapyr		
	Oat forage and fodder	*0.01

Proposed amendments to the MRL Standard for imazapic and imazapyr

Table 7: Amendments to Table 1 of the MRL Standard for imazapic

Compound	Food	MRL (mg/kg)
Imazapic (formerly known as imazameth)		
DELETE:		
GC 0647	Oats	*0.02
ADD:		
GC 0647	Oats	0.05

Table 8: Amendments to Table 1 of the MRL Standard for imazapyr

Compound	Food	MRL (mg/kg)
Imazapyr		
DELETE:		
GC 0647	Oats	*0.01
ADD:		
GC 0647	Oats	0.1

Potential risk to trade

Export of treated produce containing finite (measurable) residues of imazapic and/ or imazapyr 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 in the importing country.

The proposed use of imazapic and imazapyr on oats requires the establishment of finite MRLs for imazapic and imazapyr in oat grain. Major overseas markets do not have established MRLs for imazapic or imazapyr in oat grain, except the EU which has an imazapic MRL at *0.01 mg/kg.

The applicant has noted that “As Kingbale is an oaten hay variety and is not, and will not be, a variety approved for grain receipt by bulk handlers, it is extremely unlikely any grain will be exported. Therefore, the risk to trade of milling oats and fodder destined for export are acceptable with the label instructions proposed below.” This argument also applies to the proposed use on the Archer variety which will only be supported as an oaten hay variety.

Label instructions are proposed to manage the risk in drought-stressed crops:

“Kingbale and Archer are the only varieties approved for use with Sentry, DO NOT apply to other oat varieties.

Kingbale and Archer are oaten hay varieties. Grain harvested from failed hay crops, screenings from seed crops or excess seed cannot be delivered to bulk handlers and is not suitable for export. Grain from these situations can be fed to livestock on the Australian domestic market.

If crops are stressed due to drought conditions, they should be grazed or harvested for grain and not cut for export oaten hay markets.”

It is also noted that the following trade advice statement is on the current registered label, and the proposed label, for Sentry Herbicide:

Trade advice information: Growers should note that maximum residue limits (MRLs) or import tolerances may not exist in all markets for crops treated with Sentry®. If you are growing produce for export, please check with Nufarm Australia Limited or your Industry Association for the latest information on MRLs and import tolerances before using Sentry®.

As Kingbale and Archer will only be supported as oaten hay varieties and grain harvested from failed hay crops, screenings from seed crops or excess seed should not be delivered to bulk handlers as they will not be accepted varieties suitable for export (and if they are delivered they will be rejected or put into a domestic livestock feed stack), the overall risk to international trade in oat grain associated with the proposed use is considered to be low.

Conclusion

Nufarm Australia Limited has applied for registration of the use of imazapic and imazapyr on Kingbale and Archer varieties of oats, including in crops which may be harvested for grain.

Comment is sought on the potential for the proposed use to prejudice Australian trade of oat grain and the ability of industry to manage any potential trade risk.